



U.S. Department
of Transportation

**Urban Mass
Transportation
Administration**

MAGLEV
November 1987 - August 1990

**Selected References from the UMTRIS Subfile
and other subfiles of the
Transportation Research Information Service
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U.S. Department
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MAGLEV
November 1987 - August 1990

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**INTELLIGENT VEHICLE
HIGHWAY SYSTEMS**

**Selected References from the UMTRIS Subfile
and other subfiles of the
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October 1990

486079 DA

MARKETS FOR HIGH-SPEED INTERCITY MAGLEV TECHNOLOGY: A SYSTEMS ANALYSIS APPROACH

Coffey, HT; Johnson, LR Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 Jul 1989 18p 5 Fig. 7 Tab. 15 Ref. SUBFILE: RRIS; ATRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The technical feasibility of constructing and operating maglev vehicles at speeds of 250-300 mph has been amply demonstrated and is accepted here as a reality. In this paper, the markets into which passenger- or freight-carrying systems based on this technology can be introduced with economic reasonableness are evaluated. The characteristics and capabilities (particularly the capacity and comparative costs) of the system are enumerated and discussed from the points of view of the passengers, the airlines (as potential operators), and the traveling public. It is shown that if the system is integrated into the existing transportation system as a supplement to the airline system, it meets the criteria required for the introduction of any new product or service into a market. The financial enhancement of the maglev system resulting from the use of trunk routes with feeder lines diverging to various ultimate destinations becomes an extremely important consideration.

559959 DA

MARKETS FOR HIGH-SPEED INTERCITY MAGLEV TECHNOLOGY: A SYSTEMS ANALYSIS APPROACH

Coffey, HT; Johnson, LR Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 43-55 SUBFILE: UCITS; TLIB
No abstract available.

563269 DA

SUPERCONDUCTIVITY: FIRST CONGRESS, FIRST SESSION, OCTOBER 31, 1989

US GPO Washington 1990 122 PP SUBFILE: UCITS; TLIB For sale by the Supt. of Docs., Congressional Sales Office, U.S. G.P.O No. 85
No abstract available.

562912 DA

ELECTROMAGNETIC LEVITATION SYSTEM BY MEANS OF SALIENT-POLE TYPE MAGNETS COUPLED WITH LAMINATED SLOTLESS RAILS

Yamamura, S; Yamaguchi, H *IEEE Transactions on Vehicular Technology* vol. 39 No. 1 Feb 1990 PP 83-87 SUBFILE: UCITS; TLIB
No abstract available.

562697 DA

MODERN OPERATING CONTROL TECHNOLOGY FOR THE DB

ETR: *Eisenbahntechnische Rundschau* vol. 39 no. 3 Mar 1990 PP 115-137 German with English summaries SUBFILE: NWUTL; TLIB
Communications for train control: maglev, railways, portrait data system

562532 DA

A MODERN TRANSPORT SYSTEM - THE M-BAHN

Pleger, J (Bundesbahn-Zentralamt Munchen) ETR: *Eisenbahntechnische Rundschau* vol. 39 No. 1/2 Jan 1990 PP 39-44
German English summary SUBFILE: NWUTL; TLIB
No abstract available.

562003 DA

PENNSYLVANIA FAVORS MAGLEV OPTION IN PITTSBURGH-PHILADELPHIA STUDY

Vranich, J *Speedlines* NV1989 Nov 1989 SUBFILE: NWUTL; TLIB
Pennsylvania High Speed Intercity Rail Passenger Commission Study

561970 DA

A REFERENCE ROUTE FOR THE HIGH SPEED MAGLEV TRAIN

Breitling, W; Mayer, J (Versuchs- und Planungsgesellschaft für Magnetbahnsysteme) ETR: *Eisenbahntechnische Rundschau* vol. 38 No. 12 Dec 1989 PP 761-766 German English summary SUBFILE: NWUTL; TLIB
No abstract available.

561762 DA

DOE SAYS MAGLEV VEHICLES COULD REPLACE AIR TRAVEL

Traffic World vol. 221 No. 4 Jan 1990 PP 26-27 SUBFILE: NWUTL; TLIB
Study by the Center for Transportation Research, Argonne National Laboratory

560624 DA

MINING M-BAHN

International Railway Journal vol. 29 No. 9 Sep 1989 64p SUBFILE: NWUTL; TLIB
Feasibility for movement of freight and passengers at underground mines in West Germany. Developments in peplemovers for Las Vegas and Frankfurt airport.

558641 DA

MAGNETIC LEVITATION TECHNOLOGY FOR ADVANCED TRANSIT SYSTEMS

Society of Automotive Engineers Warrendale PA Aug 1989 69 PP SUBFILE: UCITS; TLIB ISBN: 089883449X SP-792 Future Transportation Technology Conference and Exposition, Vancouver, BC, Canada, August 7-10, 1989.
No abstract available.

559961 DA

MAGNETIC LEVITATION TRANSPORTATION STRATEGY

Wyczalek, FA Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 63-69 SUBFILE: UCITS; TLIB
No abstract available.

559960 DA

JAPANESE SUPERCONDUCTING MAGLEV: PRESENT STATE AND FUTURE PERSPECTIVE

Takeda, H Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 57-62 SUBFILE: UCITS; TLIB
No abstract available.

559958 DA

MAGLEV: A REALISTIC OPTION FOR THE NINETIES

Eastham, TR Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 33-41 SUBFILE: UCITS; TLIB

No abstract available.

559957 DA

HSST MAGLEV TRAIN AT YOKOHAMA EXPO '89

Hayashi, A; Ohishi, A Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 23-32 SUBFILE: UCITS; TLIB

No abstract available.

559956 DA

THE TRANSPRAPID MAGLEV SYSTEM

Dickhart, WW Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 13-21 SUBFILE: UCITS; TLIB

No abstract available.

559619 DA

BERLIN, SERVICE INAUGURATION OF THE M-BAHN

Poppel, U *Stadtverkehr* Nov 1989 pp 31-32 English SUBFILE: UCITS; TLIB

No abstract available.

559560 DA

A NEW MAGLEV SYSTEM FOR MAGNETICALLY LEVITATED CARRIER SYSTEM

Morishita, M *IEEE Transactions on Vehicular Technology* vol. 38 No. 4 Nov 1989 pp 230-236 SUBFILE: UCITS; TLIB

No abstract available.

559259 DA

THE TRANSPRAPID TEST FACILITY: THE EMSLAND IS MAKING RAILWAY HISTORY

Transrapid International Munich 1989 English SUBFILE: UCITS; TLIB

No abstract available.

559257 DA

MAGLEV TRANSPRAPID

Transrapid International Munich 1989 English SUBFILE: UCITS; TLIB

No abstract available.

559128 DA

CONTACTLESS GUIDING AND POSITIONING USING A MAGNETICALLY SUSPENDED ELECTRO-MAGNET TYPE LINEAR STEPPING MOTOR

Higuchi, T; Kawakatsu, H; Horikoshi, A Japanese Association of Automatic Control Japan-USA Symposium on Flexible Automation 1986 pp 335-342

558691 DA

A SUPERTRAIN SOLUTION?: HIGH-SPEED RAIL IS A GREAT SUCCESS OVERSEAS. WILL AMERICANS TAKE TO TRAINS?

Fairweather, V *Civil Engineering*, vol. 60 No. 2 Feb 1990 pp 50-51 SUBFILE: UCITS; TLIB

No abstract available.

558650 DA

THE ROLE OF HIGH SPEED MAGLEV IN THE FUTURE U.S. TRANSPORTATION SYSTEM

Uher, RA (High Speed Ground Transportation Center, Carnegie Mellon Univ) Society of Automotive Engineers Magnetic Levitation Technology for Advanced Transit Systems 1989 pp 1-12 ENGLISH SUBFILE: UCITS; TLIB

No abstract available.

558624 DA

ENERGY, ENVIRONMENTAL, AND ECONOMIC BENEFITS OF FLORIDA'S HIGH SPEED RAIL AND MAGLEV SYSTEMS PROPOSALS

Lynch, T (Florida High Speed Rail Transportation Commission) 1990 18 pp ENGLISH SUBFILE: UCITS; TLIB Paper prepared for the 1990 Annual Meeting of the Transportation Research Board, Washington, D.C

No abstract available.

558413 DA

A LINEAR INDUCTION MOTOR CONTROL SYSTEM FOR MAGNETICALLY LEVITATED CARRIER SYSTEM

Azukizawa, T *IEEE Transactions on Vehicular Technology* vol. Vt-3 no. 2 May 1989 pp 102-108 ENGLISH SUBFILE: UCITS; TLIB

No abstract available.

558197 DA

BENEFITS OF MAGNETICALLY LEVITATED HIGH-SPEED TRANSPORTATION FOR THE UNITED STATES

Grumman Corporation Bethpage NY Jun 1989 SUBFILE: UCITS; TLIB Prepared by the Maglev Technology Advisory Committee, reporting to the United States Senate Committee on Environment and Public Works June 1989--vol. 1 V. 1. Executive Report

No abstract available.

557477 DA

RECENT TECHNOLOGY ON TRANSPORTATION SYSTEMS

Hara, Y; Oshima, H; Shibata, T; Takaoka, T *Hitachi Review* vol. 37 No. 6 Dec 1988 pp 357-446 SUBFILE: NWUTL; TLIB

Contents: Structure of the MLU002 Maglev Vehicle Yoshio Hara, Katsuyuki Terada, Koumei Miyairi. -- Computer Control Systems for the Sendai Subway Hiroyasu Oshima, Tadashi Arai and Shinichi Kawah -- Recent Railway Traffic Control Systems in Japan Toshiro Shibata and Takashi Imai. -- On-board Train Information Network Systems Tadashi Takaoka, Kazuhiro Yamada and Seiji Yasunobu

556980 DA

EXPERIENCE, STATE-OF-THE-ART AND FUTURE PROSPECTS FOR THE M-BAHN AND PEOPLE MOVER SYSTEMS

Dreimann, K (Technische Universität Berlin) *Zeitschrift für Eisenbahnwesen und Verkehrstechnik*, vol. 113 No. 6/7 Jun 1989 pp 273-277 German English summary Record - 32 SUBFILE: NWUTL; TLIB

No abstract available.

556979 DA

THE M-BAHN - COMPETITION OR COMPLEMENT OF THE WHEEL RAIL SYSTEM

Lubke, D (Maschinenbau- und Elektrotechnik-Studium) *Zeitschrift für Eisenbahnwesen und Verkehrstechnik*, vol. 113 No. 6/7 Jun 1989 pp 173-181 German English summary SUBFILE: NWUTL; TLIB
No abstract available.

556595 DA

LOCAL BUSINESSES SEEK TO DERAIL DISNEY WORLD HIGH-SPEED TRAIN

Mitchell, M *Travel Weekly* vol. 48 No. 57 Jul 1989 pp 7P SUBFILE: NWUTL; TLIB
No abstract available.

555405 DA

UMTRIS SELECTIONS PERTAINING TO MAGLEV UPDATE, NOVEMBER 1987-MAY 1989 (120 SELECTIONS)

National Research Council Transportation Research Board Washington DC Oct 1989 SUBFILE: UCITS; TLIB
No abstract available.

555380 DA

ATTRACTIVE LEVITATION FOR HIGH-SPEED GROUND TRANSPORT WITH LARGE GUIDEWAY CLEARANCE AND ALTERNATING-GRADIENT STABILIZATION

Hull, JR Argonne National Laboratory Materials and Components Technology Division, Argonne Ill 1989 4 pp Report No: CONF-8903-09-1 Performed for the U.S. Dept. of Energy, Office of Transportation Research under Contract No: W-31-109-ENG-38. SUBFILE: UCITS; TLIB AVAILABLE FROM: National Technical Information Service Springfield, VA
No abstract available.

555104 DA

MAGNETBAHN TRANSPRAPID: THE NEW DIMENSION OF TRAVEL

Heinrich, K; Kretzschmar, R (MVP Versuchs- und Planungsgesellschaft für Magnetbahnsysteme MBH) Hestra-Verlag Darmstadt Darmstadt 1989 114 pp German SUBFILE: UCITS; TLIB ISBN: 3777102083
No abstract available.

553656 DA

NINETEEN DIFFERENT PUBLIC MASS TRANSPORTATION SYSTEMS: COSTS, PASSENGER COMFORT AND ENVIRONMENTAL INFLUENCES: A DATABASE WITH SHORT PROJECT DESCRIPTIONS

Thoden, R Institute of Transportation Studies University of Calif Berkeley Apr 1988 SUBFILE: UCITS; TLIB
Technical descriptions of the following types of transit systems: automated people mover, battery bus, guided bus, call buss, diesel bus, elevated rail, light rail, maglev, monorail, heavy rail trolley bus, van pool

427422 DA

INTERNATIONAL CONFERENCE ON MAGLEV AND LINEAR DRIVES: BALLY'S, LAS VEGAS, MAY 19-21, 1987

Sponsored by the Institute of Electrical and Electronics Engineers, Vehicular Technology Society Canadian Institute of Guided Ground Transport, Queen's University in cooperation with Fourth International Convention on High Speed Rail Institute of Electrical and Electronics Engineers New York NY 1987 245 pp SUBFILE: UCITS; TLIB
No abstract available.

427536 DA

HIGH-SPEED GROUND TRANSPORTATION TECHNOLOGIES FOR THE LAS VEGAS-SOUTHERN CALIFORNIA CORRIDOR

Boon, CJ Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 227-24 SUBFILE: UCITS; TLIB
No abstract available.

427535 DA

PATRONAGE ANALYSIS AND FORECAST FOR MAGLEV SERVICE BETWEEN LAS VEGAS AND SOUTHERN CALIFORNIA

Hamburg, JR; Keith, RW Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 219-22 SUBFILE: UCITS; TLIB
No abstract available.

427534 DA

THE MAGLEV TRANSPRAPID SYSTEM ON THE WAY TO APPLICATION: TEST RESULTS

Merklinghaus, W; Mních, P Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 211-21 SUBFILE: UCITS; TLIB
No abstract available.

427533 DA

SAFETY AND LICENSING ASPECTS OF TRANSPRAPID AND MAGLEV SYSTEMS

Blomerius, J Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 205-21 SUBFILE: UCITS; TLIB
No abstract available.

427532 DA

THE TRANSPRAPID MAGLEV SYSTEM: ITS APPLICATION IN THE RHEIN MAIN-RHEIN RUHR CORRIDOR IN THE FEDERAL REPUBLIC OF GERMANY

Alexy, R Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 195-20 SUBFILE: UCITS; TLIB
No abstract available.

427530 DA

MANUFACTURING PROCESS AND ASSEMBLING LINE OF GUIDEWAY AND ITS COMPONENTS OF THE TRANSPRAPID MAGLEV SYSTEM

Stockl, R; Schwindt, G Institute of Electrical and Electronics Engineers International Conference on Maglev & Linear Drives, Las Vegas, Nev 1987 pp 163-16 SUBFILE: UCITS; TLIB
No abstract available.

553538 DA

ENVIRONMENTAL ASSESSMENT FOR A SUPER-SPEED GROUND TRANSPORTATION SYSTEM PROPOSED TO LINK LAS VEGAS TO SOUTHERN CALIFORNIA

Flowers, CA (URS Corporation) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. SUBFILE: NWUTL; TLIB
No abstract available.

553532 DA

APPLICATION FIELD STUDIES

Ribbentrop, R (Versuchs- und Planungsgesellschaft für Magnetbahnsystem MBH) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. IEEE pp 189-194 SUBFILE: NWUTL; TLIB

No abstract available.

553531 DA

AUTOMATED OPERATIONS CONTROL SYSTEM FOR HIGH SPEED MAGLEV TRANSPORTATION

Schnieder, E; Kraft, KH; Guckel, H (Siemens AG Railway Signalling Division) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 181-188 SUBFILE: NWUTL; TLIB

No abstract available.

553530 DA

TRANSRAPID 06 II: PERFORMANCE AND CHARACTERISTICS

Miller, L (Thyssen Industrie AG Henschel) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 155-162 SUBFILE: NWUTL; TLIB

No abstract available.

553529 DA

STATUS OF THE MAGLEV AND LINEAR DRIVE TECHNOLOGY PROGRAM IN THE FEDERAL REPUBLIC OF GERMANY

Raschbichler, HG; Wackers, M (Thyssen Industrie AG Henschel) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 147-154 SUBFILE: NWUTL; TLIB

No abstract available.

553528 DA

THE GOVERNMENT-SPONSORED PROGRAM 'DEVELOPMENT OF THE MAGNETIC LEVITATION SYSTEM TRANSRAPID' IN THE FEDERAL REPUBLIC OF GERMANY

Menden, W; Hartmann, P International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 143-146 SUBFILE: NWUTL;

TLIB

No abstract available.

553527 DA

THE COMPETITIVE NICHE OF MAGLEV COMPARED TO HIGH SPEED RAIL AND AIR

Brand, NM (TGV Company) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 133-141 SUBFILE: NWUTL; TLIB

Projected costs and passenger traffic for the 230-mile Las Vegas-Los Angeles corridor (non-stop and one-stop) and a 460-mile corridor.

553526 DA

OPERATIONAL EXPERIENCE OF HSST-03 SYSTEM AT EXPO '85 AND EXPO '86

Suzuki, S; Murai, M; Kawashima, M (Japan Air Lines Co, Ltd) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 129-132 SUBFILE: NWUTL; TLIB

No abstract available.

553525 DA

THE LAS VEGAS M-BAHN MAGNETICALLY LEVITATED PEOPLE MOVER SYSTEM

Huss, H; Sulkin, MA (Magnetic Transit of America, Inc) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. SUBFILE: NWUTL; TLIB

No abstract available.

553524 DA

THE M-BAHN DEMONSTRATION LINE IN BERLIN : PROJECT, STATUS AND ARTISTIC IMPLEMENTATION

Eck, M (Magnetbahn GMBH) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 119-124 SUBFILE: NWUTL; TLIB

No abstract available.

553523 DA

THE M-BAHN MAGLEV RAPID TRANSIT SYSTEM - TECHNOLOGY, STATUS, EXPERIENCE

Dreimann, K (AEG Aktiengesellschaft) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 113-118 SUBFILE: NWUTL; TLIB

No abstract available.

552972 DA

SIMULATION OF THE DYNAMICS OF HIGH SPEED GROUND TRANSPORTATION VEHICLES WITH MEDYNA : POTENTIALS AND CASE STUDIES

Kortum, W (German Aerospace Research Establishment) International Conference on Maglev & Linear Drives May 1987. Sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. pp 99-112 SUBFILE: NWUTL; TLIB
No abstract available.

552072 DA

MAGLEV: AN EMERGING TRANSPORTATION TECHNOLOGY TO MEET AN IMMINENT TRANSPORTATION NEED

Uher, RA (Carnegie Mellon University) *Rail Engineering International* vol. 18 No. 1 1989 pp 5-8 SUBFILE: NWUTL; TLIB
No abstract available.

550427 DA

FIELD TESTS ON A MAGLEV WITH PASSIVE GUIDEWAY LINEAR INDUCTOR MOTOR TRANSPORTATION SYSTEM

Boldea, I *IEEE Transactions on Vehicular Technology* vol. Vt-3 no. 4 Nov 1988 pp 213-219 SUBFILE: UCITS; TLIB
No abstract available.

496210 DA

OPPORTUNITIES AND PROSPECTS FOR MAGLEV IN NORTH AMERICA

Eastham, TR; Coffey, HT Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 1989 5p 1 Fig. 1 Tab. 12 Ref. REPORT NO: CONF 890790-3 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

As a result of early research in many countries, including the USA and Canada, and developments particularly in the Federal Republic of Germany, the technologies of magnetic suspension and linear electric drives have matured to the stage at which low-speed systems are operational and high-speed systems have reached prototype test and demonstration. Maglev is now recognized as a realistic option for the 1990s and is being assessed in parallel with high-speed rail service in many corridor studies. Maglev is becoming available at a time when both road and air congestion is threatening the mobility that North America has come to expect. The fast, clean, energy-efficient characteristics should allow Maglev systems to contribute to the solution of impending transportation problems. This paper reviews the opportunities and prospects for the implementation of Maglev in North America. Portions of this document are illegible in microfiche products.

495404 DA

JR GROUP PROBES MAGLEV FRONTIERS

Tanaka, H Reed Business Publishing Limited *Railway Gazette International* vol. 146 no. 7 Jul 1990 pp 537-539 5 Fig. 2 Phot. SUBFILE: RRIS; UMTRIS AVAILABLE FROM: Reed Business Publishing Limited Quadrant Subscription Serv, Oakfield House, Perrymount Rd Haywards Heath Sussex RH16 3DH England
Trials on the 43km Yamanashi test track will determine whether an economic case can be made for a high capacity 500 km/h link between Japan's two principal conurbations using superconducting magnets on board the train.

495361 DA

HIGH SPEED RACE HEATS UP

Welty, G Simmons-Boardman Publishing Corporation *Railway Age* vol. 191 no. 5 May 1990 7p Phot. SUBFILE: RRIS AVAILABLE FROM: Railway Age Subscription Department, 345 Hudson Street: New York New York 10014

Steel wheel trains like France's TGV, Sweden's FasTrain, and Germany's ICE, remain the odds-on favorites in long-distance corridors where planning is most advanced. But maglev is coming on fast as a challenger, with test installations now planned in Florida and Pennsylvania.

495238 DA

MAGNETIC LEVITATION FOR RAIL TRANSPORTATION. JANUARY 1971-NOVEMBER 1989 (CITATIONS FROM THE COMPENDEX DATABASE)

National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Dec 1989 150p SUBFILE: UMTRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

This bibliography contains citations concerning the design, implementation, and utilization of magnetic levitation systems for rail transportation. Guideway materials, propulsion systems, dynamic instability, power losses, and control systems are among the topics discussed. Magnetic levitation systems in operation are examined, including those in Japan, England, West Germany and Canada. The application of this technology to urban transportation planning is considered. (This updated bibliography contains 370 citations, 92 of which are new entries to the previous edition.) Supersedes PB89-851745.

494863 DA

AERO-ACOUSTIC INVESTIGATIONS OF THE MAGNETIC TRAIN, TRANSRAPID 06

Alscher, H Messerschmitt-Boelkow-Blohm GmbH Munich West Germany 1989 6p REPORT NO: MBB-UW-0009-89-PUB SUBFILE: RRIS; UMTRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

Minimizing aero-acoustic noise and aerodynamic drag are major aims in the development of high speed trains. For this purpose dominant sources of aero-acoustic noise were identified on the surface of the magnetic train TRANSRAPID 06 by microphone-array measurements. Dominant sources were the gaps between car body and bogies, between the two cars of the train and a specific region near the nose of the train. The gaps are of no further interest, as they are closed by elastic fairings on the next generation vehicle, the TRANSRAPID 07. Windtunnel testing of the nose area led to local reshaping, which will lower aero-acoustic noise and aerodynamic drag.

494801 DA

FLORIDA'S HIGH-SPEED RAIL AND MAGLEV PROJECTS

Smith, CH Institute of Transportation Engineers *ITE Journal* vol. 60 no. 4 Apr 1990 pp 17-20 1 Fig. 1 Tab. Refs. SUBFILE: UMTRIS AVAILABLE FROM: Institute of Transportation Engineers 525 School Street, SW, Suite 410 Washington D.C. 20024-2729

Florida's innovative approach to meet future needs for efficient transportation is described: a statewide, high-speed, fixed guideway ground transportation system. The technologies involved will include advanced electrified wheels-on-rail trains and magnetically levitated

and propelled vehicles (maglev). Florida's concept includes the requirement that the systems be constructed and operated by private-sector interests, although this does not exclude various forms of public funding. The High Speed Rail Transportation Commission (HSR) Act of 1984, which provided several incentives for private enterprise participation, is discussed. The reasons why Florida needs HSR are discussed, as well as HSR proposals. Florida's Magnetic Levitation Demonstration Act of 1988 is also discussed. Various considerations in HSR and Maglev systems are reviewed, including safety, the health effects of magnetic fields, and the financial feasibility. The benefits of high-speed ground transportation are noted.

494431 DA

PUTTING MAGLEV ON TRACK

Johnson, LR National Academy of Sciences *Issues in Science & Technology* 1990 pp 71-76 SUBFILE: ATRIS; UMTRIS AVAILABLE FROM: Issues in Science & Technology 2101 Constitution Avenue, NW Washington D.C. 20418

As the nation's airports are faced with heavy congestion, high passenger volumes and delays, magnetically levitated trains are being considered as a viable solution. The case being made for magnetic levitation systems include the facts that such systems will reduce emissions of air pollutants, help retard global warming, not waste land resources because they can be built above existing bridges and overpasses and within existing rights-of-way requiring only 50 feet of space, and have the capacity to handle the volume of six lanes of interstate highway or a major airport. It is further suggested that a maglev system work in conjunction with airports as opposed to a competitive situation. In doing so, maglev could handle transportation needs for distances under 500 miles thereby freeing the airports to handle the true long distance travels needs. Proposed maglev systems should begin in areas such as the Northeast, the Midwest, California, Florida, and Texas where distances between major cities is not too great. Once these systems have proven to be effective, then they could be developed for other areas according to demand. Florida has already begun plans for implementing a maglev system. Decisions must be made as to which technology to use German or Japanese or to revitalize U.S. technology. The suggested strategy for U.S. maglev efforts include government leading the way by providing specifications for maglev needs in the U.S., industry being responsible for developing the technology, the tapping of resources of the national laboratories and universities and obtaining funding for maglev research and development perhaps through a fuel tax.

494116 DA

CHARACTERISTICS OF THE COMBINED LEVITATION AND GUIDANCE SYSTEM USING GROUND COILS ON THE SIDE WALL OF THE GUIDEWAY

Fujiwara, S; Fujimoto, T Japanese National Railways Railway Technical Research Institute, Kunitachi, Box 9 Tokyo Japan vol. 30 no. 3 1989 5p SUBFILE: UMTRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

Characteristics of a combined levitation and guidance system arranging ground coils on the surface of the side wall is studied. It is shown analytically that the system can generate levitation force and guidance force by the same ground coil and can raise drag ratio. And using numerical examples some features of the levitation force and

stiffnesses are shown. Document included in Quarterly Reports, Railway Technical Research Institute, v30 n3 p123-126 1989.

494057 DA

CHARACTERISTICS OF EDS (ELECTRO-DYNAMIC SUSPENSION) MAGLEV HAVING LEVITATION COILS ON THE SIDE WALL ON THE GUIDEWAY

Fujiwara, S Japanese National Railways Railway Technical Research Institute Kunitachi, Box 9 Tokyo Japan 1987 8p SUBFILE: UMTRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 EDS maglev system aiming at high speed transport is required to reduce magnetic drag in its levitation system. In the paper the levitation force and the stiffnesses characteristics of a method which arranges ground coil for levitation on the side wall to use the principle of null flux are analyzed and a numerical example is shown. According to the numerical example, maximum levitation force is about four times the rated value, and the drag ratio is higher than the value in the usual feasibility study. The lateral and yawing stiffnesses are positive values. The other stiffnesses are large values. Included in Quarterly Reports of Railway Technical Research Institute, v29 n4 pp157-163 Nov 88

494056 DA

US MARKET FOR HIGH-SPEED MAGLEV (MAGNETICALLY LEVITATED) VEHICLES

Rote, DM; Coffey, H; Johnson, L; Daniels, E Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 1989 9p 3 Fig. 6 Tab. 8 Ref. REPORT NO: CONF-890790-2 SUBFILE: UMTRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Recent studies at Argonne National Laboratory have shown that the market for high-speed magnetically levitated vehicles in the US, and in the rest of North America as well, depends strongly on how the technology is implemented. As an upgraded railway technology, it would have important benefits. However, competition with airlines would tend to make the technology uneconomical. Designed as aerospace-type vehicles with special attention to low mass and optimal aerodynamic performance and integrated into airport/airline operations, the technology would complement rather than compete with airlines. The social and economic benefits of maglev technology are discussed, and the economic viability of maglev as an airline/aerospace technology is compared to that as a railroad technology. Governing factors for potential market size and geographic distribution are addressed in detail and the expected principal routes are described. Portions of this document are illegible in microfiche products.

492306 DA

MINI-METROS WIDEN URBAN SPECTRUM

Reed Business Publishing Limited *Railway Gazette International* vol. 146 no. 3 Mar 1990 pp 207-210 4 Phot. SUBFILE: UMTRIS AVAILABLE FROM: Reed Business Publishing Limited Quadrant Subscription Serv, Oakfield House, Perrymount Rd Haywards Heath Sussex RH16 3DH England

Various types of mini-metros, peplemovers and monorails used throughout the world are presented.

492204 DA

A SUPERTRAIN SOLUTION?

Fairweather, V American Society of Civil Engineers *Civil Engineering* vol. 60 no. 2 Feb 1990 pp 50-53 SUBFILE: HRIS; UMTRIS AVAILABLE FROM: American Society of Civil Engineers 345 East 47th Street New York New York 10017-2398

France's Train a Grande Vitesse (TGV) is discussed, and the question is asked if the United States will accept high speed of any sort. European rail technology is being promoted as an environmentally sound solution to urban-highway and air traffic congestion problems. Both high speed steel-rail and magnetic levitation systems (maglev: high-speed, ground vehicles magnetically levitated, guided and propelled), another approach to superfast train travel, are being promoted here in the U.S. Several U.S. corridors have been studied and high speed rail projects of both kinds are moving forward in Texas and Florida and between Las Vegas and Anaheim, California. Several high-speed rail research programs are also under way. The French track record in this area is described. Real estate opportunities feature in both Florida's projected high-speed lines. Technology trade-offs in the decision between high-speed rail and maglev are noted.

492028 DA

ADVANCED TRANSPORTATION SYSTEMS. HEARING BEFORE THE SUBCOMMITTEE ON SURFACE TRANSPORTATION, COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION, UNITED STATES SENATE, 101ST CONGRESS, 1ST SESSION, OCTOBER 17, 1989

United States Senate Committee on Commerce, Science, and Transportation Washington D.C. 20510 1989 70p REPORT NO: S. Hrg. 101-369 SUBFILE: UMTRIS AVAILABLE FROM: Government Printing Office Superintendent of Documents Washington D.C. 20402-9325

This is a hearing on magnetically levitated transportation and high speed rail. U.S. scientists pioneered Mag-Lev technology in the 1960's and 1970's. Since that time, Japan and Germany have been leaders in the field. It is felt that the U.S. needs to reassert its technological leadership in this area. Issues examined include ways in which the development of a high speed system in the U.S. can yield major benefits, the cost and risk associated with that development, whether Federal or state funding is necessary and whether there is a need for legislation to facilitate development or eliminate barriers to construction of the systems. Included are testimony, prepared statements, and additional material submitted for the record.

491423 DA

THE SAGA OF MAGLEV

Money, LJ Pergamon Press plc *Transportation Research. Part A: General* vol. 18A no. 4 Jul 1984 pp 333-341 6 Fig. 2 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Pergamon Press, Incorporated Maxwell House, Fairview Park Elmsford New York 10523

Magnetic levitation, or MAGLEV for short, is a technology that has had considerable effort expended on its development during the past 15 years. Although intended primarily for high-speed ground transportation, it has the potential for other applications. Its advantages over conventional steel-wheel steel-rail are higher possible speeds, reduced roadbed maintenance, less noise and, since it is all electric, reduced dependence on petroleum. The U.S. was one of the early contributors to the technology as part of the response to the High Speed Ground Transportation Act of 1965. After the U.S. terminated its activity on

MAGLEV in 1975, development continued in several countries, most notable Japan and the Federal Republic of Germany. Both of those countries now have systems nearing the application stage. This paper discusses the technology, describes the major national programs and examines the rise and fall of the U.S. program of MAGLEV.

490476 DA

BENEFITS OF MAGNETICALLY LEVITATED HIGH-SPEED TRANSPORTATION FOR THE UNITED STATES. REPORT PREPARED BY THE MAGLEV TECHNOLOGY ADVISORY COMMITTEE REPORTING TO THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, UNITED STATES SENATE, 101ST CONGRESS, 1ST SESSION

United States Senate Committee on Environment and Public Works Washington D.C. 20510 Aug 1989 34p REPORT NO: S. Prt. 101-47 SUBFILE: RRIS AVAILABLE FROM: Government Printing Office Superintendent of Documents Washington D.C. 20402-9325

At the request of Senator Daniel Patrick Moynihan, the Maglev Technology Advisory Committee (MTAC) was organized in October 1988 to examine the technical and economic feasibility of running Maglev transport systems along U.S. Interstate highway rights of way. The committee was also asked to assess the potential environmental, energy, social, and industrial benefits that would result from large scale implementation of Maglev in the U.S. Results of the MTAC study are presented in two volumes. Volume 1, the Executive Report, summarizes the study; Volume 2, the Technical Report, presents detailed descriptions and analyses generated by the participants. This report to the Senate Committee on Environment and Public Works contains the Executive Report. It states that Maglev is achievable at acceptable cost and without significantly interfering with normal highway operations, and that there are compelling reasons for the U.S. to pursue Maglev. While invented in the U.S., Maglev application to actual revenue-producing service systems is being planned in both Japan and West Germany. However, the U.S. has the capability and industrial know-how at the present time to take the lead in Maglev transport.

490425 DA

[THE PROSPECTS OF MAGNETIC LEVITATION TRANSPORTATION SYSTEMS]

Hessler, H National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada 1985 n.p. German REPORT NO: NRCC C-28159 SUBFILE: UMTRIS AVAILABLE FROM: National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada No Abstract. Original journal: *Zeitschrift fuer Eisenbahnwes. Verkehrstechn.*, Vol. 107, 1983 pp 405-410.

No abstract available.

490424 DA

[TECHNICAL CONCEPT AND SYSTEM DATA OF A MAGNETICALLY SUSPENDED TRAIN WITH SHORT STATOR LINEAR MOTOR DRIVE]

Gaede, PJ National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada 1985 n.p. German REPORT NO: NRCC C-28129

SUBFILE: RRIS; UMTRIS AVAILABLE FROM: National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada Original journal: *Zeitschrift fuer Eisenbahnwes. Verkehrstechn.*, Vol. 107, 1983 pp 411-416.
No abstract available.

490423 DA

[THE M-BAHN. I SUSPENSION BY PERMANENT MAGNETS AND A PROPULSION SYSTEM USING A TRAVELLING MAGNETIC FIELD IN THE GUIDEWAY]

Heidelberg, G National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada 1985 n.p. German REPORT NO: NRCC C-28131 SUBFILE: UMTRIS AVAILABLE FROM: National Research Council of Canada Canadian Institute for Scientific and Technical Information Ottawa Ontario K1A 0S2 Canada Original journal: *Zeitschrift fuer Eisenbahnwes. Verkehrstechn.*, Vol. 107, 1983, pp 401-404.
No abstract available.

490422 DA

[CURRENT STATUS ON THE OVERSEAS DEVELOPMENT OF MAGNETIC SUSPENSION RAILROADS]

Kyotani, Y 1986 11p Japanese REPORT NO: FTD-ID(RS)T-119-0-85 SUBFILE: RRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 No Abstract. Original journal: *Journal of the Institute of Electrical Engineers Japan*, Vol. 99, 1979, pp 831-833.

490421 DA

[OPTIMUM DIMENSIONS OF POWER SOLENOIDS FOR MAGNETIC SUSPENSION]

Kaznacheev, BA Library of Congress National Translations Center Washington D.C. 20540 1985 8p Russian SUBFILE: UMTRIS AVAILABLE FROM: Library of Congress National Translations Center Washington D.C. 20540 No Abstract. Original journal: *Izvestia Vysshikh Ucheb Zaved, Elektromekhanika*; Vol. 27, 1984, pp 94-96.

490419 DA

[MULTICHANNEL TELEMETRY FOR MAGNETICALLY SUSPENDED MODELS]

Beaussier, J; Zakheim, J Library of Congress National Translations Center Washington D.C. 20540 1988 18p French REPORT NO ONERA TP-643 SUBFILE: UMTRIS AVAILABLE FROM Library of Congress National Translations Center Washington D.C. 20540
No Abstract.

490418 DA

[HEAT AND MASS TRANSFER IN MAGNETORHEOLOGICAL SUSPENSIONS]

Kordonskii, VI; Demchuk, SA Scripta Technica, Incorporated *Heat Transfer-Soviet Research* vol. 17 no. 3 1985 pp 112-129 14 Ref. Russian SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 No Abstract. Publisher-Minsk

Lykov Institute for Heat and Mass Transfer; publication year 1985, pp 47-66.

No abstract available.

490417 DA

[CONSTANT GAP WIDTH CONTROL OF MAGNETIC LEVITATION SYSTEM BY ATTRACTIVE FORCE]

Morishita, M; Ida, T Scripta Technica, Incorporated *Electrical Engineering in Japan* vol. 103 no. 3 1983 pp 91-99 Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi* Vol. 103, 1983, pp 403-410.
No abstract available.

490416 DA

[DEVICES FOR THE DIAGNOSIS OF TRANSFER PROCESSES IN MAGNETORHEOLOGICAL SUSPENSIONS]

Shulman, ZP; Kordonskii, VI; Prokhorov, IV; Demchuk, SA; Shchekinova, KI Scripta Technica, Incorporated *Heat Transfer-Soviet Research* vol. 19 no. 5 1987 pp 20-46 Russian SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Publisher-Minsk; publication year 1985, pp 3-33.
No abstract available.

490415 DA

[THREE-DIMENSIONAL ANALYSIS OF STEADY EDDY CURRENT OF CRYOSTAT OUTER VESSEL IN SUPERCONDUCTIVE MAGNETICALLY LEVITATED VEHICLE]

Nonaka, S; Sakamoto, T Scripta Technica, Incorporated *Electrical Engineering in Japan* vol. 105 no. 3 1985 pp 53-61 Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 105, 1985, pp 211-218.

490414 DA

[THREE-DIMENSIONAL ANALYSIS OF DYNAMIC EDDY CURRENT OF A CRYOSTAT OUTER VESSEL IN A SUPERCONDUCTING MAGNETICALLY LEVITATED VEHICLE]

Sakutaro, N; Tetsuzo, S Scripta Technica, Incorporated *Electrical Engineering in Japan* vol. 106 no. 5 1986 pp 82-90 11 Ref. Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 106, 1986, pp 663-670.

490413 DA

[ANALYSIS OF LEVITATING AND LATERAL FORCES OF MAGNETIC LEVITATING SYSTEM OF PERMANENT MAGNET REPULSION TYPE]

Ebihara, D; Imagawa, K; Watanabe, M Scripta Technica, Incorporated *Electrical Engineering in Japan* vol 106 no. 6 1986 pp 135-142 10 Ref. Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 106, 1986, pp 977-984.

No abstract available.

490412 DA

[COMPLETELY CONTACTLESS LINEAR DC MOTOR USING MAGNETIC SUSPENSION]

Matsumura, F; Maeda, S; Fujita, M; Fukuzono, H Scripta Technica, Incorporated *Electrical Engineering in Japan* vol 107 no. 1 1987 pp 95-103 14 Ref. Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 106, 1986, pp 1067-1074.

No abstract available.

490411 DA

[OPTIMAL ROBUST SERVO SYSTEM DESIGN AND SIMULATION OF MAGNETIC LEVITATION SYSTEM IN CONTROLLED PERMANENT MAGNET LINEAR SYNCHRONOUS MOTOR VEHICLE]

Yoshida, K; Muta, H Scripta Technica, Incorporated *Electrical Engineering in Japan* vol 107 no. 4 1987 pp 122-129 12 Ref. Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 107, 1987, pp 972-979.

No abstract available.

490410 DA

[EDDY CURRENT ANALYSIS OF CRYOSTAT OUTER VESSEL TAKING INTO ACCOUNT THE NON-CONTACT ON-BOARD POWER GENERATOR IN SUPERCONDUCTIVE MAGNETICALLY LEVITATED VEHICLE]

Nonaka, S; Sakamoto, T; Ueno, T Scripta Technica, Incorporated *Electrical Engineering in Japan* vol 108 no. 2 1988 pp 106-115 Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 108, 1988, pp 181-188.

No abstract available.

490409 DA

[CHARACTERISTICS OF EDS MAGNETIC LEVITATION WITH GROUND COILS FOR LEVITATION ARRANGED ON THE SIDE WALL]

Fujiwara, S Scripta Technica, Incorporated *Electrical Engineering in Japan* vol 108 no. 3 1988 pp 101-110 Japanese SUBFILE: UMTRIS AVAILABLE FROM: Engineering Information, Inc Document Delivery Service, Room 204, 345 East 47th Street New York New York 10017 Original journal: *Denki Gakkai Ronbunshi*, Vol. 108, 1988, pp 439-446.

No abstract available.

490002 DA

APPLICATIONS OF SUPERCONDUCTOR TECHNOLOGIES TO TRANSPORTATION

Rote, DM; Herring, JS; Sheahan, TP Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 ; Department of Energy 1000 Independence Avenue, SW Washington D.C. 20585 Jun 1989 100p Figs. Tabs. Refs. REPORT NO: ANL/CNSV-68

CONTRACT NO: W-31-109-Eng-38; Contract SUBFILE: HRIS: MRIS; RRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

This report assesses transportation applications of superconducting devices, such as rotary motors and generators, linear synchronous motors, energy storage devices, and magnets. Among conventional vehicles, ships appear to have the greatest potential for maximizing the technical benefits of superconductivity, such as smaller, lighter, and more-efficient motors and, possibly, more-efficient generators. Smaller-scale applications include motors for pipeline pumps, all-electric and diesel-electric locomotives, self-propelled rail cars, and electric highway vehicles. For diesel-electric locomotives, superconducting units would eliminate space limitations on tractive power. Superconducting magnetic energy storage devices appear most suitable for regenerative braking or power assistance in grade climbing, rather than for long-term energy storage. With toroidal devices (especially for onboard temporary energy storage), external fields would be eliminated. With regard to new vehicle technologies, the use of superconducting devices would only marginally enhance the benefits of inductive-power-coupled vehicles over conventional electric vehicles, but could enable magnetically levitated (maglev) vehicles to obtain speeds of 520 km/h or more. This feature, together with the quiet, smooth ride, might make maglev vehicles an attractive alternative to intercity highway-vehicle or airline trips in the range of 100-600 mi. Electromagnetic airport applications are not yet feasible.

489097 PR

MAGNETIC LEVITATION (MAGLEV) COMMERCIALIZATION

SPONSORING ORG: Urban Mass Transportation Administration PERFORMING ORG: Pennsylvania, State, of Harrisburg Pennsylvania CONTRACT NO: UMTA-PA-06-0111; Grant PROJECT START DATE: ND PROJECT TERMINATION DATE: ND SUBFILE: UMTRIS

Under this grant, the designs that resulted from the MAGLEV research and development efforts undertaken by Boeing (Seattle) are being transferred to the State of Pennsylvania for commercialization activities. Carnegie-Mellon University is performing the actual project work in cooperation with the state.

488774 DA

AIRPORTS: EXPANSION KNOWS NO BOUNDS

Merwin, DP Cahners Publishing Company *Highway and Heavy Construction* vol. 132 no. 11 Oct 1989 pp 34-37 3 Fig. 5 Phot. SUBFILE: ATRIS AVAILABLE FROM: Highway and Heavy Construction 44 Cook Street Denver Colorado 80206

A long-range estimate of air travel demand by the National Research Council's Transportation Research Board (TRB) says demand, measured in revenue passenger miles, will at least double by mid-21st Century and could go up by as much as 600%. The TRB study also took a look at ways to use existing facilities more effectively through vertical takeoff-and-landing airplanes and quieter engines that would allow around-the-clock airport operations; high-speed rail and magnetic-levitation trains that would replace some short flights and link airports to central cities; and super expressways for high-speed auto travel. In addition, the TRB study recommended building new airports in the most heavily congested cities and adding remote transfer airports, or wayports, either on the fringes of metropolitan areas or in truly remote, rural areas to serve only for hubbing.

Whatever the solution, contractors can count on two things: growing demand for runways, terminals and access roads and the municipalities' constant search for money to pay for them. Transportation Secretary Samuel K. Skinner has warned that federal investment in airport construction won't go much above the \$1.35 billion proposed for 1990 and has called for the transportation industry to look for new sources of revenue. The economic impact of all U.S. aviation is immense, estimated at \$522 billion in 1987 by the Partnership for Improved Air Travel. The cost of delays to the 498 million who will fly this year was estimated at between \$4 billion and \$6 billion, according to L.A. Ginn of the Airport Operators Council International.

488523 DA

TRANSRAPID MAGLEV SYSTEM

Heinrich, K; Kretzschmar, R Hestra-Verlag Holzhofalle 33, Postfach 4244 6100 Darmstadt 1 West Germany 3-7771-0209-1 1989 114p Figs. Tabs. Refs. SUBFILE: UMRIS AVAILABLE FROM: Hestra-Verlag Holzhofalle 33, Postfach 4244 6100 Darmstadt 1 West Germany

Contents include: The Transrapid MagLev System; The Transrapid Guideway; The Concrete Guideway; The Steel Guideway; The Dual-Mode Guideway; The Bending Switch; Guideway Alignment and Surveying; The Guideway Equipment; The Vehicle/Guideway Dynamics; The Long-Stator Propulsion System and its Power Supply; The Operations Control for Super Speed Magnetic Trains; The Data Transmission; The Vehicle Location; The Transrapid Vehicles; The Support- and Guidance System; The Coach Body; The Transrapid on the Way to Public Service Operation; A Study of MagLev Projects in the U.S. (Las Vegas-Los Angeles Corridor); Planning Studies for the Initiation of the Super Speed Magnetic Train System; The Transrapid 06 Trial Operations up to Service Readiness; The Emsland Transrapid Test Facility; Magnetic Train Developments Abroad; and The History of the Transrapid MagLev System.

488458 DA

ENERGY AND ECONOMIC IMPLICATIONS OF MAGNETICALLY-LEVITATED VEHICLES

Johnson, LR; Rote, DM Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 1988 9p REPORT NO: CONF-880932-5 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

Maglev systems, if implemented as "spokes" around the nation's major hub airports, have the potential to significantly reduce air traffic congestion. Maglev systems could improve the capacity of existing airports, obviating the need to build major new airports at a time when there is widespread public opposition to both airport expansion and new construction. Because of maglev's high speed (250-300 mph), the maglev has a logical market niche of trips between 100 and 600 miles. These short distance flights are the most energy intensive for the airlines; consequently, maglevs provide the opportunity to save 10-15% of the energy used by the scheduled airlines, through substitution of more efficient transport and reduced delays. Integrated into airline service, rather than competing with airlines, the economics of maglev systems is substantially enhanced. Indeed, a substantial portion of a national maglev system (3000 miles) around several major hub airports could be built over the next twenty years with a

portion of the costs that the FAA calculates are incurred by airlines and the passengers--nearly \$5 billion in 1986. Further, maglevs are the most promising large-scale application for the new class of high temperature superconductors, because of the relatively low threshold design requirements of the magnets compared to other potential applications. In addition, the new superconductors will improve maglev system reliability and may reduce capital and operating costs by as much as 10%.

487963 DA

POTENTIAL BENEFITS OF SUPERCONDUCTIVITY TO TRANSPORTATION IN THE UNITED STATES

Rote, DM; Johnson, LR Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 1988 7p REPORT NO: CONF-880842-1 SUBFILE: HRIS; RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

Research in US transportation applications of superconductors is strongly motivated by a number of potential national benefits. These include the reduction of dependence on petroleum-based fuels, energy savings, substantially reduced air and noise pollution, increased customer convenience, and reduced maintenance costs. Current transportation technology offers little flexibility to switch to alternative fuels, and efforts to achieve the other benefits are confounded by growing congestion at airports and on urban roadways. A program has been undertaken to identify possible applications of the emerging superconducting applications to transportation and to evaluate potential national benefits. The current phase of the program will select the most promising applications for a more detailed subsequent study. Transportation modes being examined include highway and industrial vehicles, as well as rail, sea, air transport and pipelines. Three strategies are being considered: (1) replacing present components with those employing superconductor, (2) substituting new combinations of components or systems for present systems, and (3) developing completely new technologies. Distinctions are made between low-, medium-, and near-room-temperature superconductors. The most promising applications include magnetically levitated passenger and freight vehicles; replacement of drive systems in locomotives, self-propelled rail cars, and ships; and electric vehicles inductively coupled to electrified roadways.

486256 DA

BENEFITS OF MAGNETICALLY LEVITATED HIGH-SPEED TRANSPORTATION FOR THE UNITED STATES. VOLUME 1--EXECUTIVE REPORT

Grumman Corporation Bethpage New York 11714-3580 1989 32p Figs. Tabs. Photos. SUBFILE: UMRIS AVAILABLE FROM: Grumman Corporation Bethpage New York 11714-3580

At the request of Senator Daniel Patrick Moynihan, the Maglev Technology Advisory Committee (MTAC) was organized in October 1988 to examine the technical and economic feasibility of running Maglev transport systems along U.S. Interstate highway rights of way. The committee was also asked to assess the potential environmental, energy, social, and industrial benefits that would result from large scale implementation of Maglev in the United States. Results of the MTAC study are presented in two volumes. This volume, Volume 1, the Executive Report, summarizes the study. The MTAC concludes that Maglev (magnetic levitation) technology offers uniquely attractive

solutions for U.S. domestic and worldwide transportation needs and is destined to soon become a significant part of the transportation market. Construction of the next generation transportation system will be a massive, major industrial venture, and it is vital that the U.S. play a major role. If we act quickly, we can be a leader in this vitally important field. This program should have as its goal the construction and operation of two or more full scale Maglev demonstration tracks within four to five years. These demonstration tracks would use different design approaches. Selection of the best approach for commercial application would be made after two years of testing under realistic Interstate conditions. The Committee strongly recommends that the U.S. institute a program to develop and demonstrate second generation Maglev technology suitable for application to the Interstate highway network. Reasons for this are outlined in this Executive Report.

486078 DA

MAGLEV VEHICLES AND SUPERCONDUCTOR TECHNOLOGY: INTEGRATION OF HIGH-SPEED GROUND TRANSPORTATION INTO THE AIR TRAVEL SYSTEM

Johnson, LR; Rote, DM; Hull, JR; Coffey, HT; Daley, JG; Giese, RF Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 Apr 1989 131p 26 Fig. 16 Tab. Refs. 2 App. REPORT NO: ANL/CNSV-67 SUBFILE: RRIS; ATRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

This study was undertaken to (1) evaluate the potential contribution of high-temperature superconductors (HTSCs) to the technical and economic feasibility of magnetically levitated (maglev) vehicles, (2) determine the status of maglev transportation research in the United States and abroad, (3) identify the likelihood of a significant transportation market for high-speed maglev vehicles, and (4) provide a preliminary assessment of the potential energy and economic benefits of maglev systems. HTSCs should be considered as an enhancing, rather than an enabling, development for maglev transportation because they should improve reliability and reduce energy and maintenance costs. Superconducting maglev transportation technologies were developed in the United States in the late 1960s and early 1070s. Federal support was withdrawn in 1975, but major maglev transportation programs were continued in Japan and West Germany, where full-scale prototypes now carry passengers at speeds of 250 mi/h in demonstration runs. Maglev systems are generally viewed as very-high-speed train systems, but this study shows that the potential market for maglev technology as a train system, e.g., from one downtown to another, is limited. Rather, aircraft and maglev vehicles should be seen as complementing rather than competing transportation systems. If maglev systems were integrated into major hub airport operations, they could become economical in many relatively high-density U.S. corridors. Air traffic congestion and associated noise and pollutant emissions around airports would also be reduced. Further analysis is needed to determine whether the foreign technologies being developed are amenable to U.S. transportation requirements. If significant improvements are needed in the foreign systems, the United States is still well positioned to undertake further development of maglev transportation technologies.

485718 DA

WORLDWIDE DEVELOPMENT OF PROPULSION SYSTEMS

FOR HIGH-SPEED TRAINS

Sjokvist, EH Transportation Research Board Transportation Research Record N1177 1988 pp 54-83 63 Fig. 4 Tab. 233 Ref. SUBFILE: RRIS AVAILABLE FROM: Transportation Research Board Publications Office 2101 Constitution Avenue, NW Washington D.C. 20418

This survey starts with a brief overview of train speed records during the last century followed by a list of types of vehicles suitable for high-speed operation. Some rules applied in various countries for the utilization of adhesion between wheel and rail are presented. At high speeds air drag is the dominant part of total train resistance, and tables and curves showing this resistance versus speed are given for a number of modern high-speed trains. The impact of vehicle cross section and shape on train resistance is discussed. Relations among tractive effort, train speed, and required power at rail make it evident that, for speeds in the range of 200 to 400 km/h, this power must be of the order of 4000 to 10,000 kW. A number of high-speed trains, locomotives, and power cars are then described in some detail. The conventional adhesion-dependent wheel-on-rail technique is likely to be used in the future for maximum speeds of up to 300 and possibly 350 km/h. Because of their high power requirements, diesel-powered trains may be restrained to about 200 km/h; gas turbines can be used to perhaps 250 km/h. Straight electric propulsion is conceivable up to the limits of adhesion, maybe 350 km/h. For higher speeds, use of an adhesion-independent magnetic levitation system appears to be inevitable. So much power is required for these high-speed trains that a three-phase propulsion system has to be adopted. All recently developed high-speed trains have been designed for three-phase propulsion. This paper appears in Transportation Research Record No. 1177, Railroad Regulation Issues, Rail Passenger Services, Railroad Bridges, and Track Maintenance Management.

484900 DA

EUROPEAN PROJECTS PROLIFERATE

Simmons-Boardman Publishing Corporation *International Railway Journal & Rapid Transit Rev* vol. 28 no. 12 Dec 1988 4p SUBFILE: RRIS AVAILABLE FROM: Simmons-Boardman Publishing Corporation P.O. Box 8 Falmouth Cornwall England Dedicated high-speed lines like the TGV in France, a.o. in Germany, Italy and Spain and plans for building them in Austria, Switzerland, Belgium, Netherlands and Britain are described. A map shows a European network of high-speed line, with existing lines, lines under construction and proposed lines. Emphasis is given on the German Transrapid maglev network and the 250 km/h ETR 450 trains.

484569 DA

SUPER HIGH-SPEED MAGNETICALLY LEVITATED SYSTEM APPROACHES PRACTICAL USE

Metsuda, S; Nakao, H; Takemasa, H Tokyo Shibaura Electric Company Limited *Toshiba Review* vol. 43 no. 10 1988 pp 798-801 Japanese. SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The JR-MAGLEV, utilizing superconducting magnets, has been under development since 1970 with the manufacturing of a succession of trial vehicles such as the LSM 200, ML 100, ML 500 and MLU 001. In 1979, the ML 500 trial vehicle achieved a world-record speed of 517-km/h. This was followed by the MLU 001, which recorded a

speed of 350 km/h as a 3-car formation in 1986 and 400 km/h as a 2-car formation with passengers in 1987. As a result of the satisfactory results obtained by the MLU 001, a prototype vehicle for commercial service, the MLU 002, was manufactured in March 1988 and is now under testing at the Miyazaki test track, with the aim of achieving a target operational speed of 420 km/h. Order as PB89-150072/WTS.

483974 DA

DESIGN APPROACHES AND PARAMETERS FOR MAGNETICALLY LEVITATED TRANSPORT SYSTEMS

Danby, GT; Powell, JR Brookhaven National Laboratory Associated Universities, Incorporated Upton New York 11973 1988 30p 16 Fig. 2 Tab. 13 Ref. REPORT NO: BNL-41434; CONF-880466-10 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Mechanically levitated transport system approaches are assessed with regard to thrust power needs, track cost, suspension stability, and safety. The null flux suspension appears as the favored approach, having the least thrust power requirements, highest stability, and lowest amount of track material. Various null flux configurations are described, together with their operating parameters. The Linear Synchronous Motor (LSM) propulsion system is also described for propelling the suspended vehicles. Cryogenics and superconductivity aspects are discussed, and the effect of high T/sub c/ superconductors evaluated. 13 refs., 16 figs., 2 tabs.

482729 DA

MAGLEV: THE DOUBLE BENEFITS OF HIGH-TC SUPERCONDUCTORS AND ITS DEVELOPMENT AS AN AEROSPACE TECHNOLOGY

Johnson, LR; Giese, RF Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 1988 13p REPORT NO: CONF-880466-8 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The potential for magnetically levitated (MAGLEV) vehicles is discussed as a means of both inter-city travel and a technology option to relieve the growing problem of air traffic congestion. A brief summary is presented of the two primary maglev concepts: (1) the attractive-force, electromagnetic system (EMS) and (2) the repulsive-force, electrodynamic system (EDS), and continues with a discussion of the advantages, potential for reduced costs and higher reliability, that the newly-discovered, high-temperature superconductors offer for EDS maglev vehicles. A summary of the current status of world wide maglev research is presented, followed by a discussion of the resurgence of US interest in maglev. An analysis of air-traffic congestion suggests that maglev can substitute for short-to-medium distance air travel. By promoting maglev as an airline technology, airlines can retain their familiar hub-and-spoke systems with maglevs an integral part of the spoke portion. A preliminary analysis suggests that maglev capital costs are likely to be comparable to those of interstate highways, and use of maglevs can delay the need for new airport and construction. For each short-to-medium flight diverted to maglev, an airline can substitute a longer flight. The short-haul flights use an inordinate amount of fuel, which is a major component of airline operating costs. Maglev energy consumption would be significantly less and would not have the emissions associated with petroleum fuel. Finally, passengers should benefit from maglev technology: travel

options will be extended, delays will be reduced, and costs for inter-city travel will be reduced.

482531 DA

MAGNETIC LEVITATION FOR RAIL TRANSPORTATION JANUARY 1970-NOVEMBER 1988 (CITATIONS FROM THE COMPENDEX DATABASE)

National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Dec 1988 124p SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

This bibliography contains citations concerning the design, implementation, and utilization of magnetic levitation systems for rail transportation. Guideway materials, propulsion systems, dynamic instability power losses, and control systems in operation are examined, including those in Japan, England, West Germany, and Canada. The application of this technology to urban transportation planning is considered (Contains 278 citations fully indexed and including a title list.)

469743 DA

USE OF THE INTERSTATE HIGHWAY SYSTEM RIGHT-OF-WAY FOR MAGNETIC LEVITATION HIGH SPEED TRANSPORTATION SYSTEMS. HEARING BEFORE THE SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, UNITED STATES SENATE, 100TH CONGRESS, 2ND SESSION

United States Senate Committee on Environment and Public Works Washington D.C. 20510 Feb 1988 105p SUBFILE: UMTRIS AVAILABLE FROM: Government Printing Office Superintendent of Documents Washington D.C. 20402

No abstract available.

482334 DA

USE OF THE INTERSTATE HIGHWAY SYSTEM RIGHT-OF-WAY FOR MAGNETIC LEVITATION HIGH SPEED TRANSPORTATION SYSTEMS. HEARING BEFORE THE SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, UNITED STATES SENATE, 100TH CONGRESS, 2D SESSION. PART 2

United States Senate Committee on Environment and Public Works Washington D.C. 20510 Sep 1988 118p REPORT NO: S. Hrg. 100-556-Pt 2 SUBFILE: RRIS AVAILABLE FROM: Government Printing Office Superintendent of Documents Washington D.C. 20402

This is a hearing on S. 2072, a bill to amend Title 23, U.S. Code, to authorize the use of rights-of-way along federal-aid highways for the construction of transportation systems that will be part of the federal-aid highway system. It contains testimony, prepared statements, additional material submitted for the record, and the text of S. 2072.

480838 DA

GETTING THROUGH RUSH HOUR QUICKLY AND QUIETLY

Zimmermann, D Forschungsdienst GmbH German Research Service-Special Science Reports vol. 4 no. 12 1988 pp 8-10 SUBFILE: UMTRIS AVAILABLE FROM: Forschungsdienst GmbH Ahrstrasse 45, Postfach 20 50 06 D 5300 Bonn 2 West Germany

With the commencement of regular passenger service the new

magnetic railway will provide the people of Berlin with what is probably the most modern local traffic system along a track segment of 1.6 kilometers in length.

480837 DA

SAFETY AND LICENSING ASPECTS OF TRANSPRAPID AND MAGLEV SYSTEMS

Blomerius, J Institute of Electrical & Electronics Engrs, Inc 445 Hoes Lane Piscataway New Jersey 08854 1987 pp 205-210 3 Fig. German REPORT NO: CH2443 SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

Magnetic levitation offers with regard to the advanced wheel-on-rail technology significant merits due to the contact-free levitation, guidance and propulsion/brake system between the vehicle and the guideway. Use of these merits is only possible by considering maglev specific safety aspects. Assisted by TUEV Rheinland as an independent neutral expert the high safety level of the TRANSPRAPID system has been achieved. At the International Conference on Maglev Transport '85 a report was given on the principles and aims of TUEV safety work. The characteristics of magnetic levitation are active systems. Some examples will be presented to make safety problems of magnetic levitation and ways to their solution evident, as fail safe-techniques in the classical sense are out of the question. In the TRANSPRAPID maglev train the on-board energy supply and the levitation and guidance system are considered. As for the guideway an active system in the form of a hydraulic drive is used for positioning and locking a switch, with fail-safe behavior to meet requirements on vehicle safety in operation. The ways to approve a maglev train in the Federal Republic of Germany and outlooks on approval in the United States of America are discussed. Translation only available from the Department of Transportation Library.

480836 DA

SAFETY ASPECTS OF THE MAGLEV TEST SITE TRANSPRAPID VERSUCHSANLAGE EMSLAND. INTERNATIONAL CONFERENCE ON MAGLEV TRANSPORT '85

Jansen, H; Mnich, P TUEV Rheinland e.V. Division of Electronics, Railroad Tech & Vibration Control 5000 Cologne 19 West Germany 1985 pp 295-302 1 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

The paper deals with the methods and principles of development-associated safety work as employed for new maglev lines. These extend from the checking of the concept to the final acceptance procedures and include the appraisal of all important components and subsystems of the installation. In addition to checking that all data specifications are met, special importance is attached to the theoretical and practical investigation of the automatic train control equipment. The quality assurance measures are another important aspect since the strength of the load-carrying structures and hence the general safety of the whole installation depends on the quality of the construction work. The authors examine in detail the theoretical principles and also the nature and extent of the documents required for assessment, likewise the methods of testing. Each test concluded is documented by the inspector and the tested parts and components are cleared for further use. The procedure concludes with a comprehensive report and the documented final acceptance reports which are the pre-

quisite for permission to operate the system being granted by the licensing authority. Translation only available from the Department of Transportation Library.

480834 DA

TUEV EVALUATES THE MAGNETIC LEVITATION TRAIN IN EMSLAND. REPRINT

Heckoetter, N; Jansen, H Verlag TUEV Rheinland *Technische Ueberwachung-Verein Rheinland* vol. 21 no. 7-8 1980 pp 295-299 6 Fig. German SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

Presented is the evaluation of the magnetic levitation train in Emsland. Translation only available from the Department of Transportation Library.

480832 DA

DEVELOPMENT-ASSOCIATED SAFETY WORK FOR MAGNETIC LEVITATION TRACK SYSTEMS

Jansen, H; Mnich, P Hestra-Verlag *ETR: Eisenbahntechnische Rundschau* 1980 pp 3-7 German SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

The article deals with the methods and principles of development-associated security work as employed for new maglev lines. These extend from the checking of the concept to the final acceptance procedures and include the appraisal of all important components and subsystems of the installation. Translation only available from the Department of Transportation Library.

480831 DA

DEVELOPMENT OF MAGNETIC LEVITATION TRANSPORT SYSTEMS IN THE FEDERAL REPUBLIC OF GERMANY. SURVEY, PRESENT STATE, PROSPECTS, AND REASONS. INTERNATIONAL CONFERENCE ON MAGLEV TRANSPORT '85

Rogg, D Dornier System NTV, P.O.B. 1360 Friedrichshafen West Germany D-7900 1985 pp 1-11 7 Fig. 5 Ref. German SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

The course of development is described with particular emphasis on the technology assessment and selection procedures which were necessary. The state-of-the-art achieved in the development and testing is characterized, and the required design steps and trends to be derived therefrom. In conclusion, the reasons and perspectives for such a development program are detailed. Translation only available from the Department of Transportation Library.

480830 DA

APPROVAL, RELIABILITY AND SAFETY ASPECTS IN THE USE OF MAGNETIC HIGH-SPEED RAIL SYSTEMS. INTERNATIONAL SYMPOSIUM: RESEARCH AND NEW TECHNOLOGIES IN TRANSPORTATION HELD JUNE 6-8, 1988, HAMBURG, WEST GERMANY

Jansen, H; Blomerius, J Rhineland Technical Supervision Association e.V. Institute for Applied Electronics, Rail & Vibration Tech 5000 Cologne 1 West Germany 1988 11p German SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

Magnetic levitation systems such as IVA '79 (TR 05) and TVE (TR 06) have been licensed according to the German Test Facility Act. When licensing maglev systems for public transport services, it is important to realize that existing technical standards and regulations are only partially applicable to maglev systems, since the technical possibilities imply new operational and rescue strategies requiring active technical systems. The reliability of these systems is a basic precondition for the safety of maglev systems. Translation only available from the Department of Transportation Library.

480829 DA

ONE DECADE OF SAFETY PHILOSOPHY IN MAGLEV EXECUTED BY TUV RHEINLAND (WITH REFERENCES). TENTH INTERNATIONAL CONFERENCE ON MAGNETICALLY LEVITATED SYSTEMS (MAGLEV) HELD JUNE 9-10, 1988, CONGRESS CENTRUM HAMBURG, WEST GERMANY

VDE-Verlag GmbH Bismarckstrasse 33 1000 Berlin 12 West Germany 1988 n.p. 7 Ref. German SUBFILE: UMTRIS AVAILABLE FROM: Department of Transportation Library 400 7th Street, SW Washington D.C. 20590

The TUV Rheinland search for safety regulations or standards for the operation of a maglev system entailed the determination of the type of modal classification to which maglev belonged: railroad or aircraft. Some aspects of both industries' safety criteria were used in developing those for maglev operation. Five major topics resulted which included: 1) Supporting, guiding and propulsion (failure behavior of supporting/guiding magnets and propulsion systems, failures in hydraulic equipment, air springs, etc., braking strategy, dynamic dimensioning of all load-carrying structures of the guideway, vehicles, and switches; 2) Vehicle safety in operation; 3) Electric installation within the vehicle; 4) Fire protection and emergency evacuation strategy and facilities; and 5) Electromagnetic compatibility, lighting protection and electrostatic charging. Translation only available from the Department of Transportation Library.

480717 DA

THE BERLIN M-BAHN, AN AUTOMATED TRANSIT SYSTEM, OPERATED FROM CENTRAL CONTROL

Kratky, E Canadian Urban Transit Association Suite 1101, 55 York Street Toronto Ontario M5J 1R7 Canada First Canadian-German Workshop on Urban Transit pp 82-92 Sep 1986 Figs. SUBFILE: UMTRIS AVAILABLE FROM: Canadian Urban Transit Association Suite 1101, 55 York Street Toronto Ontario M5J 1R7 Canada

The M-Bahn is due to start passenger service in 1987, in time for Berlin's 750th anniversary. The first section is 1,600 meters long with 3 stations. Starting from a major subway line, the new rail system serves a district of particular cultural importance. The track, which, thanks to the special features of the M-Bahn system, is extremely narrow, is almost complete. It contains the synchronous motor with guideway stator, consisting of a three-phase linear induction motor. Support and propulsion are then achieved in conjunction with the permanent lift magnet on the vehicle. The vehicles are now under construction and the central control technology is at present being brought in line with the latest developments in this field as well as with current official requirements. In First Canadian-German Workshop on Urban Transit Technology held in Toronto, September 16-17, 1986.

480687 DA

DESIGN APPROACHES AND PARAMETERS FOR MAGNETICALLY LEVITATED TRANSPORT SYSTEMS. CONFERENCE ON SUPERCONDUCTIVITY AND APPLICATIONS. BUFFALO, NEW YORK, APRIL 18, 1988

Danby, GT; Powell, JR Brookhaven National Laboratory Associated Universities, Incorporated Upton New York 11973; Department Energy 1000 Independence Avenue, SW Washington D.C. 20540 1988 30p 16 Fig. 2 Tab. 13 Ref. REPORT NO: BNL-4143 CONF-880466-10 CONTRACT NO: AC02-76CH00016; CONTRA SUBFILE: UMTRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Mechanically levitated transport system approaches are assessed with regard to thrust power needs, track cost, suspension stability, and safety. The null flux suspension appears as the favored approach having the least thrust power requirements, highest stability, and lowest amount of track material. Various null flux configurations are described, together with their operating parameters. The Linear Synchronous Motor (LSM) propulsion system is also described for propelling the suspended vehicles. Cryogenics and superconductivity aspects are discussed, and the effect of high T/sub c/superconductor is evaluated. Portions of this document are illegible in microfiche products.

480624 DA

PEOPLE MOVERS MOVE DOWNTOWN

Hart, M American Society of Civil Engineers *Civil Engineering* vol. 59 no. 2 Feb 1989 pp 71-74 SUBFILE: HRIS; UMTRIS AVAILABLE FROM: American Society of Civil Engineers 345 East 47th Street New York New York 10017

Fast, futuristic automated people movers (APM) are described that can carry 10 to 100 passengers at speeds ranging from 8 to 50 mph. They ride on rubber tires, steel wheels, or air cushions, and are propelled by rotating electric motors, linear electric motors, magnetic fields, or cables. To date they are solving congestion problems at 9 airports in the United Kingdom and the United States, and several more are planned or under construction. However, there have been obstacles to urban integration of APMs. Some believe that demand has not caught up with project costs. The high maintenance costs have to be offset and capital costs brought down to the point at which the installation of such systems becomes viable. The largest operating APM, the Vancouver Skytrain, a 13-mile double track system, is described. In Honolulu, a 15-mile APM system has been chosen as the solution to serious traffic problems. A 1.3-mile magnetic levitation system is now being installed in Las Vegas to connect its convention center with a new downtown transportation center. The article discusses the Miami Metromover which connects with the downtown stop on the Miami rail system to deliver passengers to various points downtown. This APM system has led to a development boom that in turn has stimulated plans to extend the line. The 2.9-mile long Detroit APM is also discussed.

479906 DA

CHARACTERISTICS OF EDS MAGLEV HAVING LEVITATION COILS ON THE SIDE WALL OF THE GUIDEWAY

Fujwara, S Japanese National Railways *Railway Technical Research Inst. Quarterly Reports* vol. 29 no. 4 Nov 1988 pp 157-163 10 Fig. 4 Tab. 7 Ref. SUBFILE: RRIS; UMTRIS AVAILABLE FROM:

Ken-yusha, Incorporated Hikaricho 1-45-6, Kokubunji Tokyo Japan
EDS maglev system aiming at high speed transport is required to reduce magnetic drag in its levitation system. In this paper the levitation force and the stiffnesses characteristics of a method which arranges ground coil for levitation on the side wall to use the principle of null flux are analyzed and a numerical example is shown. According to this numerical example, maximum levitation force is about four times the rated value, and the drag ratio is higher than the value in the usual feasibility study. The lateral and yawing stiffnesses are positive values. The other stiffnesses are large values.

479901 DA

ANALYSIS OF SHIELDING AGAINST MAGNETIC FLUX DENSITY MAKING USE OF SUPERCONDUCTING MATERIAL

Terauchi, N Japanese National Railways *Railway Technical Research Inst, Quarterly Reports* vol. 29 no. 4 Nov 1988 pp 164-171 10 Fig. 2 Ref. SUBFILE: RRIS; UMTRIS AVAILABLE FROM: Ken-yusha, Incorporated Hikaricho 1-45-6, Kokubunji Tokyo Japan

With the Maglev Car as one example, we now use various apparatus which utilizes intensive electromagnetic fields created by superconducting magnets. So it is one of the most important problems to shield the space against magnetic flux density. This paper deals with the method to analyze the electromagnetic field against flux density making use of the Meissner effect. Assuming the superconducting material as a sum of magnetization vectors, we search for the magnetic field distribution from the rotation of a vector potential which is formed by currents equivalent to magnetization vectors. In this paper we could simulate the process in which superconducting material switches to a normal conducting one.

478815 DA

FUTURE TRAIN IS HERE ALREADY

Greeman, A Institution of Civil Engineers *New Civil Engineer* N754 Aug 1987 pp 32-34 2 Fig. 4 Phot. SUBFILE: UMTRIS; TRRL; IRRD AVAILABLE FROM: Institution of Civil Engineers 1-7 Great George Street, Westminster London SW1P 3AA England

An account is given of the Transrapid, a magnetic train at present undergoing tests in northern Germany. The Transrapid is strictly a suspended train with powerful electromagnetic wheels suspended 10 mm from a magnetic track on the underside of cantilevered projections from the main guideway. Speeds of over 400 km/h are envisaged and the group developing Transrapid which includes Lufthansa and the German Federal Railways see the system as particularly useful for linking European cities. It is suggested that it has been eclipsed by France's TGV and comparisons are made. One drawback is the need for new raised guideways to be built rather than the use of existing track but there are several environmental advantages. Details are given of the construction of the track and vehicle, the latter being similar to an airline cabin and having the potential to provide office, computer and telecommunications facilities. (TRRL)

477703 DA

ADVANCES IN APPLIED SUPERCONDUCTIVITY: A PRELIMINARY EVALUATION OF GOALS AND IMPACTS

Wolsky, AM; Daniels, EJ; Giese, RF; Harkness, JBL; Johnson, LR Argonne National Laboratory 9700 South Cass Avenue Argonne Illinois 60439 Jan 1988 171p REPORT NO: ANL/CNSV-64 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service

5285 Port Royal Road Springfield Virginia 22161

This document is meant to aid the US Department of Energy, Assistant Secretary for Conservation and Renewable Energy by discussing the likely impacts of recent results from research on superconducting materials. The discussions in this document concern terrestrial applications that would substantially affect the production and use of electricity. The sections of the report each address a particular topic. The topics are: (1) electric generators, (2) transformers, (3) power transmission, (4) magnetic energy storage, (5) electric motors, (6) separation industry, and (7) maglev trains.

477652 DA

MOVING DOWNTOWN

Carrington, B Mass Transit, Incorporated *Mass Transit* vol. 15 no. 9 Sep 1988 6p SUBFILE: UMTRIS AVAILABLE FROM: MASS TRANSIT P.O. Box 1478 Riverton New Jersey 08077

Peplemover systems or Automated Guideway Transit systems which have been able to survive in the urban mass transit markets both in the U.S. and Europe are described. They include rubber-tired systems, monorails, magnetically levitated and propelled systems, among others.

475858 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 10.3: ANALYSIS OF TRACTION MOTOR REQUIREMENT FOR LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR APPLICATIONS

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-18 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-17 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475857 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 9.3: ANALYSIS OF THE CURRENT AND POTENTIAL PERFORMANCE OF THE TGV TECHNOLOGY

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-17 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-16 and 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475856 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 9.2: REVIEW, VALIDATION AND REVISION OF THE CAPITAL AND OPERATING COSTS FOR A TRANSPRAPID TR-06 MAGLEV SYSTEM IN THE LAS VEGAS-SOUTHERN CALIFORNIA CORRIDOR

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-16 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-15 and 86-17 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475855 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 9.1: EXAMINATION OF ESTIMATED COSTS, INITIAL ORDER OF MAGNITUDE REVIEW

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-15 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-14 and 86-16 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475854 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 8.2: GUIDEWAY TOLERANCES AND FOUNDATION CONDITIONS

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-14 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-13 and 86-15 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475853 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 8.1: THERMAL ANALYSIS OF TRANSPRAPID MAGLEV GUIDEWAY PROPOSED FOR ELEVATED STRUCTURES IN LAS VEGAS-SOUTHERN CALIFORNIA CORRIDOR

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-13 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-12 and 86-14 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475852 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 7: EVALUATION OF ELECTROMAGNETIC INTERFERENCE

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-12 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-11 and 86-13 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475851 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 6: MAGLEV VEHICLE MAGNETIC FIELDS

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-11 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-10 and 86-12 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475850 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II

MAGLEV TECHNOLOGY ASSESSMENT, TASK 5: DEVELOPMENT STATUS OF MAJOR MAGLEV SUBSYSTEMS AND CRITICAL COMPONENTS

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-10 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-9 and 86-11 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475849 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 4: CURRENT PERFORMANCE AND POTENTIAL OF SUPER-SPEED TRAIN SYSTEMS

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-9 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-8 and 86-10 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475848 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 3: REVIEW OF RECENT MAGLEV APPLICATIONS STUDIES

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-8 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 and 86-7 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475847 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 2: MAGLEV BIBLIOGRAPHY

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-7 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6, 86-8 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475846 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, TASK 1: REVIEW OF PHASE I REPORT

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-6 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-7 through 86-18 narrate the results of the separate tasks undertaken. Report 86-19 is the Executive Summary.

475845 DA

SUPER-SPEED GROUND TRANSPORTATION SYSTEM, LAS VEGAS/SOUTHERN CALIFORNIA CORRIDOR, PHASE II MAGLEV TECHNOLOGY ASSESSMENT, EXECUTIVE SUMMARY

Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada 1986 n.p. REPORT NO: CIGGT 86-19 SUBFILE: UMTRIS AVAILABLE FROM: Canadian Institute of Guided Ground Transport Queen's University Kingston Ontario K7L 3N6 Canada

This report summarizes a study undertaken by CIGGT, in conjunction with Kercheval and Associates and the National Research Council Canada, for the City of Las Vegas to provide an objective assessment of the development status of available super-speed passenger service between Las Vegas and Southern California. Reports 86-6 through 86-18 narrate the results of the thirteen separate tasks undertaken.

475813 DA

THE MBB (MESSERSCHMITT-BOELKOW-BLOHM) PROPULSION CONCEPTS FOR MAGNETIC SUSPENSION RAILWAYS: RETROSPECTIVE VIEW AND PROSPECTS

Reismayr, D Messerschmitt-Boelkow-Blohm GmbH Munich West Germany 1987 4p German REPORT NO: MBB-Z-141/87 SUBFILE: RRIS; NTIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 The principles of contactless linear propulsion are given. The advantages of asynchronous short-stator motors, as well as develop-

ments and testing procedures are presented. The disadvantage of the short-stator motor is that it requires a high power current transmission. Development of long-stator magnets for the vehicles TR05 and TR06 are described. The economic aspects of the short and long-stator principles are discussed.

469314 DA

DUAL-PURPOSE TRACK

Fricke, H; Merkel, E Tetzlaff-Verlag GmbH *Eisenbahningenieur* vol. 38 no. 5 May 1987 pp 245-248 German SUBFILE: UMTRIS AVAILABLE FROM: Tetzlaff-Verlag GmbH Havelstrasse 9, Postfach 4006 6100 Darmstadt 1 West Germany

The dual-purpose track concept fulfils the requirements of both maglev and rail-based systems from the technical and profitability standpoints. The possibility for maglev systems to penetrate right into the very heart of cities using already existing railway right of way would appreciably enhance their credibility as complementary transport system.

469298 DA

LINEAR TRACTION MOTORS FOR HIGH-SPEED GROUND TRANSPORT

Petrov, BA Institut Energetiki of AN Latviiskoi SSR *Beskontaktnye Elektricheskie Mashiny* N25 1986 pp 12-44 76 Ref. Russian SUBFILE: UMTRIS AVAILABLE FROM: American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York New York 10019

Various designs of linear traction motors are examined with particular reference to high-speed ground transport applications (including systems with magnetic levitation). In particular, attention is given to the principle of operation of such motors, their main design features and their effect on the performance, and ways of improving the performance characteristics of linear motors. The possibility of combining the functions of traction, levitation, and guidance in a single motor assembly is discussed.

469295 DA

MAGNETIC LEVITATION IN LINEAR PROPULSION MACHINES

Schieber, D Pergamon Press, Incorporated *Franklin Institute Journal* vol. 317 Mar 1984 pp 171-181 7 Ref. SUBFILE: UMTRIS AVAILABLE FROM: American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York New York 10019

A simple magnetic levitation system is analyzed; the results obtained yield insight into the lift-thrust mechanism and demonstrate, through the magnetic Reynolds number, the interplay of the electric and geometric parameters. Research supported by the Technion Fund for the Promotion of Research.

469294 DA

MAGNETIC LEVITATION SUPERSPEED SYSTEM IN THE FEDERAL REPUBLIC OF GERMANY

Hucks, H August Thyssen-Huette AG *Thyssen Technische Berichte* vol. 16 no. 2 1984 pp 89-94 German SUBFILE: UMTRIS AVAILABLE FROM: American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York New York 10019

The development of the magnetic levitation superspeed system in the FRG since 1970 is reviewed. The programs, demonstration projects, and test installations employed up to now are summarized and

assessed. Promising developments for the future are addressed. It is concluded that actual application cases demonstrate the advantages of the system.

469293 DA

PROPELLING PASSENGERS FASTER THAN A SPEEDING BULLET (MAGLEV R & D IN FOREIGN COUNTRIES)

Alscher, H; Boldea, IF; Eastham, AR; Iguchi, M Institute of Electrical & Electronics Engrs, Inc *IEEE Spectrum* vol. 21 Aug 1984 pp 57-64 SUBFILE: UMTRIS AVAILABLE FROM: American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York New York 10019

Current progress in the development of high-speed magnetic-levitation (maglev) railway transportation systems is reviewed. Attention is given to long-standing research in this by Japanese, West German, and British public and private railroad companies, and to more recent research programs in the U.S., Rumania, and Canada. There are two basic types of maglev systems under consideration: (1) the repulsive mode between vehicle-borne superconducting magnets and induced currents in guideway conductors (electrodynamical suspension); and (2) the attractive force between iron-core electromagnets on the vehicle and ferromagnetic rails (electromagnetic suspension). The systems are powered by either long or short stator linear synchronous motors or by linear induction motors. A Canadian hybrid system using both wheel support and linear induction propulsion is discussed in detail. A table is given which lists the distinctive features of the major maglev research programs throughout the world.

469255 DA

MATHEMATICAL MODELING AND CONTROL SYSTEM DESIGN OF MAGLEV VEHICLES. CONFERENCE ON DYNAMICS OF HIGH-SPEED VEHICLES HELD IN UDINE, ITALY, 1981

Popp, K Springer Verlag *Courses and Lectures* N274 1981 pp 333-363 56 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Springer Verlag 175 Fifth Avenue New York New York 10010

Magnetically levitated vehicles are under development for applications in rapid transit systems in highly populated areas as well as for high speed transportation over large distances. The feasibility of electromagnetic guidance and control, particularly for high speed operations in connection with the use of linear induction motors for propulsion, has been shown by various test-vehicle runs.

469254 DA

MAGNETICS AND EXPERIMENTAL RESULTS OF MAGLEV-VEHICLES. CONFERENCE ON DYNAMICS OF HIGH-SPEED VEHICLES HELD IN UDINE, ITALY, 1981

Bohn, G Springer Verlag *Courses and Lectures* N274 1981 pp 381-395 8 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Springer Verlag 175 Fifth Avenue New York New York 10010

The modern development of magnetic levitation started in 1968, when the companies Messerschmitt-Boelkow-Blohm (MBB) and Krauss-Maffei (KM) investigated intensely the transportation volume of the last 20 years of this century and the worldwide standard of transportation technology. The first four vehicles were built as rigid bodies, where the magnets were directly fixed to the vehicle body. Further developments must aim to reduce the electrical losses, to raise the reliability and to diminish the demands on the guideway. These ideas led to the modified vehicle KOMET M. The aim can be reached by

a modular structure where the magnets are suspended by springs and damping elements to the bogies and the passenger cabin is suspended by springs and damping elements to the bogies.

469059 DA

NATIONAL INFRASTRUCTURE ISSUES. HEARING BEFORE THE SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, UNITED STATES SENATE. ONE HUNDREDTH CONGRESS. SECOND SESSION ON REGIONAL TRANSIT INFRASTRUCTURE AND THE POTENTIAL OF MAGNETIC LEVITATION TECHNOLOGY FOR INTERCITY TRANSPORTATION. PART 3. JANUARY 21, 1988

United States Senate Committee on Environment and Public Works Washington D.C. 20510 1988 125p SUBFILE: HRIS; UMTRIS AVAILABLE FROM: Government Printing Office Superintendent of Documents Washington D.C. 20402

These hearings are directed at understanding the condition of the national infrastructure, and the problems that confront it, as well as generating creative approaches to assuring that the infrastructure is able to meet the nations evolving needs. The hearings cover the public works categories (highways, bridges, and other facilities providing transportation, water, and waste management) and focuses on the services. It focuses on infrastructure questions related to the following: private sector, economic growth, international competitiveness, financing, work force, federal budgeting procedures, research, and technological innovation.

468887 DA

THE ELECTROMAGNETIC LEVITATION AND GUIDANCE TECHNOLOGY OF THE 'TRANSRAPID' TEST FACILITY EMSLAND. IEEE, VERBAND DEUTSCHER ELEKTROTECHNIKER, AND ARBEITSGEMEINSCHAFT MAGNETISMUS, INTERNATIONAL MAGNETICS CONFERENCE, HAMBURG, WEST GERMANY, APRIL 9-13, 1984

Bohn, G; Steinmetz, G Institute of Electrical & Electronics Engrs. Inc *IEEE Transactions on Magnetics* Sep 1984 pp 1666-71 5 Ref REPORT NO: Vol. MAG-20 Part 2 SUBFILE: UMTRIS AVAILABLE FROM: American Institute of Aeronautics and Astronautics 1290 Avenue of the Americas New York New York 10019

The general design of a high-speed ground transportation system based on electromagnetic levitation and guidance technology, which is now under development in West Germany, is described, as is a large-scale test facility which has been built to evaluate the economic feasibility of such a system. The mechanical and the electrical structure of the suspension system of the vehicle is examined, and the principal technical specifications are given. A theoretical model for a levitation magnet is presented along with the principal electrical characteristics of the magnet. Research supported by the Bundesministerium fuer Forschung und Technologie.

468883 DA

LINEAR SYNCHRONOUS UNIPOLAR MOTOR (LSUM) DEVELOPMENT REPORT

Gilliland, RG; Pearson, GW Boeing Aerospace Company Automated Transportation Systems Seattle Washington 98124; Urban Mass Transportation Administration 400 7th Street, SW Washington D.C. 20590 Oct 1986 232p REPORT NO: UMTA-WA-06-0014-86-1

CONTRACT NO: DTUM60-80-C-71009; Contract SUBFILE: UMTRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The development and test of an Integrated Magnetic Propulsion and Suspension motor is described. The machine, designated as a Linear Synchronous Unipolar Motor (LSUM), utilizes rare earth permanent magnets to supply its magnetic field, giving primary suspension for a transit vehicle without significant energy consumption. The properties of the synchronous motor allow better utilization of the vehicle power conditioning equipment by obtaining a higher power factor and efficiency product than possible with the linear induction motor. The LSUM was tested and evaluated in a static test facility. A complete documentation of life and thrust performance over the full range of a vehicle operating scenario, and a description of magnetic flux in and around the machine were obtained. The concept of supplying the unipolar magnetic field with rare earth magnets, and boosting that field with D.C. coils for lift control was proven during the test. The motor showed its potential for use in an automated public transportation system, particularly those systems that are characterized by a relative low ratio of thrust to lift.

468859 DA

NEW EMU TRAINS FOR THE ATHENS-PIRAEUS LINE

Tribukait, K Maschinenfabrik Augsburg-Nurnberg AG *M.A.N. Research, Engineering, Manufacturing* N16 Apr 1985 pp 55-59 SUBFILE: UMTRIS AVAILABLE FROM: Engineering Societies Library 345 East 47th Street New York New York 10017

M.A.N.'s activities in the field of railway rolling stock are backed by experience gained in the design and production of more than 60,000 vehicles which the company has supplied since 1849/50. Built for short headways on urban and suburban routes, for comfortable travel in long-distance trains or for economic freight services, M.A.N.'s range embraces light and heavy Diesel and electric multiple unit stock (DMUs and EMUs), underground and surface rapid transit stock, monorail cars, passenger cars for long-distance, regional and suburban services, luggage/mail vans, freight cars and special-purpose vehicles. Also included are bogies for all fields of application, especially air-suspension bogies, components for magnetic levitation systems as well as complete wheel-and-axle sets. (Author abstract)

468856 DA

MAGNETICALLY LEVITATED LINEAR MOTOR CAR BREAKS WORLD SPEED RECORD

ODS Corporation Dai-Ni Kuyo Bldg, 5-10-2, Minami-Aoyama, Minato-ku Tokyo 107 Japan 1987 n.p. SUBFILE: UMTRIS AVAILABLE FROM: ODS Corporation Dai-Ni Kuyo Bldg, 5-10-2, Minami-Aoyama, Minato-ku Tokyo 107 Japan

A Japanese National Railways (JNR) magnetically levitated linear motor car has broken the world speed record for manned rail vehicles by traveling at 400 kilometers per hour on Wednesday. The run is part of a succession of tests being conducted as JNR continues to work to develop the next-generation mode of high-speed rail transportation (COMLINE, 7/29/86). The vehicle is kept elevated above its single rail by magnets, resulting in an incredibly smooth ride and an almost complete absence of noise and friction.

468843 DA

GUIDEWAY TRANSPORTATION. 1979-SEPTEMBER, 1982

(CITATIONS FROM THE NTIS DATA BASE)

National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Oct 1982 164p SUBFILE: UMTRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The bibliography cites research on automated guideway transportation (AGT), in which passengers can be transported along tubes or rails under automatic control. The carriers, termed personal rapid transit vehicles or people movers, can accommodate individuals or small or larger groups. The reports cover many aspects of technology, such as demand actuated service, networks, elevated structures, monorail, light rail, computer aided control, vehicle merging, headway safety, shuttle loops, guideway designs, magnetic levitation, suspended vehicles, and dual mode. Discussions are made of steering control, ride quality, airport services to move people or baggage, gravity assistance in accelerating and braking, test vehicles, and maintenance. Other topics are cost comparisons of AGT with conventional transit, fares, and equipment failure. Air cushion vehicles are excluded. (This updated bibliography contains 156 citations, 42 of which are new entries to the previous edition.) Supersedes PB81-807869 and PB80-808124.

468842 DA

GUIDEWAY TRANSPORTATION. 1964-JULY, 1981 (CITATIONS FROM THE NTIS DATA BASE)

National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161 Aug 1981 297p SUBFILE: UMTRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

The bibliography cites research on automated guideway transportation (AGT), in which passengers can be transported along tubes or rails under automatic control. The carriers, termed personal rapid transit vehicles or people movers, can accommodate individuals or small or larger groups. The reports cover many aspects of technology, such as demand actuated service, networks, elevated structures, monorail, light rail, computer aided control, vehicle merging, headway safety, shuttle loops, guideway designs, magnetic levitation, suspended vehicles, and dual mode. Discussions are made of steering control, ride quality, airport services to move people or baggage, gravity assistance in accelerating and braking, test vehicles, and maintenance. Other topics are cost comparisons of AGT with conventional transit, fares, and equipment failure. Air cushion vehicles are excluded. (This updated bibliography contains 292 citations, 58 of which are new entries to the previous edition.) Supersedes PB80-808124, and NTIS/PS-79/0429.

468832 DA

INTEGRATED MAGNETIC PROPULSION AND SUSPENSION (IMPS) FINAL REPORT

Gilliland, RG; Lyttle, DD; Pearson, GW Boeing Aerospace Company Automated Transportation Systems, P.O. Box 3999 Seattle Washington 98124; Urban Mass Transportation Administration 400 7th Street, SW Washington D.C. 20590 Dec 1986 n.p. REPORT NO: UMTA-WA-06-0014-86-2 CONTRACT NO: UMTA-WA-06-0014; Grant SUBFILE: UMTRIS AVAILABLE FROM: National Technical Information Service 5285 Port Royal Road Springfield Virginia 22161

This report describes the development of critical technology for an Integrated Magnetic Propulsion and Suspension (IMPS) system for automated guideway transportation. Baseline work begun by Rohr

Industries, in 1970, was picked up by Boeing Aerospace, beginning 1978 and continued to the present. Significant gains were demonstrated in the areas of linear motor development, power control and conditioning, and in non-contacting air gap sensor and control system development. The IMPS technology is seen to be competitive with magnetically levitated machines being developed in Europe and Japan. With continued development, the Linear Synchronous Unipolar Motor (LSUM) can make the IMPS technology competitive with steel wheel and rail transit on an energy consumption basis. It can provide a higher level of service and lower overall operating and maintenance costs than competing systems. The IMPS technology and the development of solid state electronics have matured to where it is completely feasible to develop a full scale demonstration IMPS system.

468831 DA

PRESENT STATE AND PROSPECTS OF MAGLEV TRANSPORTATION

Masada, E *Systems and Control* vol. 30 no. 9 Sep 1986 pp 543-552 SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

Developing a levitation train capable of providing fast and comfortable transportation has begun with a century-old experiment with air cushions. In the late 1960s advances in magnetic and power electronics technologies made the application of magnetic levitation possible and facilitated full research to realize a practical application of magnetic levitation together with air cushion levitation. Though air cushion trains did not become a practical means of transportation due to several shortcomings, magnetic levitation trains did develop fully and went into operation at Birmingham, England, in 1984. Japan and West Germany are conducting continuous test runs, and feasibility studies of practical systems are also taking place. This article explains basic principles of magnetic levitation trains, which include magnetic support, magnetic introduction, and linear motor propulsion. Various methods of possible system structures are presented and compared. The author describes Japanese superconducting magnet levitation trains, West German trains, the HSST project, and the Birmingham system. He also evaluates characteristics, noise energy requirements, and construction costs.

468830 DA

SOME IMPRESSIONS OF THE INTERNATIONAL CONFERENCE ON MAGLEV AND LINEAR DRIVES

Kawashima, M *OHM* vol. 74 no. 8 Aug 1987 pp 96-97 SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

This is an overview of the International Conference on Maglev & Linear Drives held in May 1987. The symposium was sponsored by the IEEE Vehicular Technology Society and the Canadian Institute of Guided Ground Transport, Queen's University. The Japanese participants presented eleven papers. HSST progress, etc. are discussed with photos and description of some major papers.

468829 DA

DEVELOPMENT OF ULTRA INDUCTION COIL FOR MAGNETICALLY FLOATED TRAIN

Iwahana, T; Nemoto, K *Journal of Railway Engineering Research* vol.

42 no. 3 Mar 1985 pp 96-101 5 Ref. SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

The article traces the background, development, and present status of the ultra induction coil to float and propel trains. The initiation, improvement, and the direction of the present research are outlined. The structures of ultra induction coils from the prototype to the present one are illustrated. At present, four types, including a scaled down version of ultra induction coils, are produced. Specifications for each coil are given. Coils are tested to check their characteristics and performances and test results and some observations of the test process are given. The coils are mounted on a test train on the Miyazaki Experimental Line to improve performance.

468827 DA

DYNAMIC BEHAVIOR OF A GIRDER WITH LOW FLEXURAL RIGIDITY FOR MAGLEV

Kawakami, H; Matsuura, A; Sugiyama, Y Railway Technical Research Institute Railway Technical Research Report N1327 Aug 1986 pp 1-45 15 Ref. SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

More economical structures are demanded in the construction of a magnetic levitation railway, and so it is advisable to use a girder with low flexural rigidity. But a large vibration should occur in the girder when the levitated vehicle is run at very high speed. This paper investigates the dynamic behavior of the girder through measurements and theoretical analysis considering the interaction between the levitated vehicle and the girder, and makes a basic proposal on practical design. Since the dynamic behavior of the proposed girder changes more than the existing girder under same conditions of vehicle speed, span length, and so on, it is desirable to adopt a dynamic design method using simulation. With this, a rational design impact factor can be decided upon, and riding comfort and running safety can be checked. (AA)

468826 DA

STUDY ON MAGLEV VEHICLE POSITION DETECTING SYSTEM USING THE FEEDING CIRCUITS

Ikeda, H; Shimada, K Railway Technical Research Institute Railway Technical Research Report N1318 Mar 1986 pp 1-71 3 Ref. SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

This paper proposes a new magnetically levitated (MAGLEV) vehicle position detecting system using the feeding circuits. The linear synchronous motor adopted in a superconducting MAGLEV transportation system is composed of armature coils laid out on the ground along the guideway, and superconducting magnets installed aboard the vehicle. Phases of the electromotive forces are typically detected by a vehicle position detector and the vehicle is driven by controlled armature currents which are in-phase with the electromotive forces. In the position detecting system proposed here, a high-frequency signal wave is superposed on the armature current, and vehicle position is calculated using signal waves induced in the search coils mounted on the vehicle. As the vehicle runs, the amplitudes of the signal waves fluctuate. Signal frequency selection minimizes

fluctuations of the amplitudes. The shapes of the search coils and signal wave processing that can detect vehicle position accurately are also shown. A phase-locked-loop is used for phase calculation of the linear synchronous motor, and a short sampling time of the control loop is found effective for accurate calculation. (AA)

468825 DA

MAGLEV

Kyotani, Y *Cryogenic Engineering* vol. B:21 Nov 1986 pp 14-16 SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

The history of magnetic levitation began in 1970, when a basic experiment was initiated in Japan. The trial runs with LSM 200 and others were already under way in 1972. Magnetic levitation has been realized, and JNR has begun to examine the construction for commercial use. The author discusses what magnetic levitation is, why society needs it, and why it is necessary to use superconducting magnets. The key to the success of the project is the superconducting magnet and the cooling system. The author reviews the present status of research at the National Railways Laboratory in Miyazaki Prefecture.

468824 DA

CONFERENCE REPORT: INTERNATIONAL CONFERENCE ON MAGLEV TRANSPORT, 17-20 SEPTEMBER 1985

Shoda, E *Cryogenic Engineering* vol. 20 no. 6 Dec 1985 pp 369-371 SUBFILE: UMTRIS AVAILABLE FROM: University Microfilms International Japan Technical Information Service, 300 North Zeeb Road Ann Arbor Michigan 48106

The conference on Maglev transport was attended by 129 people, including 33 from six foreign countries. The authors report the developments in magnetic levitation from the U.S.A., West Germany, Canada, England, EC, and Japan. Systems discussed at the conference were the superconducting magnet levitation and the normal magnet levitation systems.

468451 DA

TRANSRAPID 06 TEST RESULTS

Heinrich, K; Mnich, P Hestra-Verlag *ETR: Eisenbahntechnische Rundschau* vol. 36 no. 10 Oct 1987 pp 633-640 4 Tab. 12 Phot. 11 Ref. German SUBFILE: UMTRIS AVAILABLE FROM: Hestra-Verlag Holzhofallee 33, Postfach 4244 6100 Darmstadt 1 West Germany

No abstract available.

468449 DA

TRANSRAPID 06 II VEHICLE

Miller, L Hestra-Verlag *ETR: Eisenbahntechnische Rundschau* vol. 36 no. 10 Oct 1987 pp 641-646 2 Tab. 15 Phot. 6 Ref. French SUBFILE: UMTRIS AVAILABLE FROM: Hestra-Verlag Holzhofallee 33, Postfach 4244 6100 Darmstadt 1 West Germany

No abstract available.

468445 DA

TRANSPORT: MAGLEV'S SUCCESS MAY NOT MEAN ORDERS

Electrical-Electronic Press *Electrical Review* Oct 1985 p 18 SUBFILE: UMTRIS AVAILABLE FROM: Electrical-Electronic Press

Quadrant House, The Quadrant Sutton Surrey SM2 5AS England United Kingdom: Maglev magnetic levitation light rail equipment can cut operational and maintenance costs by 10 percent compared with conventional urban transport systems. Maglev equipment has been installed to transport passengers in the short link between Birmingham International Airport and Birmingham International rail station. Direct energy costs of the link total some UKL20,000/yr. The 600 V direct current traction power supply has 2 independent feeds, with 1 being provided as a back-up. Pairs of metallized carbon shoes mounted on aluminum brackets attached to the inner pair of magnets at each end of the door side of the vehicle collect the current. Each of the 3 modules in the pulse-width modulated inverters correspond to a single phase of a 3-phase supply. Output from the inverter is monitored continuously, giving constant thrust output from the rotor. This is of prime importance, due to the 20 millimeters operating gap between the linear induction motor's rotor and stator. A thyristor short circuits the supply to the inverter in the event of low control supplies or an over-voltage in the power circuit.

468444 DA

MAGNETIC TRAIN SYSTEM HITS SPEED OF 249 MILES AN HOUR

Asian Wall Street Journal Mar 1987 p 8 SUBFILE: UMTRIS AVAILABLE FROM: Dow Jones and Company, Incorporated 200 Liberty Street New York New York 10281

Japan National Railway's experimental LMU-001 magnetically-levitated train achieved a speed of 249 miles per hour during a manned test run. The train runs on an inverted U-shaped guideway that reduces the possibility of derailment. It carries a powerful magnetic device that induces an electric current as it passes over electrical coils laid across the track. The polarity between the train and track becomes the same, giving the train upward lift. Magnets on the train are drawn forward by coils of different polarity on the track ahead.

468443 DA

AEG, KOBE TO MARKET 'M-BAHN' RAIL SYSTEM

Fairchild Publications, Incorporated *American Metal Market* Nov 1987 p 4 SUBFILE: UMTRIS AVAILABLE FROM: Fairchild Publications, Incorporated American Metal Market, 7 East 12th Street New York New York 10003

Kobe Steel gets license to market the M-Bahn magnetic levitation and linear motor drive railway system from AEG and Magnet Bahn. The system uses permanent magnets installed in the coil of motors embedded in railways. The system derives electric power by itself with little energy consumption.

468442 DA

AEG GETS 80% STAKE IN MAKER OF MAGNETIC LEVITATION TRAINS

Fairchild Publications, Incorporated *Metalworking News* Aug 1987 2p SUBFILE: UMTRIS AVAILABLE FROM: Fairchild Publications, Incorporated Metal Working News, 7 East 12th Street New York New York 10003

Magnetic Transit of America has been 80% acquired by AEG. Magnetic Transit has received permission to proceed with plans for a 1.3-mi system in Los Angeles, California. AEG acquired Magnetbahn (Starnberg, West Germany) in 7/87.

468441 DA

DEVELOPMENT OF SUPERCONDUCTING COILS FOR MAGLEV

Iwahana, T; Nemoto, K Japan Society of Mechanical Engineers *Japan Society of Mechanical Engineers, Journal* vol. 89 no. 817 Dec 1986 pp 1353-59 13 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Japan Society of Mechanical Engineers Sanshin Hokusai Bldg, 2-4-9 Yoyogi, Shibuya-ku Tokyo 151 Japan

The authors take the MLU001 as an example and concentrate on the performance of superconductor coils for Maglev. The structure, role and requirements for the development of this technology are reviewed. The MLU001 is 29 m long, and can accommodate 3,000 passengers. There is a 1.7 m long, .5 m wide superconductor coil in each axle. The illustration of MLU001 (I type coils), and MLU 500 (II type coils) are provided. The superconductor coils use copper and aluminum conductors and generate twice as much power compared with conventional coils. The structure of these coils and their comparison are described with charts and actual photographs.

468440 DA

PRESENT STATUS OF MAGLEV DEVELOPMENT

Tanaka, H Society of Automotive Engineers of Japan, Inc *Society of Automotive Engineers Japan, Inc, Journal* vol. 41 no. 2 Feb 1987 pp 166-170 2 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Society of Automotive Engineers of Japan, Inc 10-2 Goban-cho, Chiyoda-ku Tokyo 102 Japan

The new prototype vehicle MLU002, a magnetically levitated vehicle (Maglev) is presented. The coil arrangement on this vehicle is a superconducting material and the track coils are aluminum. A drawing shows the configuration for the linear-repulsion motor. The electrical supply of the system is shown and drawings and chart provides basic parameters on the vehicle. The electrical supply is three phase, 60-cycle, and a newly devised cycle converter provides 0-34 kHz power to the system, with a 100% power factor improvement over the old system. Operating tests were to have begun at Miyazaki Test Station in April of 1987.

468439 DA

IS THE TRAIN OF THE FUTURE ABOUT TO PULL IN?

McGraw-Hill, Incorporated *Business Week* Industrial Edition Nov 1987 p 150 SUBFILE: UMTRIS AVAILABLE FROM: McGraw-Hill, Incorporated 1221 Avenue of the Americas New York New York 10020

Nevada might build a 230-mi magnetic levitation train from Las Vegas to Los Angeles, California by 1991 and will choose between 2 foreign consortiums bidding on the job: the parties are Transrapid, a West German group composed of the government, Thyssen Industries Henschel, MBB, and Kraus-Mafferi; and HSST, a spinoff of Japan Air Lines. The winning firm's government would be required to guarantee most of the \$2.5 billion cost. Environmental concerns, fear of earthquake dangers and possibly increased traffic problems might also hinder development. HSST is building a 4.4-mi maglev train in Las Vegas which will travel at 125 miles per hour and will link the downtown with the gaming strip. Las Vegas is also building a \$50 million maglev people mover from downtown to the ^G^ At airport with AEG, another West German firm, doing the construction.

468438 DA

VERY FAST TRAINS MOVING AHEAD IN WEST GERMANY

American Chemical Society *Chemical and Engineering News* Jun 1986 p 60 SUBFILE: UMTRIS AVAILABLE FROM: American Chemical Society Publications 1155 Sixteenth Street, NW Washington D.C. 20036

Messerschmidt-Bolkow-Blohm is developing the Transrapid 06 magnetic hovertrain. The train has completed 10,000 kilometer of tests on a test track, and has achieved a speed of 221 mph, with a target of 250 mph. MBB says the best potential client for Transrapid is the State of Nevada, which wants to make access to Las Vegas easier for people in S California. German Federal Railway, meanwhile, is developing the intercity Experimental (ICE), which has achieved speeds of 197 mph, close to the design maximum of 27 miles per hour (350 kph). Some 30 kilometer of high-speed commercial track between Hanover and Wurzburg will open in 8/86. Each 8-wheel locomotive (1 at each end of the train), generates 4,200 kilowatt for a total of 8,400 kilowatt (11,400 hp). Passenger cars are made of aluminum. Each has about 3 metric tons of noise-and heat insulation material. Windows are triple glazed. The trains will be in service in 1991. Some 1,000 kilometer of high-speed track will be in service by the mid-1990s, and 3,000 kilometer will be in service soon thereafter.

468437 DA

STUDY ON MAGNETIC LEVITATION VEHICLE POSITION DETECTING SYSTEM USING POWER SUPPLY CIRCUITS

Ikeda, H; Saijo, T Institute of Electrical Engineers of Japan *Institute of Electrical Engrs of Japan, Trans* vol. 106 no. 6 Jun 1986 pp 535-542 + Ref. SUBFILE: UMTRIS AVAILABLE FROM: Institute of Electrical Engineers of Japan 1-12-1, Yurakucho, Chiyoda-ku Tokyo 100 Japan

Japanese research on magnetic levitation vehicles using linear ors has advanced in recent years. The position of these MAGLEV trains needs to be determined precisely so that at the proper time, power can be applied to the three-phase AC coils on the track which pull the train along. A system simpler and less expensive than its predecessors can determine the position of a train precisely by sending high-frequency signals through the track coil feeding circuit. The method of signal transmission along the power line, signal processing aboard the train, and the results of system tests on the Miyazaki experimental line are detailed. The method described for selecting a frequency will vary as little as possible as the train's distance from the transformer station changes. A 30-watt signal gave excellent results with a 10-MVA LSM on the Miyazaki experimental line.

468436 DA

TRENDS IN MAGLEV SYSTEM DEVELOPMENT IN THE FEDERAL REPUBLIC OF GERMANY

Yoshida, K Institute of Electrical Engineers of Japan *Institute of Electrical Engrs of Japan, Journal of* vol. 106 no. 2 Feb 1986 pp 137-144 15 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Institute of Electrical Engineers of Japan 1-12-1, Yurakucho, Chiyoda-ku Tokyo 100 Japan

The TR06 is gathering world attention as a final step toward the introduction of commercially operated, high-speed electromagnetic levitated trains. Maglev offers high speed, low pollution, high serviceability, and low cost. West Germany is researching runs within Germany; and Germany, France, Belgium, and Holland have formed a working group to research international lines. The TR06 uses LSM propulsion with linear generators for contactless electric transmission.

A 360-km/hr test is planned in mid-1986 to obtain operating and all-system data. In 1987, the track will be completed and a 400-km hr run made. The future will bring a demonstration of the improved technology to be incorporated in the TR07. Research is continuing into replacing EMS with CPM.

468435 DA

V. POWER ELECTRONICS 3. MAGLEV TRANSPORT; HIGH TECHNOLOGY APPLIED TO ELECTRIC POWER ENGINEERING

Kitamoto, M; Kawashima, M; Ikeda, H Institute of Electrical Engineers of Japan *Institute of Electrical Engrs of Japan, Journal of* vol. 105 no. 11 Nov 1985 pp 1079-82 9 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Institute of Electrical Engineers of Japan 1-12-1, Yurakucho, Chiyoda-ku Tokyo 100 Japan This article discusses the application of power electronics to maglev transport using Japan's HSST-03 and MLU-001 as examples. The miniaturization of the propulsion systems depends on use of GTO, and the levitation system would have been impossible without high-speed, large-capacity devices.

468434 DA

EQUIVALENT CIRCUIT PARAMETERS OF CONTROL COILS FOR THE VERTICAL MOTION OF A CONTROLLED-PM LSM MAGLEV VEHICLE

Yoshida, K; Umino, T; Kajiki, Y Kyushu University, Japan *Technology Reports of the Kyushu University* vol. 58 no. 5 Oct 1985 pp 705-711 8 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Kyushu University, Japan Hakozaki, Higashi-ku Fukuoka-shi 812 Japan

The Maglev vehicle suspended by controlled permanent magnets (PMs) is stabilized by actively controlling the applied voltage of the control circuit through a feedback of the state variables. In this paper, equivalent circuit parameters of the control coils for the vertical motion of the controlled-PM LSM Maglev vehicle are derived analytically. The total flux linking with the control coils is calculated from the flux density within two regions of the PM and coils between PMs, which has been analyzed previously by one of the authors, and the flux density of the coil end region, of which the distribution is approximated using a sinusoidal function. Equivalent circuit parameters are obtained as self-inductance, mutual inductance and speed emf coefficient, by differentiating the total flux linkage with respect to time. These parameters are expressed in an analytical form including all the design variables. It is found theoretically that the nonlinear voltage equation is independent of the stator current in the normal operation of the Maglev vehicle. Numerical results for the Maglev M-Bahn show that these parameters are relatively weakly dependent on airgap because an equivalent airgap length is increased by almost PM height. (AA)

468433 DA

SIMULATION TEST FOR A NEW REFRIGERATION SYSTEM OF MAGLEV TRAIN

Hirano, A Japanese National Railways *Railway Technical Research Inst, Quarterly Reports* vol. 27 no. 4 Dec 1986 p 137 SUBFILE: UMTRIS AVAILABLE FROM: Ken-yusha, Incorporated Hikaricho 1-45-6, Kokubunji Tokyo Japan

The development of cryogenic equipment in the Miyazaki Maglev Test Track was started in 1970. Presently, a running test is being done using the test vehicle MLU001. The refrigeration system of the

Maglev Test Track depends largely on a ground refrigeration facility. Topics include test apparatus, test result, and conclusions.

468432 DA

RESEARCH AND DEVELOPMENT OF SUPERCONDUCTING COILS FOR MAGLEV CARS

Iwahana, T; Nemoto, K Japanese National Railways *Railway Technical Research Inst, Quarterly Reports* vol. 26 no. 3 Sep 1985 pp 103-109 4 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Kenyusha, Incorporated Hikaricho 1-45-6, Kokubunji Tokyo Japan
Intrinsically stabilized superconducting wires with a copper ratio of about two are used to conduct the trial manufacture of four different types of coils for the purpose of developing a light mass superconducting coil with high current density. These are designed so as to understand as systematically as possible how the differences in the structure and the method of manufacture might affect their performance. By testing their performances, it is learned that the superconducting wire with a copper ratio of about two can be made available for a large magnet with a high magneto-motive force. A lot of useful knowledge and techniques, for example, the effects of impregnation with epoxy resin, are also obtained. (AA)

468431 DA

COMPUTER SIMULATION OF THE VERTICAL MOTION OF CONTROLLED-PM LSM MAGLEV VEHICLE

Yoshida, K; Kajiki, Y; Umino, T Kyushu University, Japan *Technology Reports of the Kyushu University* vol. 58 no. 5 Oct 1985 pp 713-720 7 Ref. SUBFILE: UMTRIS AVAILABLE FROM: Kyushu University, Japan Hakozaki, Higashi-ku Fukuoka-shi 812 Japan
This paper describes the computer simulation of the vertical motion of the Maglev vehicle, which is simultaneously propelled and suspended by linear synchronous motors (LSMs) with controlled-PM excitation. Under the assumption that all controlled-PMs on board make the same motion in the vertical direction, nonlinear dynamic equations are derived for the magnet frame with magnet suspension consisting of the controlled-PMs and for the cabin mounted on it through the secondary suspension of pneumatic springs. To compensate for the static instability of the two-mass model, a state feedback controller is designed for the controlled-PM Maglev M-Bahn. A minimum value of a feedback gain K for deviation Δ of airgap length is determined approximately from the locus of closed-loop eigenvalues vs. K of the linearized equations. It is found that there is an essential difference between simulation results based on the nonlinear and linearized equations of motion. Nonlinear simulation results show that a significant improvement in dynamic behavior is achieved by adding the feedback control with a gain K for airgap velocity Δ , and that this controller makes the Maglev M-Bahn follow very smoothly a step variation of 4 mm in the armature rail with negligibly small power loss. (AA)

468378 DA

MAGLEV ULTRA-HIGH-SPEED GRINDING WHEEL SPINDLE

Ota, M Japan Society of Precision Engineering *Japan Society of Precision Engineering Journal* vol. 53 no. 7 Jul 1987 pp 1012-14 SUBFILE: UMTRIS AVAILABLE FROM: Japan Society of Precision Engineering Seimitsu Kogakkaishi Tokyo Japan
Magnetic bearings contribute to the reliability of machining systems.

In this article, the author describes a way to achieve a 5000 mm speed for a wheel spindle. The maglev spindle uses electromagneti current control with 5 degrees of freedom. It has no airflow restrictions. It has a little eddy current, so the rise in the steel plate temperature is not a problem. It assures good rotational precision because the spindle does not get close to a dangerous speed. The author gives an example of a 180,000-rpm spindle. Its merits are unlimited life, proximity displacement sensor signal monitoring automatic balancing, and active control of revolving rotational axes displacement.

468377 DA

MAGLEV APPROACHES PRACTICAL USE

Tanaka, H Japan Railway Engineers' Association *Japanese Railway Engineering* vol. 27 no. 1 Jun 1987 pp 2-6 SUBFILE: UMTRIS AVAILABLE FROM: Japan Railway Engineers' Association 2-5-18 Otemachi, Chiyoda-ku Tokyo Japan
Beginning in 1970, the Japanese National Railways undertook the development of a superconducting magnet system for use in a levitated, high-speed mass transit system. Today, the newly restructured Japan Railways Group is continuing the research. The experimental magnetically levitated train, or "maglev", is now in its third generation. The current vehicle, dubbed the MLU002, can attain a maximum speed of 420 km/h. Though research has progressed, the need for liquid helium in current superconducting magnet systems poses a major stumbling block. New ceramic magnets, however, may provide the answer. Eventually, the maglev train could provide high speed (up to 500 km/h) domestic and intercontinental transport through undersea tunnels. The Japan Railways Group foresees passenger and commercial applications.

448234 DA

THE M-BAHN SYSTEM: MAGNETIC LEVITATION AND LINEAR PROPULSION AS A NEW TECHNIQUE FOR TRANSIT SYSTEMS

Heidelberg, G; Niemitz, K International Center for Transportation Studies Rapid Transport Systems 1985 pp 85-107 SUBFILE: UCITS; TLIB
No abstract available.

444621 DA

MAGLEV AS A RAPID TRANSPORT SYSTEM

Radloff, M *DDR Verkehr* 1988 pp 379-381 German SUBFILE: UCITS; TLIB
No abstract available.

444075 DA

ELECTRIC VEHICLE PROPULSION AND MAGNETIC LEVITATION

Wyczalek, FA Electric Vehicle Association of Canada International Electric Vehicle Symposium, 9th: 1988 8 pp SUBFILE: UCITS; TLIB
No abstract available.

443883 DA

THE MAGLEV SYSTEM OF FRICTIONLESS RAILWAY Raschbichler, G *Railway Technology International* 1988 pp 64-67 SUBFILE: UCITS; TLIB

No abstract available.

443710 DA

MAGLEV BRIEFING TO URBAN MASS TRANSPORTATION ADMINISTRATION

MITRE Corporation SL Jun 1983 SUBFILE: UCITS; TLIB

No abstract available.

443707 DA

NEW TRANSPORTATION TECHNOLOGIES: THE MAGLEV SYSTEM

Thyssen Henschel Munich 1988 15 pp English SUBFILE: UCITS; TLIB

No abstract available.

443619 DA

MAGNET POWER SYSTEM FOR THE MICROWAVE TOKAMAK EXPERIMENT (MTX)

Jackson, MC Lawrence Livermore Laboratory Livermore Calif Oct 1987 5 pp REPORT NO: UCRL-96651 SUBFILE: UCITS; TLIB AVAILABLE FROM: National Technical Information Service Springfield, VA

Prepared for submittal to 12th Symposium on Fusion Engineering, Monterey, California, October 12-16, 1987 No abstract available.

443087 DA

A MAGLEV SYSTEM IN BERLIN

Willigens, J-M *La Vie du Rail* n2157 Aug 1988 pp 35-36 French SUBFILE: NWUTL; TLIB

No abstract available.

442363 DA

TRANSRAPID MAGNETIC SUSPENSION RAILROAD - A NEW ERA OF HIGH SPEED TRANSPORTATION

Raschbichler, H (Thyssen Industrie AG Henschel) *Verkehr und Technik* vol. 41 no. 6 Jun 1988 pp 228-231 German SUBFILE: NWUTL; TLIB

No abstract available.

442344 DA

THE DEVELOPMENT OF MODERN HIGH-SPEED RAIL SYSTEMS

ETR: Eisenbahntechnische Rundschau vol. 37 no. 5/6 May 1988 pp 261-327 German, English summary SUBFILE: NWUTL; TLIB

German research: comparison of high speed rail and maglev, wheelrail technology for high speed rail, transrapid maglev train, usage study for maglev, testing vehicles, IC express high-speed cars train control, maglev for local transit.

442327 DA

GERMANY: STATIONS FOR THE TRANSRAPID

Willigens, J-M *La Vie du Rail* N2147 Jun 1988 pp 41-42 French SUBFILE: NWUTL; TLIB

Terminals designed by architect Manuel Sanchez for the proposed German Transrapid magnetic suspension system.

440664 DA

SPECIAL ISSUE ON AUTOMATED VEHICLE PROPULSION AND

SUSPENSION

Adriance, CJ Institute of Electrical and Electronics Engineers *IEEE Transactions on Vehicular Technology*, vol. VVT-29,N1 Feb 1980 103 pp ENGLISH SUBFILE: UCITS; TLIB

No abstract available.

439504 DA

CURRENT STATE OF DEVELOPMENT IN THE MAGNETIC LEVITATION HIGH-SPEED TECHNIQUE

Raschbichler, H (Transrapid International) European Conference of Ministers of Transport High-Speed Traffic on the Railway Network of 1986 pp 79-86 SUBFILE: NWUTL; TLIB OECD Publications and Information Centre, distributor.

No abstract available.

439031 DA

IS A MAGNETIC LEVITATION TRAIN REASONABLE FOR LONG-DISTANCE TRAFFIC IN THE GERMAN FEDERAL REPUBLIC?

Jung, B (Universitat Karlsruhe) *Internationales Verkehrswesen* vol. 39 no. 1 Jan 1987 pp 24-26 German, English summary SUBFILE: NWUTL; TLIB

No abstract available.

436662 DA

MAGNETICALLY STEERABLE AXLE WITH INDEPENDENT WHEELS

Institut National de Recherche sur les Transports et leur Securite Rapport INRETS, NN54 Dec 1987 58 pp French SUBFILE: UCITS; TLIB ISBN: 285782209X

No abstract available.

435507 DA

RESEARCH AND DEVELOPMENT WORK ON MAGLEV SYSTEMS - A SALUTARY EXAMPLE OF THE RELEVANCE OF CLEAR POLICY TARGETS IN THE TRANSPORT SECTOR

Grabener, K *Internationales Verkehrswesen* vol. 39 no. 5 Sep 1987 pp 342-346 German, English summary SUBFILE: NWUTL; TLIB

No abstract available.

435503 DA

THE MAGLEV SYSTEM

ETR: Eisenbahntechnische Rundschau vol. 36 no. 10 Oct 1987 pp 623-646 German, English summaries SUBFILE: NWUTL; TLIB

Articles on the transrapid magnetic levitation system: steps on the way to service accessibility, high-speed switch for the south loop of the experimental facility, test results, the service vehicle.

434097 DA

THE TRANSRAPID MAGLEV RAILWAY: PRESENT STATE OF DEVELOPMENT

Raschbichler, H (Thyssen Industrie AG Henschel) *Railway Technical Review* n28 1986 pp 21-25 SUBFILE: NWUTL; TLIB

No abstract available.

429565 DA

MAGNETIC LEVITATION, RELUCTANCE EFFECT MOTOR, LINEAR MOTOR - AND THE OTHERS

