



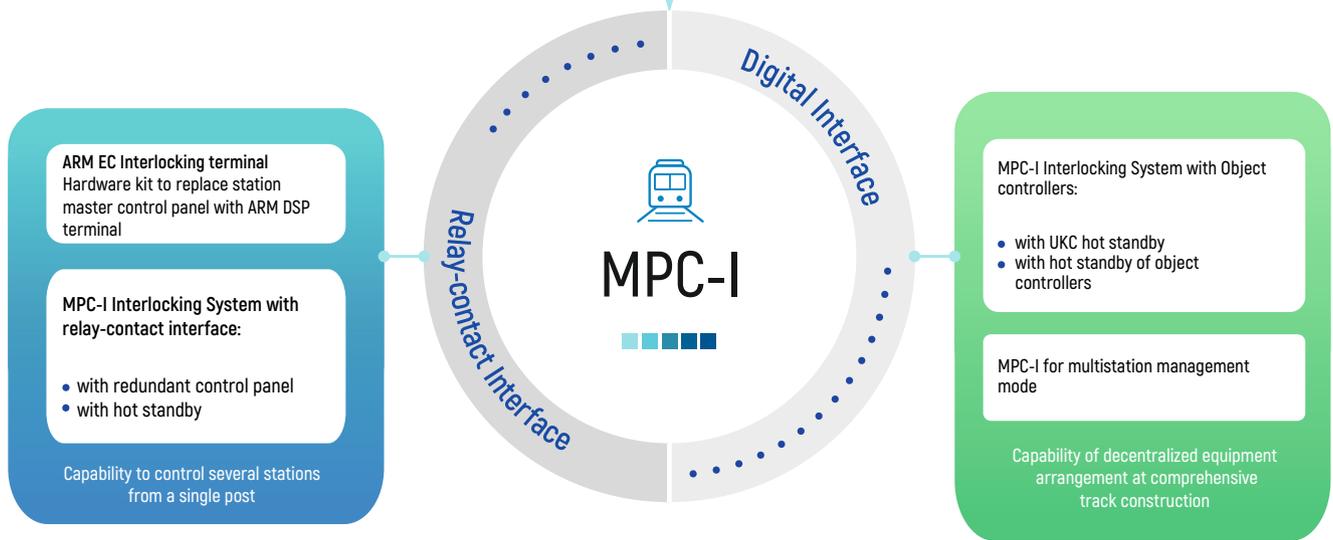
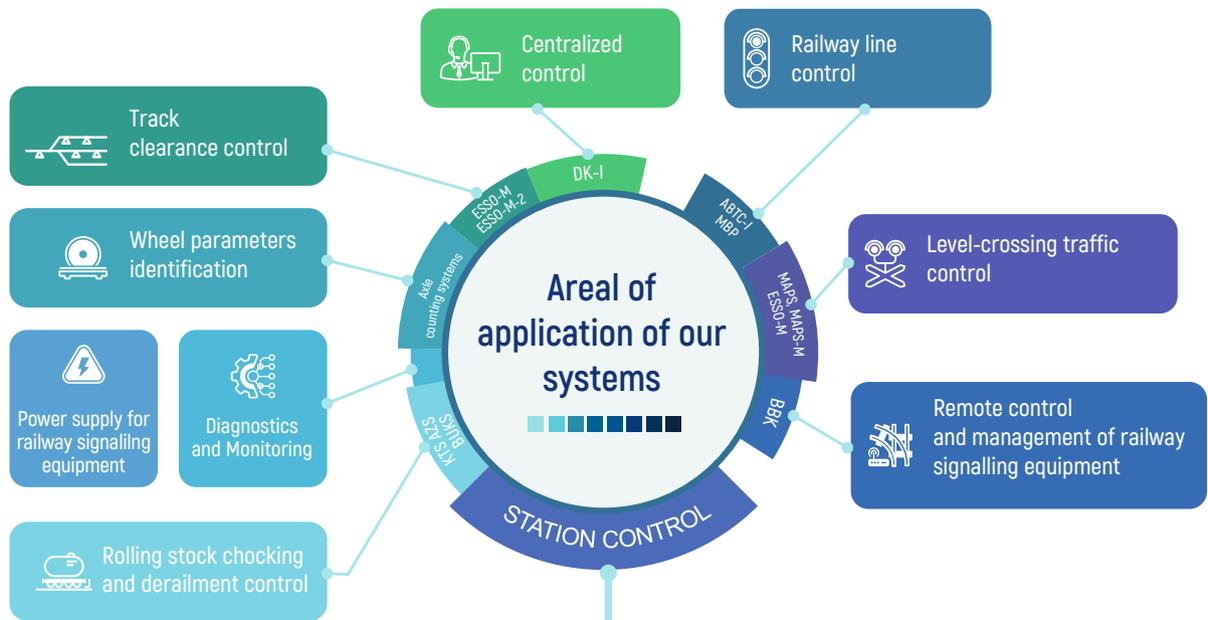
Research & Development Company
PROMELECTRONICA



**Station
Control**

MPC-I Computer Based Interlocking System





MPC-I COMPUTER BASED INTERLOCKING SYSTEM

Centralized control of trackside equipment - points, light signals, level-crossings.

MPC-I is designed for railway facilities of any configuration (small, medium, and large stations, turnouts, passing stations, junctions) that ensure routing of train and shunting traffic by light signals, as well as auto block, semi-automatic block and CTC systems.

MPC-I can be housed both in stationary buildings and MKM Transportable Equipment Modules.



APPLICATIONS

- Reduction of running costs due to the system reliability and self-diagnostics.
- Train traffic safety improvement.
- Replacement of outdated relay interlocking systems.
- Provision of better work environment and improvement of personnel productivity.
- Event logging, database building of personnel actions and operation of system components.
- Expansion of functional capabilities of interlocking system.
- Saving usable floor space at interlocking posts.
- Reduction of staff size.

STATION OPERATES
24/7/365

**OVER
170 STATIONS**

IMPLEMENTED IN
9 COUNTRIES

**≈4000 points
CONTROLLED BY MPC-I**

MPC-I is approved for application
on Russian Railways network

100% compliance to RAMS
requirements

FSTEK Certificate for absence
of undeclared capabilities and
unauthorized access

RELIABILITY AND SAFETY

Award of the Russian Railways
for the best quality of complex
technical solutions

Highest safety integrity level
CENELEC SIL4

Validated cybersecurity

Diagnostics and monitoring:
KID-I and KID-N controllers provide
accurate measurement of insulation
resistance and voltage

USER ADVANTAGES



System interface in 5 languages.



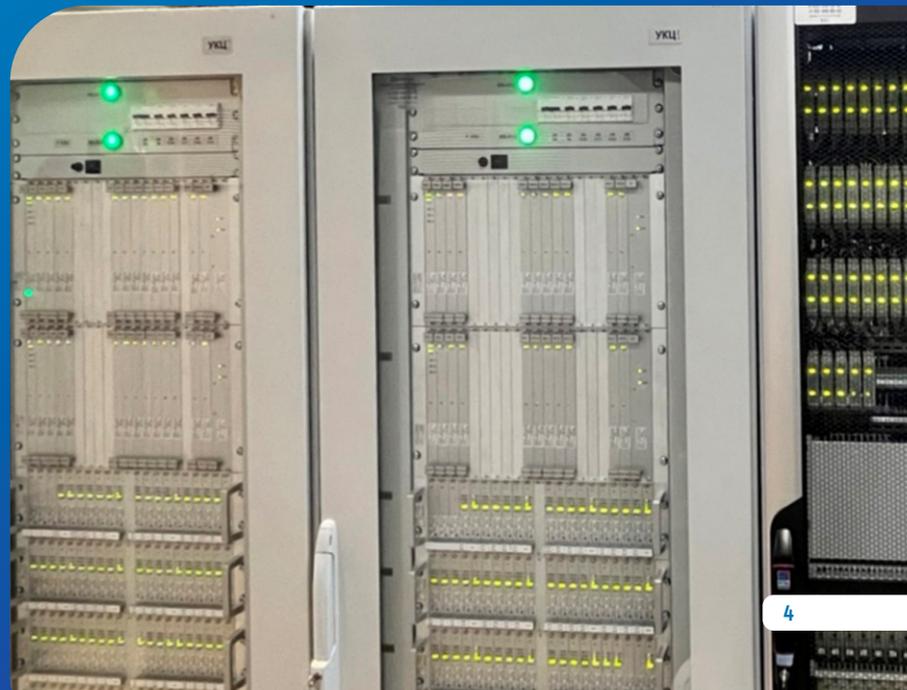
Operating documentation
translated into local language.



Improved personnel performance.

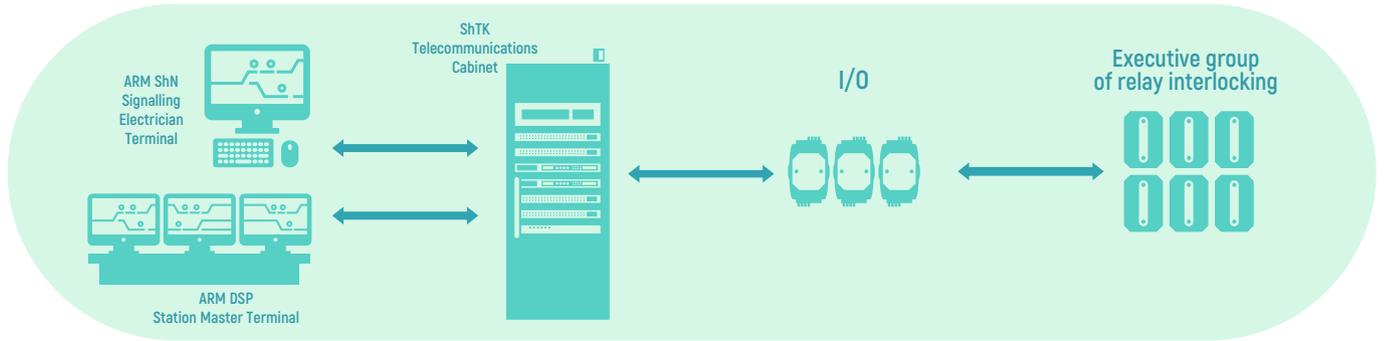


Training – simulators for station
masters, MPC-I lab set.

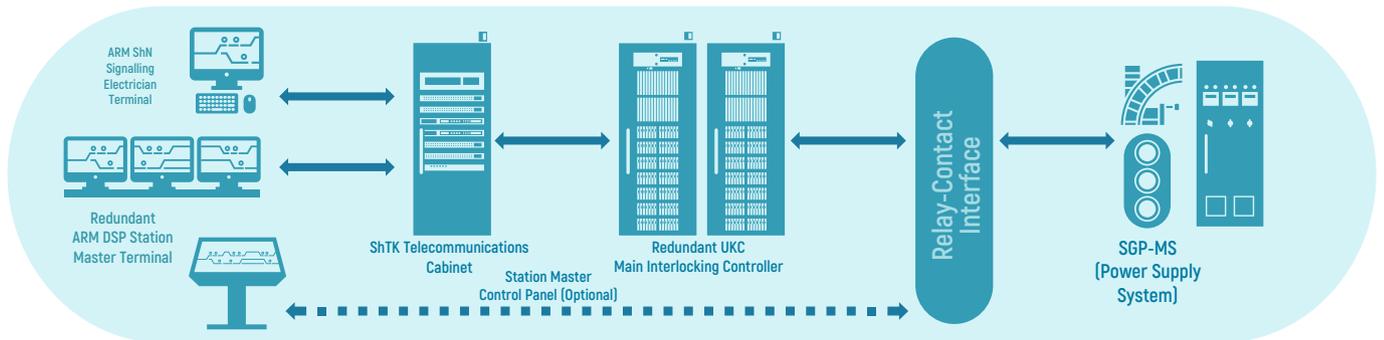


SYSTEM VARIANTS

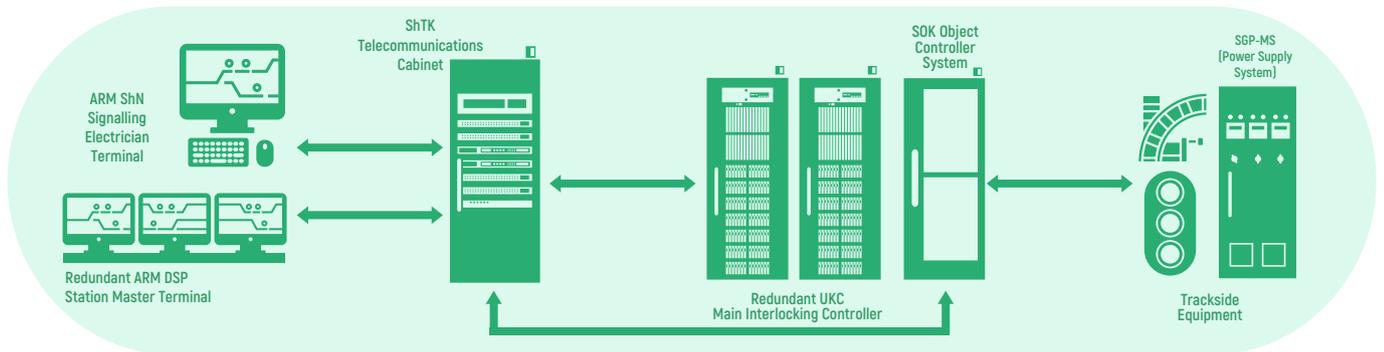
ARM EC



MPC-I with relay-contact interface

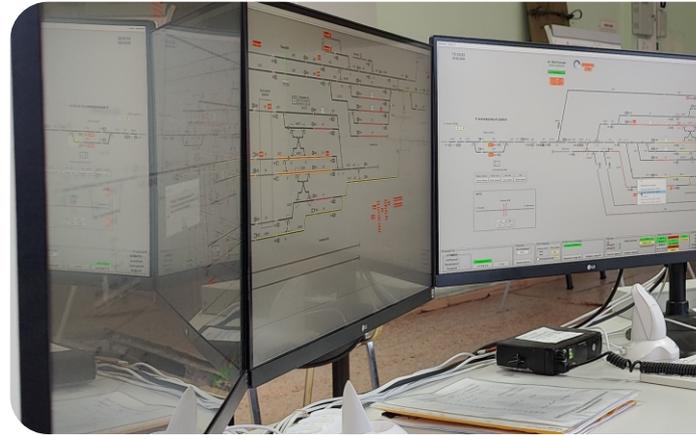


MPC-I with digital interface

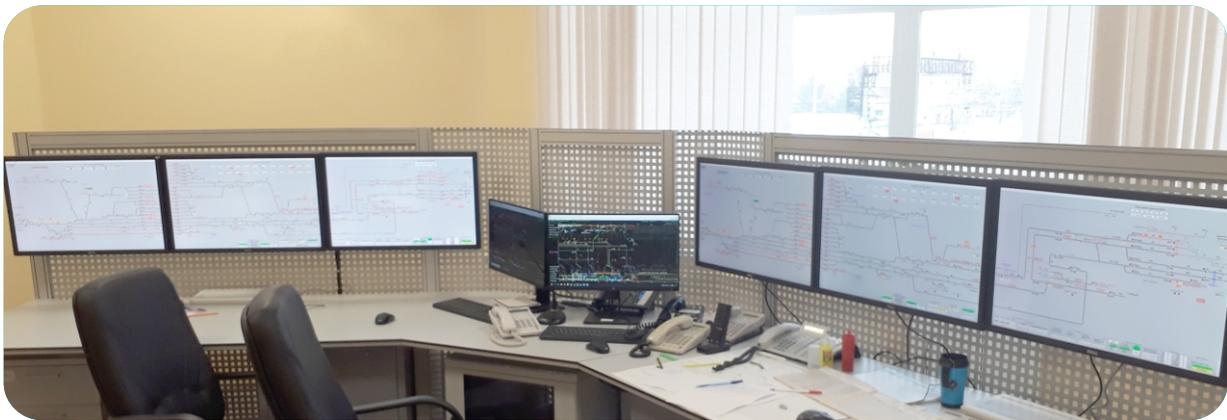


ARM EC

Technical solution designed for partial modernization of relay interlocking systems. New hardware and software allows replacing control panel with a modern Station Master Terminal at minimal expense. Modernized electrical interlocking is updated with new event logging features, as well as capability to view all actions of a station master and station status, as well as provides remote control capability.



- ◆ Can be used on stations of any size even if already installed relay electronic interlocking reached end of its life cycle.
- ◆ This solution is efficient for designing of new small stations with a small number of points.
- ◆ The solution reduces running costs for relay equipment.



MPC-I WITH RELAY-CONTACT INTERFACE

MPC-I with relay-contact interface uses 1st class safety railway relays to directly control trackside equipment.

MPC-I with relay-contact interface uses UKC Main Interlocking Controller in order to perform logical dependencies of interlocking. One UKC Main Interlocking Controller cabinet is used to control all objects on a station with up to 35 points.

Up to four UKCs can be cascaded if there are more than 35 points on a station. Each cascaded UKC provides efficient control of up to 45 points.

This solution is efficient for partial modernization of stations: for example, in a case when the cable network of trackside equipment shall not be replaced.



ARM ShN Electrician Terminal



ARM DSP Station Master Terminal



ARM ShN Electrician Terminal



UKC Main Interlocking

MPC-I WITH DIGITAL INTERFACE

MPC-I Interlocking system can be fitted with object controllers for direct control over trackside equipment.

MPC-I with digital interface uses UKC Main Interlocking Controller to perform logical dependencies of electronic interlocking. In case MPC-I is fitted with object controllers, one redundant UKC Cabinet is added to MPC-I.

Expansion of trackside equipment is achieved by adding more object controller cabinets.

On average, one object controller cabinet controls and monitors 12 points.

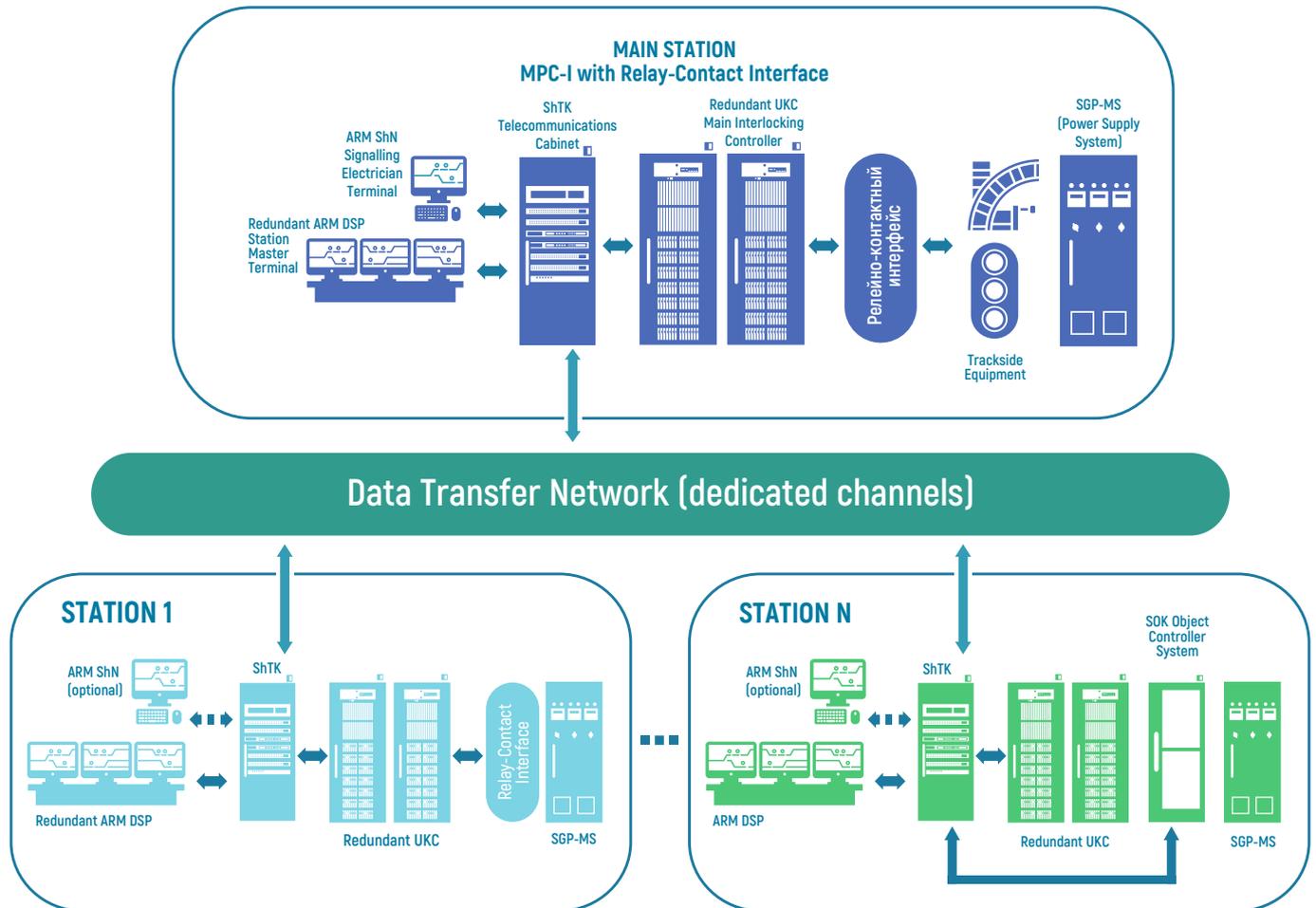
- Can be used on stations with unlimited number of interlocked points.
- MPC-I with digital interface can significantly cut down the amount of relay equipment, use integrated train spacing systems (semi-automatic, automatic block systems without intermediary signals), provide detailed diagnostic information on trackside equipment, carry out simple station modernization in case track layout changes. Redundancy of object controllers increases reliability of MPC-I system.
- Setting up multistation mode (one main interlocking processor on one main station and object controllers on up to 19 remote stations) can only be based on MPC-I with digital interface.



REMOTE STATION CONTROL FROM SINGLE POST

The solution is used on low-traffic lines in order to reduce operating staff, as well as sections that can allow for temporary work of Station Masters on separate stations.

Each station is fitted with full set of MPC-I equipment – both with relay-contact interface and digital interface.



MULTISTATION MODE

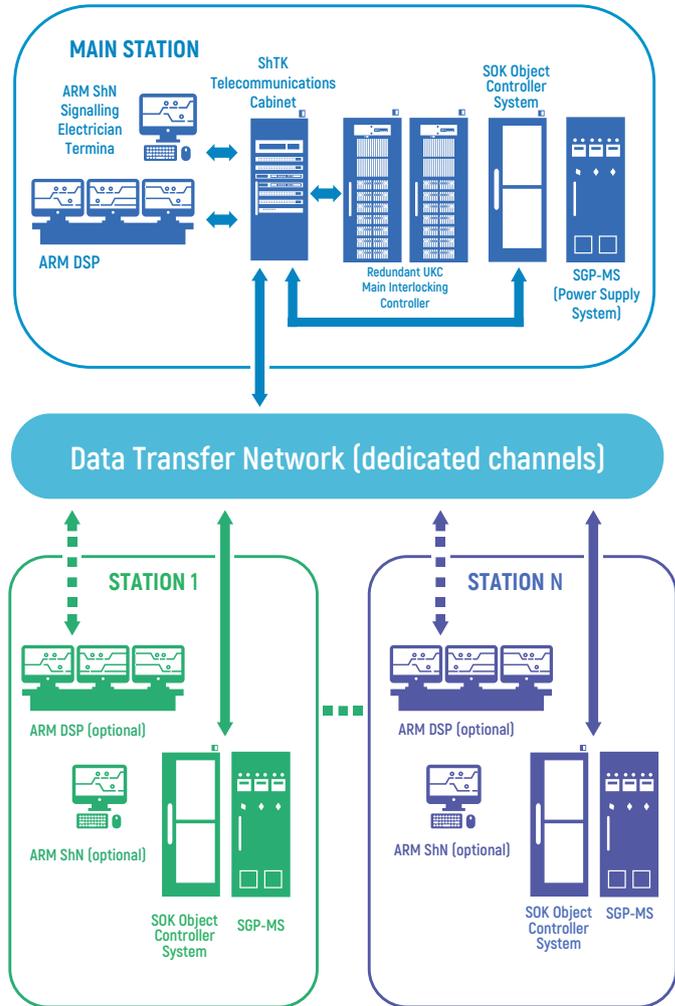
Distributed equipment allocation on major stations, control of adjacent stations without organizing central posts on them.

When used in multistation mode, MPC-I uses a single interlocking processor (redundant UKC with ShTK Telecommunications Cabinet) on a main (sectional, zonal or major intermediate) station and simultaneously interacts with object controllers on several adjacent passing lanes, turnouts and minor intermediary stations, on the basis of the full processor load.

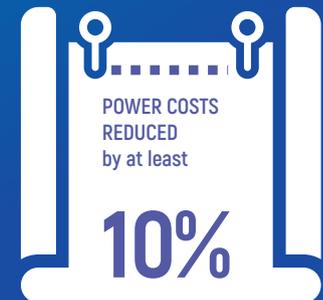
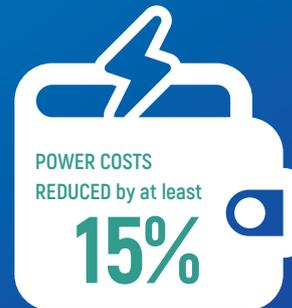
Advantages of MPC-I multistation mode:

- application of a single interlocking processor unit for the whole line of N stations;
- division of redundant interlocking processor sets to various stations of the section;
- application of standard object controller equipment for remote control over N stations;
- autonomous and independent allocation of Station Master panel on each station – continuity of operation;
- allocation of Station Master panels only on main stations;
- integration of the whole line with CTC via a single linear point of a main station.

Multistation mode can be implemented within comprehensive projects of any complexity to fit a railway line with new railway equipment.



MPC-I COST-EFFICIENCY



SGP-MS UNINTERRUPTABLE POWER SUPPLY SYSTEM

AREAS OF APPLICATION

- Replacement of outdated power supply systems.
- Provision of stable and uninterruptable power supply to signalling systems.
- Reduction of running costs due to application of low-maintenance and maintenance-free components.



AUTONOMOUS STATION OPERATION
FOR UP TO 8 HOURS*

*from uninterruptable power supply unit, in case diesel generator is used, duration is determined by its parameters

**SYSTEM TYPE
ADAPTABLE TO
STATION PARAMETERS**

**STANDARD DESIGN
SOLUTIONS**

**REDUCED
TIME FOR
TROUBLESHOOTING**

PURPOSE AND ADVANTAGES



Reception, metering, transforming, distribution of electricity.



Control of power supply quality.



Control and commutation of feeders, diesel generator control, diagnostics.



Protection against overvoltage, short circuits, environmental and surge overvoltages.



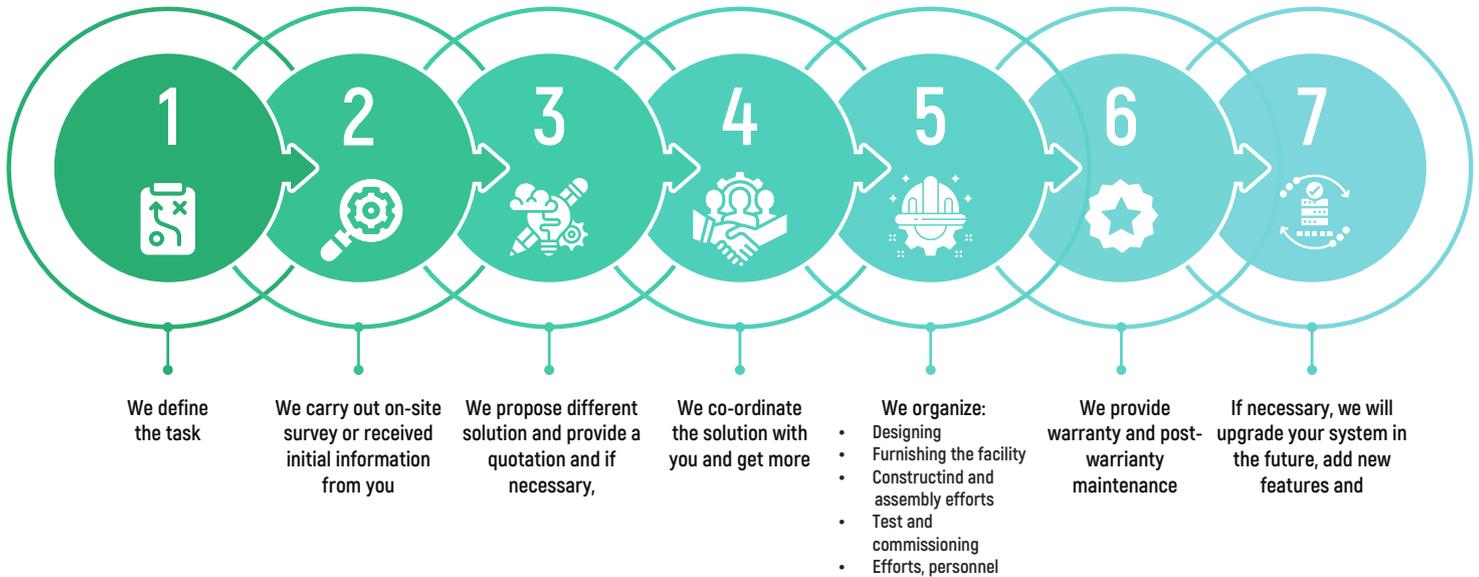
Absence of proprietary components.



Open structure – replacement/changing of parameters of separate components.



MAIN STAGES OF RAILWAY INFRASTRUCTURE MODERNIZATION



*Design, construction and delivery of equipment not manufactured by R&D Company Promelectronica can be carried out by the Customer



Research&Development Company
PROMELECTRONICA



Watch the video
about MPC-I



620078, Russia, Yekaterinburg,
128A Malysheva Street



Phone: +7 (343) 358-55-00
Fax: +7 (343) 378-85-15



info@npcprom.ru
npcprom.ru