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# Creativity, Innovation and Flexibility – a Success Foundation of the 21<sup>st</sup> Century, not Only in Railway Signalling

*MONAT is an industrial enterprise, which since the moment of its foundation in 1991, characterized by creativity, innovation and flexibility. However last years, to be up to new challenges on the difficult signalling market, the quest for fresh ideas commenced, which would allow creation of such a value mix, which could bring the company brand new opportunities.*

Creativity, in general, it is an ability of formation new ideas, concepts or links with already existing ideas. Creativity is a foundation of innovation which stands for ability of quest for new technologies, products organizational changes or creation of new markets. [J. A. Schumpeter]. In the contemporary world, where time is getting more and more important, one observes a tendency amongst many big corporations, of creation fictitious innovations resulting from superficial creativity or oft even its atrophy. Outcome of this is lack of focus on customer's present needs. Probably it derives from their good reputations consolidated at the end of the 20<sup>th</sup> century based on paradigm of huge barrier of entry into markets of advanced technology amongst others railway signalling systems, necessity of long year system research and development dedicated for certain market niche. Moreover, in this situation, if the sales for long years has shown successes expected by the shareholders it was difficult not to be influenced by an illusion of own power, blocking the company in its past and preventing it from transformation.

Meanwhile the economy, what can be observed today in the investment boom on Polish railway market, requires a new element of quality, comparing with the past years - much bigger flexibility. Flexibility stands for ability to adapt an enterprise to changing customer needs, e.g. product or service delivery, oft on an one-off basis, for a price, acceptable by customer but which in parallel covers all reasonable deliverer's costs. This situation requires a big courage while creating the new approach, new environment perception – of suppliers and contractors, as well as new look at similar issues in other business segments, and finally identification of the leader's own position in the supply chain.

A mission for MONAT is to create values for customers by delivery the simple in use thus competitive in costs of operation solutions, fulfilling all functional requirements of the customer. For the last several years PKP PLK (Polish Railway Lines) require in their Technical Standards, based on fundamental requirements of RAMS (Reliability, Availability, Maintainability and Safety) for whole railway network, system technical availability on the proper high level. Characteristics of every new system should be simple and safe way of maintenance. The best choice would be if the maintenance activities were limited to one or two inspections per year without significant personal and financial burdens.

This requirement is related to global tendency to be focused only on own core business, not as before dispersing on all, also what was not the domain of key activities. A mission of every infrastructure manager is to ensure the properly high traffic capacity and quality of rail roads as well as the highest level of safety.

Considering the present world trends, the MONAT engineering team has developed numerous systems characterized by on one hand excellent functionalities and on another low cost maintenance but also low purchase price. These systems can compete successfully with products of world leaders, stable brands. But it have to be emphasized that one-off costs and maintenance costs are lower comparing with global competitors.

Particular attention should be paid to power supply, because it is a part of every signaling system and finally it does determine the technical availability of even the most reliable system.

Presently many producers of signaling systems decided to use SUZ-2M power supply. This system is characterized by simple, modular design, easy installation, flexible configuration, easy extension and is equipped with event log as well as remote access via the Internet.

Despite advanced functionalities it is distinguished by the very attractive price. The system is configurable for different connections to the power supply line – basic network, back up, stationary or mobile generator with an automatic or manual starter. The system has own the battery pack for UPS functionality.

For years MONAT has been delivering the UP-1 level crossing of A category, controlled locally or remotely. This is the reliable and cheap system because of both one-off and operational costs.

The next generation system is the KSP-7M level crossing, which is the brand new solution. Available in configurations for categories A with automatic warning switch on, B, C and protected pedestrian crossings.



MO2 Type – TOP Railway Signal

The KSP-7M level crossing is suitable for every train detection system, based on axle counting of passing rolling stock. The system is foreseen to be connected with all type of interlocking as an element of train route.

Interesting and, what is the most important, very reliable from customer's perspective, are longitudinal barriers, equipped with patented fuses. In case of collision with road vehicle the solution enables horizontal movement of barrier without its destruction or limits significantly scale of damage. The fuse is cut and after the hit in barrier an „ejector” disconnects barrier from the gate machine. In the protection module there is a sensor which transmits a signal informing of barrier issue. The longitudinal barriers can be equipped with LED or classic lights. Maximal length is up to 9 m, what is the unique solution in the country.

The next interesting and innovative product reducing the maintenance costs, in parallel ensuring work safety of maintenance staff, are the signals with movable heads. The unique solution enables working on the ground level after the signal head has been moved down to the foundation level, where works can be performed easier, safe and quick.

An alternative to previous solution is the signal with fix head but with the platform ensuring comfort and safety of the maintenance engineer working at heights.

In the article we focused only on some solutions of MONAT company, which materialize significantly the business vision of shareholders: creativity, innovation and flexibility. In firm's achievement there is also many other, not less innovative ideas, which were implemented a couple of years ago on the PKP PLK network and other, predominantly private ones like industrial yards, branch lines. Amongst others there are EOR-1M turnout heating, TVP-1M Closed Circuit Television or unique on Polish railway network KSIT-1M insulation condition monitoring system, ensuring the safety during loading and unloading tank wagons.

Looking to the future MONAT invests substantial means in new system research and development. Presently it is working on groundbreaking solution of integrated signaling platform. The project is a part of the company development strategy. The nature of the platform is an integration of all interlocking functions



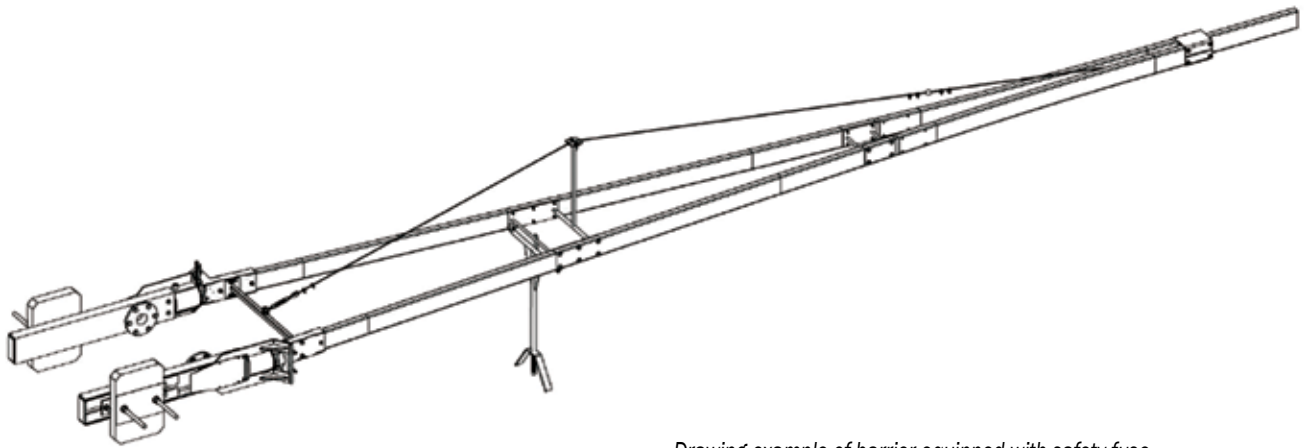
*KSP-7M computerized level crossing system*



*Maintenance works on the signal with movable head*

into one modular system, easy for configuration and extension but first of all much cheaper than other single systems, presently being installed – like station interlocking, line block, level crossing. It is possible thanks to the new generation of Programmable Logical Controllers, intrinsic fail-safe and advanced certified software tools (Safety according CENELEC standards). The central system will communicate with the controlled objects via universal, transparent object controllers. In the all-purpose signalling system the special emphasis was given on cryptographic security protecting against any unauthorized access.

We are aware that such an approach will completely change the existing technological paradigm in domain of railway signalling systems and will cause significant cost reduction of manufacturing, programming, safety case preparation as well as maintenance, scrap and renewal of systems. It will be a real revolution on the railway market.



*Drawing example of barrier equipped with safety fuse*

Beyond the services of railway signalling MONAT designs, delivers and installs other railway systems, both for main purchaser – PKP PLK as well as other companies, active in the railway market. The enterprise possesses complete machinery park. It has all necessary certificates.

The company specializes in turn key projects, rendering the warranty and post warranty services, what constitutes significant strategic advantage, enabling flexible approach to the customer full service.

Summing up, MONAT is a multi-business undertaking, active amongst others on railway signaling market segment, which is

characterized by creative, innovative and flexible solutions, tailor made to meet the needs of the 21<sup>st</sup> century. They are also the strengths in the company SWOT analysis. The company is listening to sometimes very weak signals coming from the environment and based on them adopts the organization and its activities to the current market needs. Going out to meet the future the company creates already today the future needs of its customers.

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*Company seat in Gdansk, [www.monat.pl](http://www.monat.pl)*