

Approved:
Vice Rector of the University,
Professor V.V. Sapozhnikov

MINUTES
of the Meeting of the Academic Board
of the Petersburg State University of Transport Communications

March 20, 1996

Saint-Petersburg

Subject: "String Transport System"

Reported by Anatoly Unitsky, General Designer of the NTL GmbH Company (Minsk, Republic of Belarus)

Participants:

V.V. Sapozhnikov, Professor, Vice Rector
L.N. Pavlov, M.A., Vice Rector, Research
M.N. Novikov, D.A., Professor, Head of the Department "Electrical Machines"
A.N. Lyalinov, D.A., Professor, Department "Civil Mechanics"
A.I. Khozhainov, D.A., Professor, Head of the Department "Electrical Engineering"
A.T. Burkov, D.A., Professor, Head of the Department "Railways Power Supply"
V.M. Petrov, D.A., Professor, Head of the Department "Survey and Erection of Railways"
M.F. Makhnovskiy, M.A., Assistant Professor, Department "Civil Mechanics"
O.I. Borshchev, M.A., Assistant Professor, Department "Strength of Materials and Structures"
V.M. Varentsov, M.A., Assistant Professor, Department "Railways Power Supply"
G.E. Sereda, M.A., Assistant Professor, Department "Electrical Engineering"
I.V. Gurlov, M.A., Assistant Professor, Department "Electrical Machines"
S.A. Gulin, M.A., Assistant Professor, Department "Electrical Machines"
Ya.Y. Parmas, M.A., Senior Researcher, Department "Electrical Machines"
V.S. Trofimov, M.A., chief of the Laboratory "Design and Transport"
G.L. Andreev, M.A., Assistant Professor, Department "Engineering Graphics"
A.P. Epifanov, D.A., Professor, Department "Electrical Machines"
V.M. Pivovarov, Designers' Team Chief, Special Machine Building Designing Bureau
M.V. Zhilin, Designers' Team Leader, Special Machine Building Designing Bureau
V.S. Zharkevich, Chief Designer of Belorussian Designing Institute, the "Transport" Studio, (Minsk)

Presentation of A.E. Unitsky

The NTL GmbH has developed a string transport system (STS) including the string track structure suspended 10-50 m high in alternating anchored and carrying supports.

The string rails are electrically insulated and act as current bus bars to convey energy to the transport means. The Transport means is a wheel vehicle carried by string rails weighing 2,000-5,000 gross accommodating 3-20 passengers.

A great tensioning force of the string (100-500 tons) and a particular design of the rail, a fast velocity of the vehicle (up to 300-500 km/h) make the track structure highly smooth. The main components and design features have been disclosed. The results of investigation of the dynamics of vibrations of the track structure, scaled tests of the vehicle model in the aerodynamic tube, design indicators of the feasibility's and other STS features have been explained.

The main results of the presentation are described in the author's publication "String Transport Systems" published by the NTL GmbH in Gomel in 1995.

Questions:

A.N. Lyalinov, M.N. Novikov, A.I. Khozhainov, G.E.Sereda, V.M. Petrov, O.I. Borshchev, V.M. Vorontsov, L.N. Pavlov, M.F. Makhovskiy, M.V. Zhilin, et al.

Discussion:

A.I. Khozhainov, V.M. Petrov, A.N. Lyalinov, M.N. Novikov, L.N. Pavlov, et al.

The discussion revealed:

1. The need, uniqueness and practical expediency of implementation of the STS Project in its immediate application for the geographic and climatic conditions of the North-West of Russia
2. The complexity of the problem under study.
3. The feasible effectiveness of the implementation based on the transition from a planar railway system to the three-dimensional system.

The Board recommends the following:

1. To accomplish a more detailed study of the traction drive, reliability problems and the safety of the string transport system in its integrity.
2. To erect a pilot leg to validate the main design parameters and the STS' behavior in operation.
3. To attract the research potential of the Transport Research School and the University of Petersburg.
4. To try to get finances for the R&D and erection of the pilot leg of the novel transport system.

Chairman of the Session

signature

L.N. Pavlov

Secretary

signature

V.S. Trofimov

March 21, 1996