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The idea of the Polish Association of Transport Engineers & Technicians in professional life

Abstract: One of the basic goals set for the Polish Association of Transport Engineers and Technicians is to increase the professional qualifications of the staff. Such development is possible through the exchange of knowledge at various thematic meetings also organized by, inter alia SITK RP. Using the example of the Works Group, the author presents the possibilities of promoting the idea of the Association in his professional life.

Keywords: Club SITK RP; Conference; SITK RP

Introduction

At the end of 1945, an initiative group was formed, comprising Zygmunt Balicki, Wacław Gordziałowski, Tadeusz Grochowski, Jan Kubalski, Zbigniew Modliński, Jan Różycki, Józef Skrzekot, Robert Szajer, Piotr Trzaskała, and Józef Zgierski. This group pioneered the first organizational steps towards the establishment of an association aimed at uniting communication engineers and technicians, as well as other individuals with professional experience in communication or related fields. These efforts led to the creation of the Association of Engineers and Technicians of Communication in 1946, which continues to operate today under the name Association of Engineers and Technicians of Communication of the Republic of Poland (SITK RP), utilizing its own name and logo (Figure **1**).

1. Logo and full name of the SITK RP association [1]

Upon its establishment, the Association of Engineers and Technicians of Communication of the Republic of Poland (SITK RP) drew on the interwar traditions of technical organizations: the Association of Polish Railway Engineers (operating from 1919–1939), the Association of Technical Administration Employees of Polish State Railways (1927–1939), the Association of Railway Technicians of the Republic of Poland (1925/1926–1939), the Association of Road Engineers of the Republic of Poland (1921–1939), the Association of Members of Polish Road Congresses (1925–1939, 1945–...), and the Road League (1933–1939).

The founders of the Association of Engineers and Technicians of Communication of the Republic of Poland aimed to achieve the following goals:

- advancing technology in the fields of civil engineering, communication, and transportation,
- representing engineering and technical staff before state and union authorities,
- enhancing the professional qualifications of such staff,

- protecting the profession,
- organizing mutual aid among colleagues.

As a result of changes in national legal regulations, the Association was required to adapt its statute to comply with current standards. Today, SITK RP is a scientific and technical organization with non-commercial objectives, working for the benefit of the transportation sector, primarily in the interest of its members.

From its inception, the Association has been a member of the Federation of Scientific and Technical Associations (NOT). The structure of the Association of Engineers and Technicians of Communication of the Republic of Poland (SITK RP) includes 28 regional branches, comprising several thousand members. Both the national board and the regional boards are authorized to establish sections (committees) at the national and regional levels, which serve as advisory teams for the board authorities. Supporters of SITK RP are organized into Clubs/Circles, which are directly formed within the organizational structure. In addition to this traditional form, there is a growing number of Clubs/Circles that bring together employees from various transport sectors within companies where they are employed.

SITK RP Activities in Workplaces

According to the internal regulations of the Association of Engineers and Technicians of Communication of the Republic of Poland, it is possible to establish Clubs/Circles at workplaces. One such circle is the SITK RP Workplace Circle at the Railway Institute. Paying special attention to the formal and legal requirements related to its parent organization and the tasks and topics handled in their daily work, members of the Association seek methods to promote SITK RP's goals in their professional lives.

Maintaining the primary affiliation with the Railway Institute, and at the request of its Directorate, employees of the Institute who are members of the Association undertake various activities to promote the SITK RP logo in support of transportation-related initiatives aligned with the Association’s mission. This includes participation in thematic conferences on railways organized by various SITK RP branches.

One such example was the conference titled *"Solutions for Railway and Road Intersections at Track Level from Legal, Economic, and Technical Perspectives"* organized by the SITK RP Branch in Częstochowa. During this conference, representatives from the SITK RP Workplace Circle at the Railway Institute shared their expertise on the evaluation of changes impacting solutions used at railway-road crossings.

Given that all modernized railway lines are subject to European and national certification processes, this issue has gained new significance. It is especially critical for lines that have already been certified and approved for operation, as efforts are subsequently undertaken to improve the operational parameters of railway infrastructure. Therefore, it has become essential to assess the impact of investments on already-installed systems that hold valid EC verification certificates and have either received or are awaiting approval for operation from the President of the Office of Rail Transport (UTK).

The approval for organizing a thematic panel on research perspectives in transport at the "Transport of the 21st Century" conference under the logo of the Association received recognition from both the Director of the Railway Research Institute, Dr. hab. Eng. Andrzej Massel, and the organizers from the Faculty of Transport at the Warsaw University of Technology. During this panel, chaired by Prof. Dr. hab. Eng. Jacek Kukulski (Chair of the SITK Branch at the Warsaw University of Technology), members of the SITK RP Branch at the Railway Research Institute presented six papers covering a wide spectrum of topics related to various research areas in rail transport.

When examining the railway environment, the electronic safety systems used in it are responsible for ensuring the safety of people and assets in the transportation process, both in

stationary and mobile facilities. In their presentation, the authors aimed to draw the audience's attention to the fact that these systems operate in a diverse electromagnetic environment on Earth, which is distorted by both intentional and unintentional sources of electromagnetic radiation. This issue is particularly significant across large railway areas, where electromagnetic immunity of safety system electronic devices to all kinds of interference is crucial for the transportation process. Based on specific permissible interference levels, safety system designers can appropriately select and ensure the safe operation of these systems in such environments.

Another important research topic discussed in a separate presentation was the verification of the compatibility of rail vehicles with commonly used train detection systems, specifically axle counting systems. This verification is conducted through measurements of the magnetic field intensity generated by the tested type of rolling stock. Magnetic field disturbances or the presence of metal masses near the railhead may generate interference affecting the operation of axle counting systems. Knowledge of permissible interference values allows designers to develop such design and construction rules for rolling stock types that minimize or eliminate the likelihood of generating such interference, ultimately ensuring the appropriate level of railway system safety.

Another presentation focused on the introduction of new solutions in the automation of IT/OT systems as part of the ongoing modernization of railway infrastructure. Older systems typically operate in isolation, without access to the external world, while new ones are designed to interact with other systems. To meet the requirements encapsulated in the terms "safety" and "security," the implemented systems must be planned and designed in a strictly regulated manner. The information presented outlined the general actions needed to ensure that the system can be safely implemented into railway infrastructure and emphasized the element of planning high-risk zones (High-Level Railway Zones).

Subsequent remarks in another presentation referred to analyses and challenges faced by operators using base network elements as components of complex networks regarding the implementation of Class A systems on existing infrastructure. Using the example of terminal size diversity, the scope of the problem arising from legal regulations concerning the control subsystem was outlined.

Another presentation addressed a potential problem in the real railway environment: the adoption of a misinterpreted variable describing an interoperable rail traffic management and control system. This was discussed in the context of assessing the significance of changes to modified parameters in relation to the specific documents required for obtaining the EC verification certificate and the authorization for operation.

Every passing day brings many conveniences and changes to our surroundings. Such changes also occur in the railway transport sector, particularly in the control subsystem. The final presentation discussed updates introduced in the new edition of the technical specification for interoperability concerning control systems, specifically the addition of automatic train operation features to the ETCS automatic train control system.

The dynamic development of railway transport, leading to the increasing use of computer-based management systems, has begun to highlight noticeable potential threats related to the vulnerability of these systems to external cyberattacks. These issues were addressed in a presentation by representatives of the SITK RP Branch Circle at the Railway Institute (IK) during a conference organized by SITK RP branches in Kielce titled *Innovative Technologies in the Construction, Maintenance, and Operation of Railway Traffic Control and Communication Systems in Polish Railways*.

In their presentation, the authors emphasized that protection against such attacks must be implemented from the design stage by incorporating appropriate standards. Looking ahead to the evolution of legislation over the years, it is expected that, in addition to evaluating basic

parameters, elements related to cybersecurity will become an integral part of the certification process for devices. Additionally, organizations should consider whether current "industry-specific" tender procedures for implementing computer systems should already include references to appropriate standards in the descriptions of contract requirements, enabling railway companies to take proactive measures to prevent external cyberattacks.

The above-mentioned conferences also provided an opportunity for employees of the Railway Institute, individuals involved in transportation, and members of the Association to share information about the Institute's statutory and commercial activities, particularly regarding the standardization of selected computer interface components of railway traffic control systems (RTC). The knowledge gathered through project work and its practical applications align with SITK RP's goal of enhancing the professional qualifications of its members. The skills of engineering and technical staff can also be developed by identifying new areas where awareness and technical expertise need to be improved—particularly in cybersecurity, which was a key topic of discussion during these conferences.

Cybersecurity issues were discussed in detail at a conference organized by the National Board of the Association of Engineers and Technicians of Communication of the Republic of Poland (SITK RP), in cooperation with the Railway Institute, titled *IT & OT in Rail Transport*. Among many presentations, representatives of the SITK RP Branch Circle at the Railway Institute discussed the main cybersecurity threats in rail transport, along with the identification of digital functionalities potentially vulnerable to cyber threats. In a summarizing presentation, concepts for future cybersecurity guidelines for infrastructure managers and railway operators were outlined.

Respecting the formal and legal frameworks of the workplace and the work conducted therein, and in agreement with senior management, it is possible to develop appropriate positions on maintaining core affiliations and promoting the goals set by SITK RP to improve the professional qualifications of its members by sharing experiences with others. Members of the Branch Circle at the Railway Institute aim to fulfill this role, which will also be evident in a series of presentations during a gathering of SITK RP enthusiasts organized by the SITK RP branch in Kraków at the NOVKOL 2022 conference.

Source materials

[1] www.sitkrp.org.pl