Foreword about Professor Maria Franekova, a member of the International Scientific Editorial Board of "Advances in Electrical and Electronic Engineering" journal and the Professor at University of Zilina, Faculty of Electrical Engineering, Department of Control and Information Systems :

Maria Franekova

Maria Franekova was born in Brezno (Slovak republic), 1961. She graduated in Telecommunication technique at the Faculty of Electrical Engineering, Slovak Technical University, Bratislava in 1985. She received her Ph.D. degree at the Faculty of Electrical Engineering, University of Transport and Communications, Zilina (today University of Zilina) in 1995. She received the associate professor degree in specialization Information and Interlocking Systems at Faculty of Electrical Engineering (FEE), University of Zilina (UNIZA) in 2004. Since 2011, she has been professor in the Automation specialization. The topics of her research include area of safety and security communications with orientation to industrial safety-related communication systems, methods for safety assessment of data transmissions for safety-critical applications in transport and industry especially with using tools of channel coding and cryptography techniques. In the given area, she is publishing, expertly leads Ph.D. students and a collective of workers at Department of Control and Information System at FEE, UNIZA. She is the head of the Information and Communication Systems section. She is at the same time a member of editorial boards of several scientific journals and committees of international scientific conferences, a member of committee of the Slovak Society for Cybernetics and Informatics (SSKI), member of Institution of technical normalization (SUTN). She had to chance to confront her experience and knowledge from the area of safety-related communications systems during various foreign study stays and to present it in her lectures within the Erasmus mobility program.

Dear readers, on the present, in the sphere of process control in the field of Automation we are witnessing a growth in the utilisation of more affordable open transmission systems and devices based on wireless technologies. This fact brings besides the positive contributions also negative effects by increasing the safety threats, which are important to be eliminated. My professional career is more than 30 years orientated to the area of safety data transmission - for a communication system which is a part of specific area of control systems referred to as safety-related (SR). In order to eliminate the risk related with unauthorized access to open transmission systems, it has become obligatory to use sophisticated modern cryptography tools. The basic task of safety-related transmission system synthesis from the perspective of cryptography mechanisms utilisation is to design it to be with a certain probability resistant against attacks, abusive or harmful events, which deteriorate the availability, integrity and confidentiality of the stored or transmitted data.

In the modern safety-related control and communication systems, it is possible to talk about the integration of „security" elements with the „safety" elements. From the scientific research point of view, it is a perspective field of cryptography and information and communication security (ICS) mechanisms in the applications with increased safety integrity level (SIL), requiring a transfer of knowledge from ICS to SR systems. This dynamically expanding area interferes to a large spectrum of process automation in the machine engineering, chemical engineering, transport and everywhere, where an undetected corruption of transmitted data can cause casualties, harms of human health, substantial material damages or environmental damages.

This tendency and requirements from practice need to be responded adequately within the educational process as well, widen the range of courses with orientation to ICS in the study programmes in the field of Automation and offer interdisciplinary solutions. Thereby we provide a wider scope of knowledge to our graduates utilisable for the area of safety-related (critical) applications of process control.

Thanks to the Advances in Electrical and Electronic Engineering team for numerous high-class contributions from the area of information and communication security and I wish you a wide range of readers.