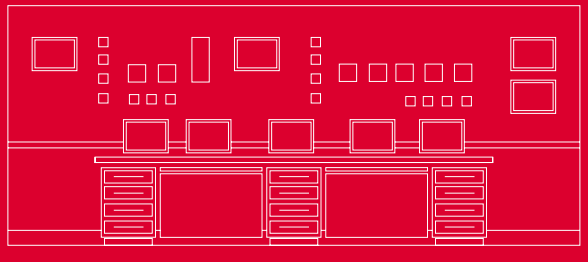
Control and dispatch desks
Mimic boards

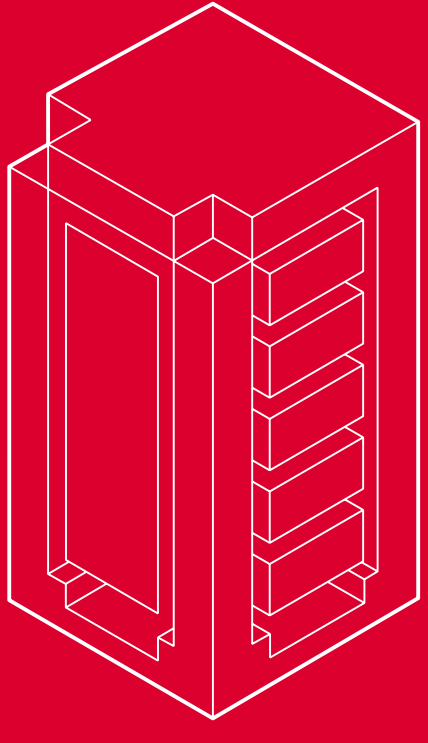
[2007]



ZPAS net

connections for you

ZPAS GROUP



Philosophy of the ZPAS Group

As a manufacturer, we operate in accordance with our well-established reputation of a reliable and trustworthy business partner offering customers top-quality products, short lead times and reasonable prices.
These are the main assumptions of our business philosophy.

The capital of the ZPAS Group is not only its modern machines, but also its highly qualified personnel. Our employees are young, creative and innovation-minded. Advanced production technologies are supported by well-planned management of all manufacturing processes.

In January 2007, the ZPAS trade mark received a new visual identification and an advanced tool supporting the company's functional organisation: ZPAS launched the implementation of an ERP-class integrated IT system Infor ERP LN.

Customers expect us to supply well-designed solutions and a comprehensive product portfolio meeting their requirements. Products developed for the IT, telecommunication and power industry sectors must have parameters and properties which meet challenging high-tech requirements. It is our objective to supply precisely such types of products.

The ZPAS Group, which pursues common and uniform goals and philosophy, integrates the product offer of ZPAS S.A. and ZPAS-NET Sp. z o.o. The motto of the ZPAS Group places an emphasis on the advantages of all products offered, the benefits of using them, the system of communication with customers, partnership, technical consulting and high level of customer service from the very first contact until order fulfilment. This shows our attitude towards customers whose requirements we want to meet at the highest level possible.

We are a Polish company supporting and promoting the high quality of Polish products and services.

We focus on advanced technologies, young and well-qualified staff and dynamic operations.

Table of contents

CONTROL AND DISPATCH DESKS, MIMIC BOARDS

ABOUT THE COMPANY

General view of the upper section of the manufacturing plant in Przygórze

ZPAS Group

Since the very beginning of its business activity in 1973, ZPAS has produced a variety of industrial cabinets and enclosures. Initially, the Company operated as the Experimental Department of the Power System Automation Institute (IASE) in Wrocław, to become a part of the Research and Manufacturing Centre for Power System Automation (CNPAE). After 1989, the management of the Company undertook actions aimed at privatisation, which resulted in the establishment of a private joint-stock company at the end of 1991. On 1 June 2004 a separate company called ZPAS-NET was spun off from ZPAS, taking over a part of the plant's production.

The line of products manufactured in the plant located in Przygórze incorporates important supporting elements of advanced telecommunications, IT and electric power systems. Thanks to new technologies and advanced design solutions, ZPAS developed a uniform and comprehensive product portfolio which makes it possible to join the previously separated groups of products in the IT and power industries.

At the beginning of the 1990s, the Company shifted its key business from the power industry into the telecommunications sector, winning a number of customers e.g. among ICT system integrators and providers. Thanks to ongoing technological development, large outlays on new investments and the implementation of quality management systems based on ISO standards in mid 1990s, ZPAS S.A. reached 50% export rate of its products within just a few years, becoming one of Poland's major exporters. Our products are highly valued by many well-known

Bird's eye view of the manufacturing plant in Przygórze

firms using ZPAS products in their most technologically advanced solutions (e.g. Lucent, Ericsson, Siemens, Areva, Anixter, Polkomtel and European Organisation for Nuclear Research - CERN). Currently, the ZPAS Group markets a very broad range of equipment (mainly enclosures) designed for performing important functions in a variety of industries using electronic communication.

Quality and the environment

ZPAS S.A. holds both ISO 9001:2000 Quality Assurance System Certificate and ISO 14001:2004 Environmental Management System certificate. More detailed information about the Company is available on the Company's website at www.zpas.com.

ABOUT THE COMPANY

Lower section of the manufacturing plant in Przygórze – Metal Working Plant

Seat of the Company's Management Board

Sales agencies

The Company has around a dozen sales agencies all over Poland. A detailed list is available at www.zpas.pl.

ZPAS products are also sold abroad through a network of sales representatives and trading partners in Austria, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Denmark, France, Germany, Greece, Hungary, Iceland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Morocco, the Netherlands, Norway, Portugal, Russia, Slovenia, Spain, Sweden, Switzerland and Ukraine. Detailed information on foreign sales representatives is provided on request by the international trade section of the Company's Marketing Department.

ZPAS offers:

- 19" and 21" data communication enclosures (including server cabinets, telecommunication cabinets, EMC enclosures and others – both in floor-standing and wall-mounted versions),
- empty power cabinets (without electrical devices),
- customised cabinets,
- products made of stainless acid-resistant steel.

ZPAS-NET offers:

- structural cabling elements and telecommunications accessories,
- fibre optic distribution frames,
- outdoor cabinets,
- low-voltage cabinets and switchgear with electrical devices,
- dispatch and control desks,
- mimic boards,
- ZPAS Control Oversee - system of supervising climatic conditions in server rooms, data communication and power cabinets, and elements of building and industrial automation.

ABOUT THE COMPANY

Automatic powder paint shop

GUARANTEE

Note: ZPAS-NET reserves the right to introduce design changes in its products.

DISPATCH AND CONTROL DESKS

REFERENCES FOR DISPATCH AND CONTROL DESKS

Control and dispatch desks have been manufactured by ZPAS S.A. since the very beginning of the Company's activity, i.e. 1973, and sold both on the Polish and foreign markets. A total of several hundred desks have been manufactured to date, with eighty systems completed during the last five years. ZPAS control and dispatch desks are mainly designed for power plants, heat and power generation plants, power distribution companies, sugar factories, integrated mills, railway companies, cement plants, chemical plants, gas works, coking plants, hard and brown coal mines and many other sectors of industry and business.

Our product portfolio includes universal modular desks and consoles made on special orders according to the customer's documentation or design developed by ZPAS SA. The product range also incorporates a series of types of standard PSL control desks with a modular design, intended for production lines, tooling centres etc. Each console may be delivered together with complete electric equipment and accessories. Assembly on site is also available on request.

Sample realisations

- **ABB CENTRUM Wrocław**
  - Elektrociepłownia Gorzów (heat and power generation plant)
  - Tłocznia Gazu Kondratki (gas compressor plant)
  - Tłocznia Gazu Włocławek (gas compressor plant)
  - Tłocznia Gazu Ciechanów (gas compressor plant)
  - Tłocznia Gazu Szamotuły (gas compressor plant)
  - Tłocznia Gazu Zambrów (gas compressor plant)
  - Elektrownia Jaworzno III, blok 6 (electric power station, block 6)
  - Elektrociepłownia Boruta in Zgierz (heat and power generation plant)
  - Elektrociepłownia Władysławowo (heat and power generation plant)
- **ABN Russia**
  - Earthquake Research Centre
  - Gazprom
- **BELMATEX Bielsko-Biała**
- **CSC AUTOMATION - Ukraine**
- **Cukrownia Krasnystaw S.A. – Siennica Nadolna (a sugar factory)**
  - electrical dispatch room
- **Cukrownia Lublin (a sugar factory)**
  - electrical dispatch room
- **CYNK-MAL Sp. z o.o. - Legnica**
- **DAEWOO Motor Polska Sp. z o.o. - Lublin**
  - control room of the heat and power generation plant
- **EMERSON – Płock petroleum refinery**
- **EMPOR Kielce**
  - Detention Centre in Piotrków Trybunalski
- **Energetyka Szczecińska (a power distribution company)**
  - RDR Goleniów
- **ELEKTROBUD - BYDGOSZCZ Sp. z o.o.**
- **ELBUD - Warszawa**
  - Substation Pasikurowice
- **ELKON ELBUD - Kraków**
  - Substation Wielopole
- **ELEKTROBUDOWA S.A. in Katowice**
  - Heat and power generation plant no. 3 in Łódź
- **Heat and power generation plant II – Bydgoszcz**
  - control room
- **Heat and power generation plant GIGA Świdnik**
- **ELEKTROMONTAŻ – Katowice S.A.**
- **ELEKTROMONTAŻ – Wrocław S.A.**
- **Heat and power generation plant Kozienice – Świerże Górne**
  - control rooms for blocks 2, 3, 4, 5, 6, 7, 9, 10
  - control room for demineralisation plant
- **Electric power station Połaniec**
  - control rooms for blocks 1, 4, 5
  - control room of the station's operating engineer
  - central control room of the power blocks
- **Electric power station Rybnik**
  - control room for block 8
- **Electric power station Turów - Bogatynia**
  - control room for blocks 8, 9, 10
- **Hydroelectric power station Dychów**
- **ELPRO Leit- und Energietechnik GmbH - Berlin**
- **ELTARG Dąbrowa Górnicza**
- **ELWRO SYSTEM Wrocław**
- **Energetyka i Technika Grzewcza TERMAL Sp. z o.o. (power and heating company)**
  - Zakład Utylizacji Odpadów – Warsaw (a waste disposal plant)
- **EnergiaPro - Wrocław**
  - Regional Electric Power Control Facility – local MV control room in Wrocław
  - Regional Electric Power Control Facility – local LV control room in Wrocław
- **ENERGOAPARATURA S.A. - Katowice**
  - EC Zabrze
- **ENERGOPROJEKT - Gliwice**
- **ENERGOTEST ENERGOINWEST Rybnik**
  - Electric power plant in Rybnik
- **Fabryka Kotłów RAFAKO S.A. – Racibórz (a boiler manufacturing plant)**
- **GE Industrial Systems GmbH - Berlin**
- **HONEYWELL Sp. z o.o. - Warszawa**
- **INDUSTRIAL CONTROL Sp. z o.o. - Warszawa**
- **JJK ENERGIE - France**
  - consoles for the Ruwais petroleum refinery, Abu Dhabi (United Arab Emirates)
- **JJK ENERGIE - Warsaw**
  - Heat and power generation plant Opole
- **Keller - Germany – modular desks for Spain and Australia**
- **KGHM Polska Miedź S.A.**
  - Zakłady Górnicze Lublin (a mining company)
- **Kopalnia Węgla Brunatnego – Kleczew (a brown coal mine)**
  - dispatch room of the Kazimierz Wielki strip mine
  - dispatch room of the Lubstów strip mine
  - dispatch room of the Józefów strip mine
- **LEOLA BALT - Kaliningrad**
- **MAHLE - Krotoszyn**
- **MAGO - HURT Sp. z o.o. - Jelenia Góra**
- **MERCOMP PŁOCK Sp. z o.o.**
- **METSO Automation**
  - Electric power plant in Siekierki
  - Arctic Paper Kostrzyń
  - Electric power plant in Żerań
- **Mostostal Zabrze**
  - Electric power plant in Cieszyn
- **Neles Automation**
  - Electric power plant in Żerań
- **PHU Normatech S.C. - Starachowice**
- **PPUiH TEJA Sp. z o.o. - Ząbkowice Śląskie**
- **PSE Centrum Sp. z o.o. – Control room of the Substation 220/110 kV Mory**
- **Prochem – petroleum refinery in Trzebinia**
- **Przedsiębiorstwo Kompletacji i Montażu Systemów Automatyki – Tychy (an automatics plant)**
- **TERMALL Bełchatów**
  - Heat and power generation plant in Katowice
- **QMAC Sp. z o.o. - Tarnów**
- **Walcownia Stali Czechowice – Dziedzice (a steel rolling mill)**
- **Westinghause Poland**
  - Electric power plant in Gacko – Bosnia and Herzegovina
- **Wrocławskie Kopalnie Surowców Mineralnych S.A. (a mining company)**
- **Zakłady Azotowe Kędzierzyn (a chemical plant)**
  - Central control room of the ammonia section
  - Control room of compressors in the ammonia section
- **Zakłady Azotowe Puławy (a chemical factory)**
- **ZAPIS HARDWARE Ostrów Wlkp.**
  - Electric power station in Połaniec
- **Zakład Energetyczny Będzin (a power distribution company)**
  - Operation control room
- **Zamojska Korporacja Energetyczna S. A. (a power distribution company)**
  - Regional operation control room - Chełm
- **Zespół Elektrowni Wodnych Porąbka-Żar S.A. in Międzybrodzie Żywieckie (hydroelectric power stations)**
  - operation dispatch room
  - control room of the carburisation section in the heat and power generation plant in Katowice
- **Zespół Elektrowni Wodnych Niedzica (hydroelectric power stations)**
  - control rooms for the power station's blocks
- **Zielonogórskie Kopalnie Surowców Mineralnych S.A. (a mining company)**
- **ZSA MERA – PNEFAL Sp. z o.o. - Warsaw**

GENERAL DESCRIPTION OF DESKS

In the area of control and dispatch desks, ZPAS S.A. mainly offers products with shape and functionalities adjusted to the needs of a particular facility in which they are to be installed. Such consoles are manufactured according to the documentation supplied by the customer or prepared by the Design Department of ZPAS S.A. Quite often our consoles are a part of complex orders incorporating matching electrical accessories, mimic boards and on-site assembly.

Because of their round-the-clock use, our desks are made of top-quality materials which guarantee high durability and visual attractiveness. To this aim, ZPAS S.A. designers co-operate with design offices, architects and ergonomics specialists.

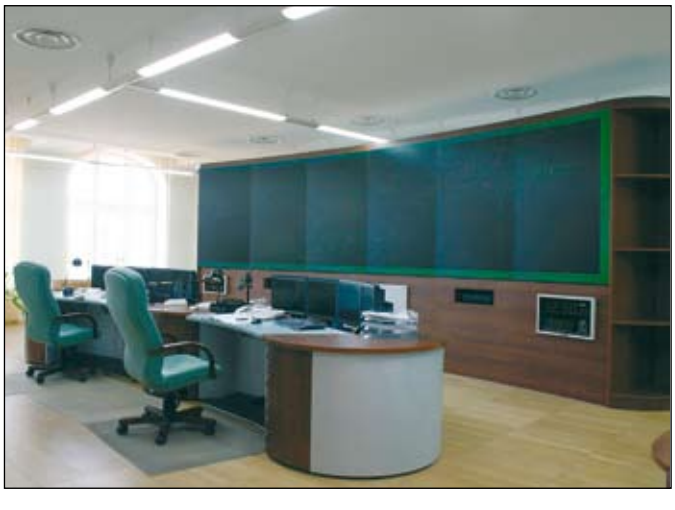
CONTROL DESKS DESIGNED FOR INDUSTRIAL FACILITIES

Control desks can be made entirely of sheet steel. Console shape and dimensions should be tailored to a particular facility and appliances in accordance with customers' individual needs and requirements.

DISPATCH AND DISPATCH/CONTROL DESKS

In the case of dispatch or dispatch/control desks which also perform a function of an operating workstation, the design comprises a base, a desktop, and – if necessary – additional tops.

Desktops are made of a wide range of materials, from wood-like boards to synthetic materials – depending on particular needs and standard requested by the customer. In simple designs which do not call for an application of expensive technologies, double-sided laminated or MDF boards are typically used, in a wide range of colours of the finishing laminate elements. Acrylic materials, such as Paracor or Corian, enable a wider range of applications.



Desktops can also be made of mimic panels which allow quick and easy changes of visual matrix diagrams and arrangements of installed instruments.

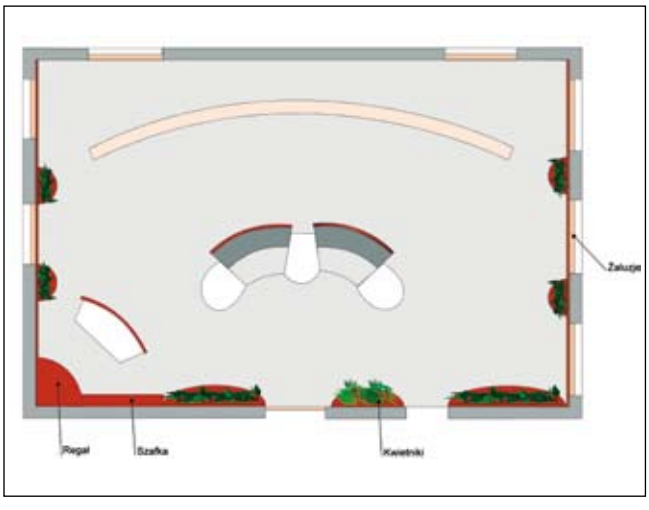
Desktops can be equipped with tops of various shapes and dimensions making it easy to install monitors, push buttons, meters, displays or other types of devices.

COLOUR SCHEMES

Metal elements of consoles can be painted, galvanised or made of plain stainless steel, without any extra surface finish. We use epoxy and polyester powder paints, textured, in all colours from the RAL catalogue.

SAMPLE CONFIGURATIONS

Thanks to regular and close co-operation with specialists from many fields, including industrial design, ergonomics and interior architecture, and an experienced manufacturing team, ZPAS-NET is able to provide customers with any configuration of control desks, present their spatial arrangement in a room and assembly the complete structure on site in a turnkey system.



With the help of dedicated computer programmes, we are able to present our customers sample dispatch/control room arrangements, including a proposal for a complete range of fittings suited to a given facility and on-site assembly.

SAMPLE CONFIGURATIONS OF DISPATCH ROOMS

PDM DISPATCH AND CONTROL DESKS

General description

The new line of dispatch and control desks produced by ZPAS S. A. is based on an innovative design approach incorporating a modular structure.

The main assumption in the process of designing new modular desks was to develop and define a standard which – due to its modular construction – would enable a wide range of available combinations of system elements.

This solution, compared to traditional one-piece designs, costs less and can be delivered to the end customer within a shorter time. Now a potential customer can choose between a number of standard modules which – assembled together – make up the finished product.

An appropriate selection of elements makes it possible to adjust desktop colour to the overall colour scheme of a given room or to specific customer requests.

Moreover, the structure itself, based on a central frame, makes it possible to use different finishing materials, which gives customers a possibility to choose between more economical and more luxurious versions.

In terms of industrial design, the main idea of new modular consoles is based on the development of several interchangeable elements marked by innovative shape and construction properties.

Modular structure enables to adjust consoles to virtually every dispatch/control room.

PDM DISPATCH AND CONTROL DESKS

Components

PC module

A two-tier 19" cabinet designed for installing the central unit of the system or other types of electronic devices. The upper part of the cabinet is used as a support for the operating desktop, while the lower (rear) part is designed for placing monitors. Two PC modules are designed for one workstation.

Cylinder with 8 drawers

A central unit which makes it possible to arrange sets at any desired angle.

It can be connected to:
- the PC module,
- the shield joining the cylinder with the PC module

Half-cylinder with 4 drawers

A side element for closing the set.

It can be connected to:
- the PC module,
- the shield joining the cylinder with the PC module,
- the other half of the cylinder (central module)

Side wedge

An end element (without drawers).

It can be connected to:
- the PC module.

15° wedge

The wedge enables bending sets by 15°. If more than one wedge is used, then the bending angle can be increased.

It can be connected to:
- the PC module

PDM DISPATCH AND CONTROL DESKS

Components

Rear shield

A shield for covering the rear space between the cylinder and the PC module.

It can be connected to:

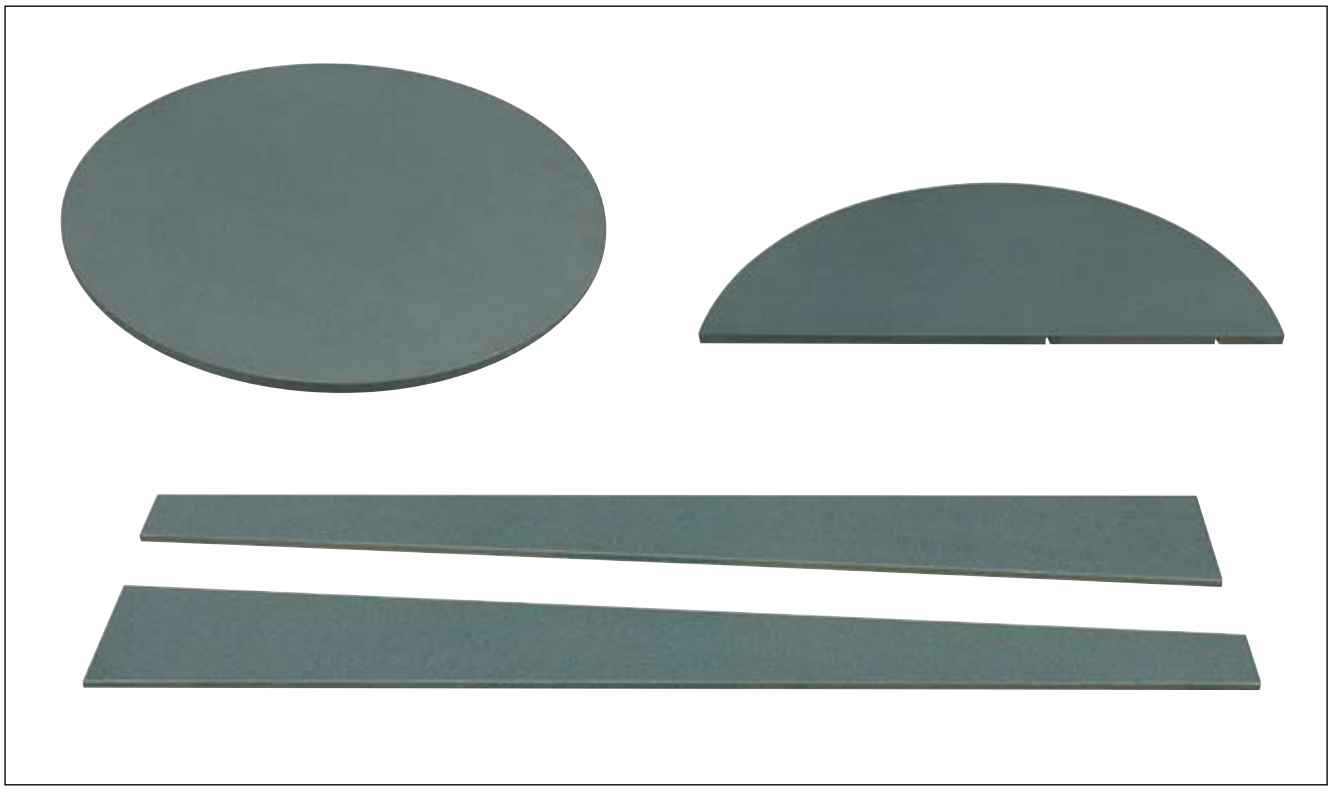
- the PC module,
- the cylinder as the central element of the console

Desktops

Desktops, sides, tops and other elements of consoles can be make of modern synthetic materials - depending on customers' needs and the required standard. Given the fact that they are used round-the-clock, consoles must be made of high-quality materials ensuring long durability and visual attractiveness.

Desktops of the proposed modular control and dispatch desk are made of the following materials:

- Chipboard, laminated on both sides, with edges protected by PCV strip matching the colour of the desktop.
- MDF board, laminated, with increased resistance to abrasion, with edges protected by PCV strip matching the colour of the desktop.
- Modern synthetic materials, for example Paracor/Plexicor, Corian, SSV

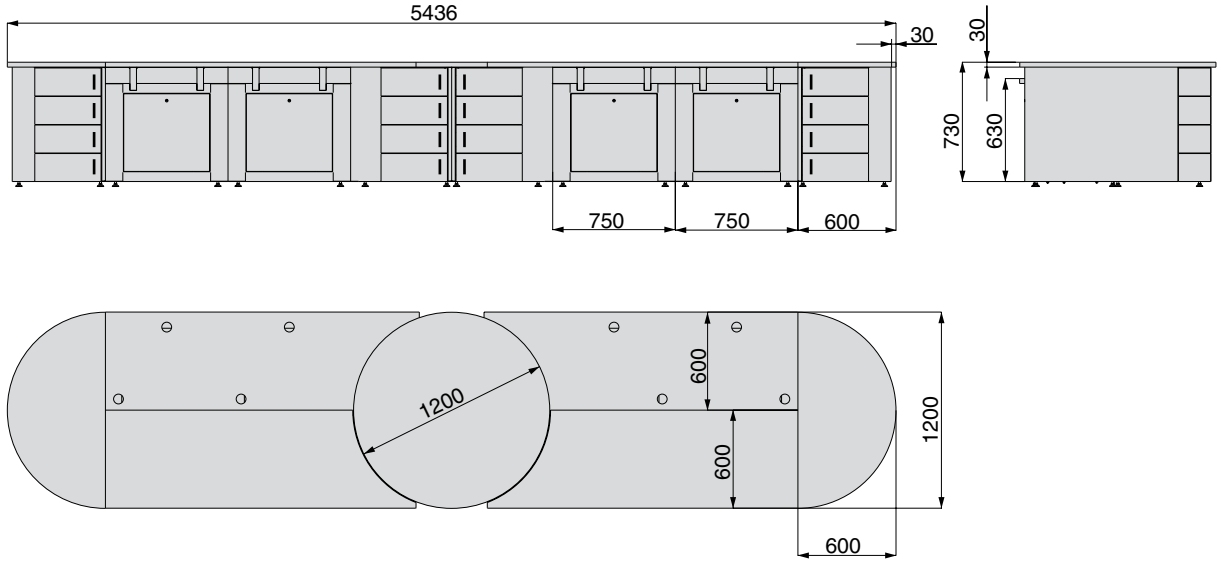


PDM DISPATCH AND CONTROL DESKS

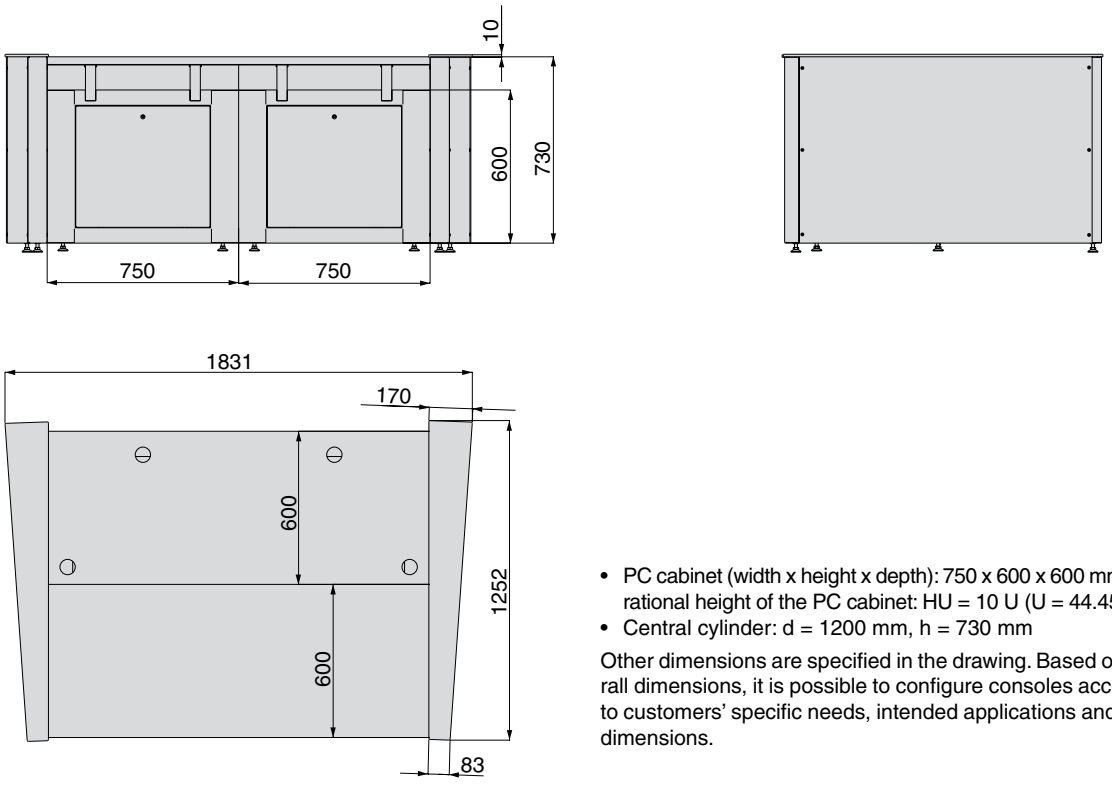
Overall dimensions of components

An appropriate configuration of the typical components described above allows to create a virtually unlimited number of operator workstations.

Straight-line double-station desk



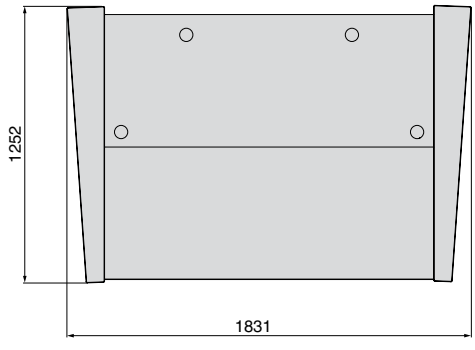
Single-station desk



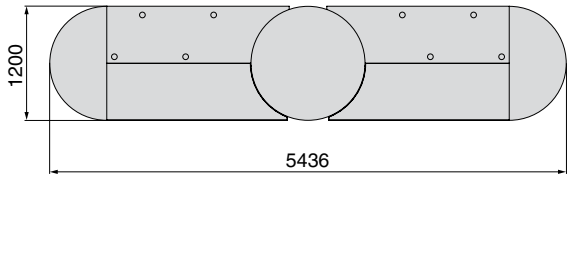
- PC cabinet (width x height x depth): 750 x 600 x 600 mm;operational height of the PC cabinet: HU = 10 U (U = 44.45 mm)
- Central cylinder: d = 1200 mm, h = 730 mm

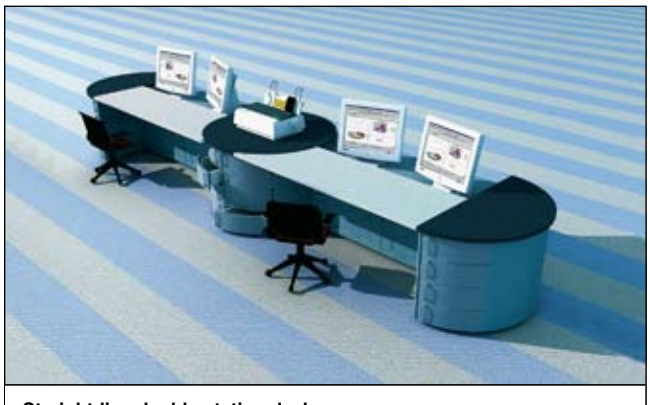
Other dimensions are specified in the drawing. Based on overall dimensions, it is possible to configure consoles according to customers' specific needs, intended applications and room dimensions.

PDM DISPATCH AND CONTROL DESKS

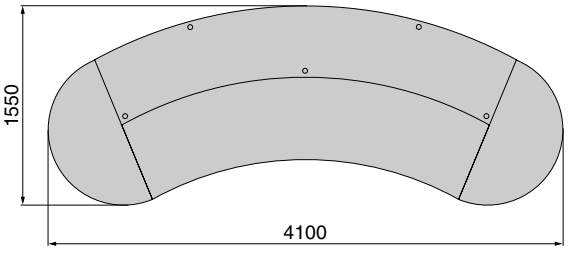


Single-station desk

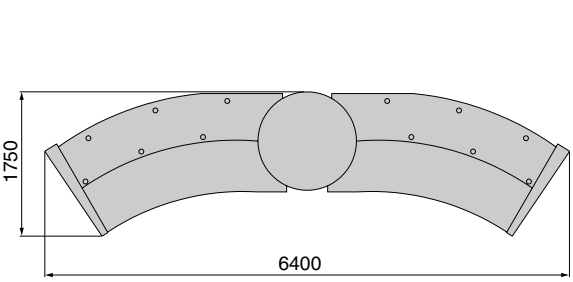




Straight-line double-station desk



Arch-shaped desk



“Broken-line” double-station desk

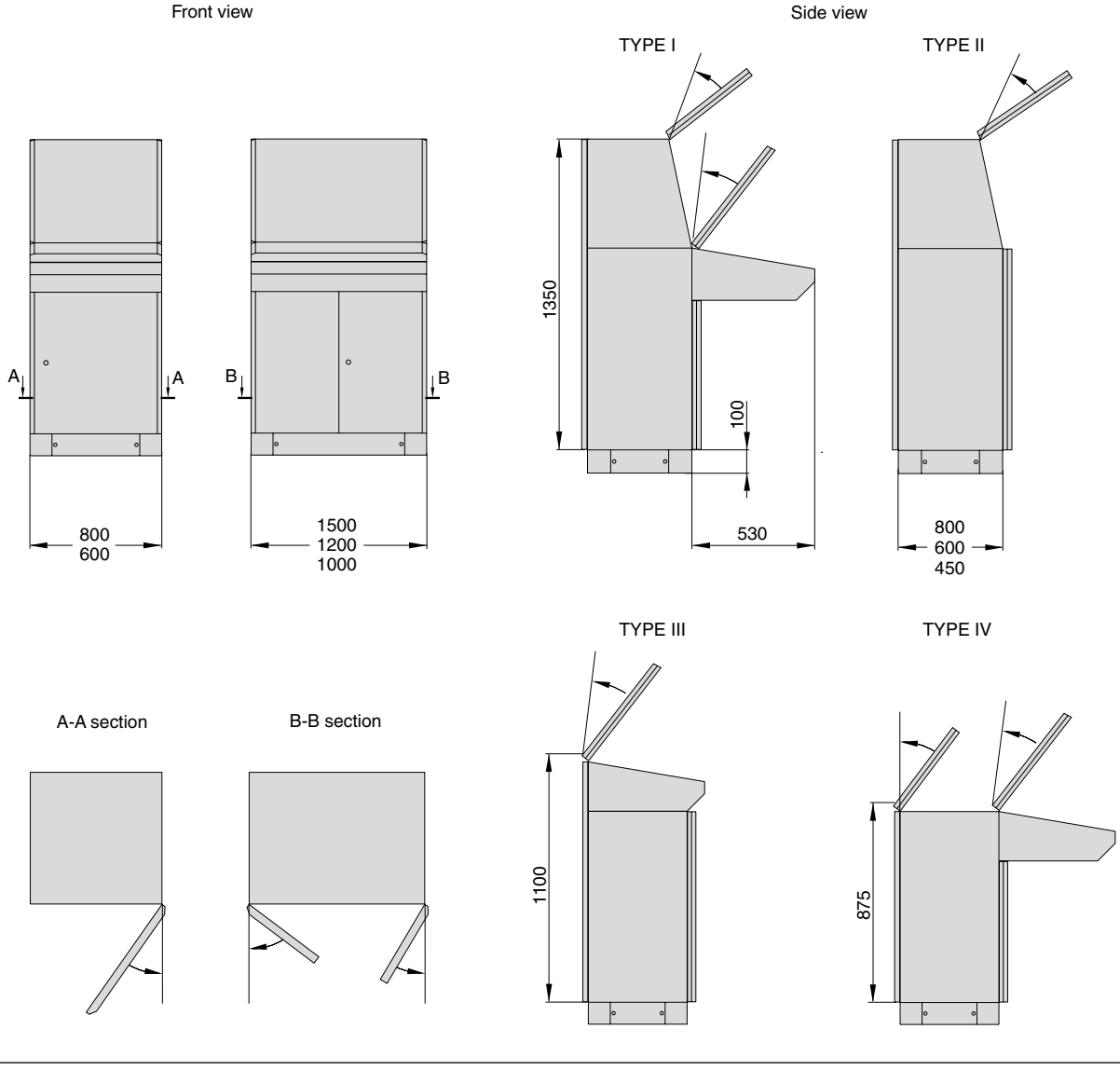
PSL CONTROL DESKS

PSL-type control desks are designed for mounting control apparatus, measurement and monitoring systems, computer equipment and visualisation devices representing production processes. They are particularly recommended for operating workstations in automated processing lines or machining centres. As a standard, PSL control desks are manufactured in four types.

Sample control desk
1. Top part, 2. Hinged panel of the front segment, 3. Top segment, 4. Front segment, 5. Bottom segment, 6. Rear shields, 7. Door, 8. Plinth

NOTE:
- Both top and bottom segments are equipped with mounting plates with adjustable mounting depth.
- Cutouts in the panels of the top and front segment can be tailored to the customer's requirements.
- Cable entries are located in the base of the bottom segment.
- Desk is set on a plinth which can be anchored to the floor.

PSL CONTROL DESKS



SAMPLE CUSTOMISED PROJECTS

Single-station desk with a top

A single-station dispatch desk with a top featuring a matrix board together with a mimic diagram. The support structure of the desk is made of powder-coated sheet steel. The desktop is made of laminated chipboard.

Stainless steel desk

A stainless steel desk supplied to GE Industrial Systems - Berlin.

SAMPLE CUSTOMISED PROJECTS

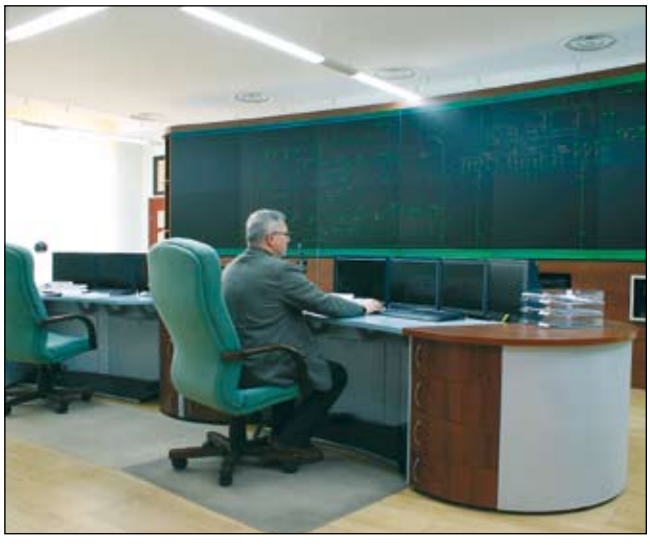
Single-station desks

Desks made up of standard 19" metal cabinets, a side element and an MDF board desktop with increased mechanical resistance and quality.

SAMPLE REALISED PROJECTS

Regional power dispatch facility in Wrocław

A PDM-type modular control desk installed in the medium-voltage dispatch room.



An ARCUS-type modular control desk installed in the low-voltage dispatch room.

SAMPLE REALISED PROJECTS

Chemical plant Kędzierzyn S.A.

PDM-type modular control desks.

SAMPLE REALISED PROJECTS

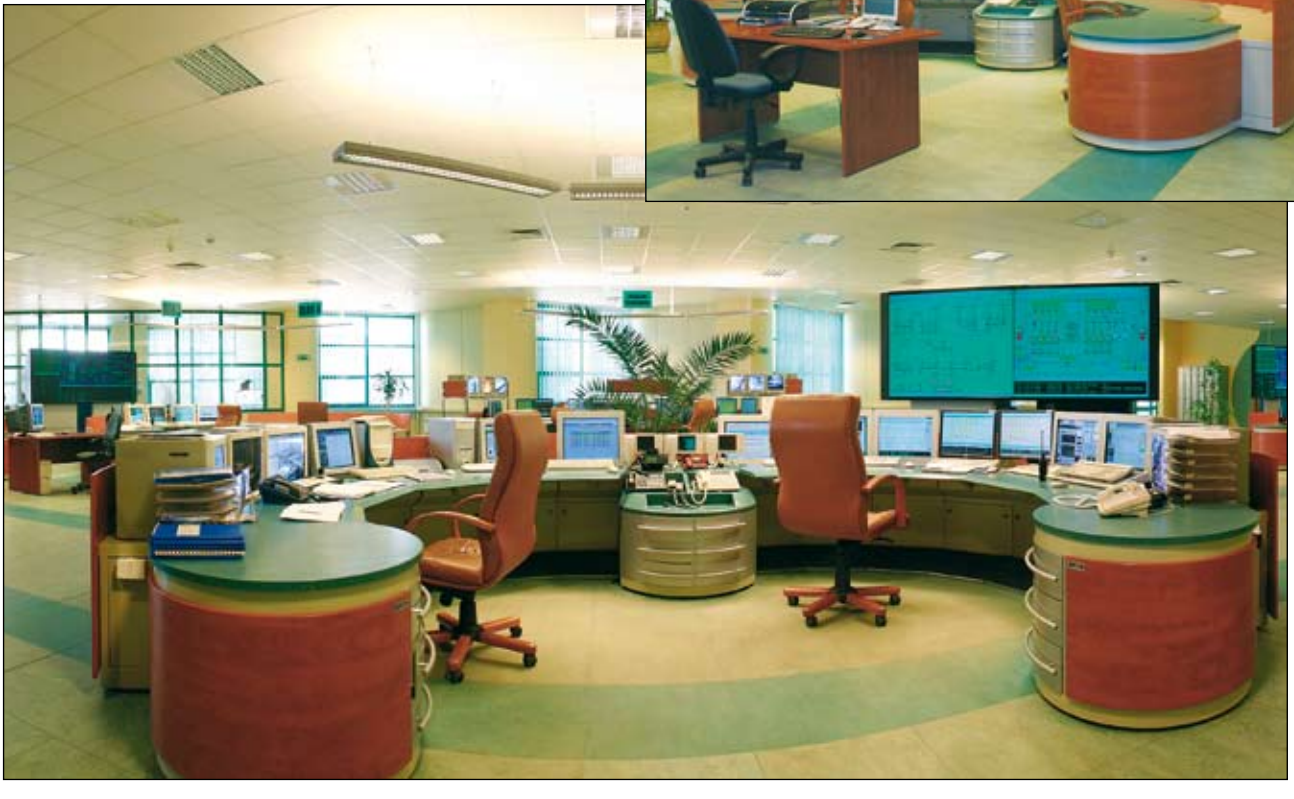
Control room in a Warsaw power station

A PDM-type modular control desk

SAMPLE REALISED PROJECTS

Połaniec electric power station

ARCUS-type modular control desks installed in the central control room.
Dispatcher workstations of all power station blocks are located in one room.



SAMPLE REALISED PROJECTS

Power control room in Skawina electric power station

PDM-type modular control desk with a mimic board undergoing modernisation.

SAMPLE REALISED PROJECTS

Ciechanów gas compressor plant

A PDM-type modular desk in the control room of the gas compressor plant.

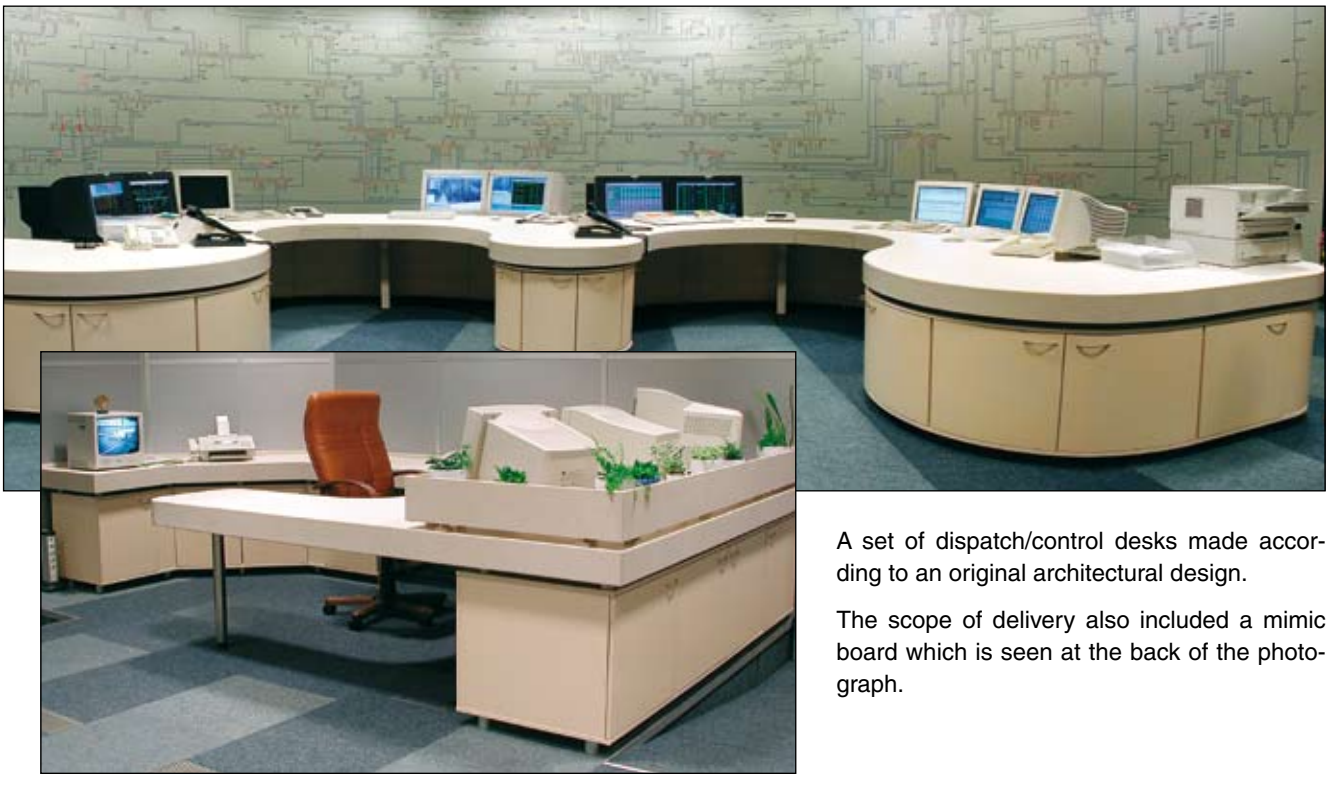
SAMPLE REALISED PROJECTS

Kondratki gas compressor plant

A control desk specifically designed for installing computer equipment. The desk is composed on standard 19" metal cabinets and a double-tier Corian desktop.

SAMPLE REALISED PROJECTS

Regional power dispatch facility in Katowice



A set of dispatch/control desks made according to an original architectural design.

The scope of delivery also included a mimic board which is seen at the back of the photograph.

Control desk supplied to GAZPROM Russia

A set of dispatch/control desks made according to an original architectural design. The operating part of the desktop is made of Corian, while the narrower rear part is designed for installing LCDs.

POWER STRIPS FOR DISPATCH DESKS

Power strip LZ-30 F

Technical data:

Rated voltage	230 V AC
Maximum current	16 A
Rated power	16 A / 3600 W
Main conductor	1.5 mm2
Protection system	2P + Z
Protection degree	IP 20
Surge current	6.5 kA
Power network filter	30 MHz

Advantages:

- Optimum strip height: 1 U = 44.45 mm.
- Four mounting positions of fixing brackets.
- 35° inclination of outlet boxes allows for a virtually unlimited use of angle plugs - possibility of strip fixing directly one above another.
- Easy, practical, universal and quick strip mounting.
- Strips equipped with a network filter and overvoltage protection ensure:
  - Effective protection against effects of interference or surge.
  - Extension of life of supplied ITC equipment, computer systems, audio-visual devices, etc.

Dimensions:
19" x 1 U (440 x 44 x 44 mm)

Accessories:
Five sockets with an earthing pin, an illuminated switch, network filter, overvoltage protection, optical signalling system for overvoltage protection actuation, a feeder cable (3 m) with a plug, fixing brackets and accessories for panel mounting on the 19" frame.

Note:
Other types of sockets can be incorporated into the strip on customer's request.

Portable power strip

Dimensions:
240 x 116 x 60 mm

Accessories:
Up to 12 outlets in one unit, an illuminated switch, a network filter, overvoltage protection, optical signalling system for overvoltage protection actuation, a feeder cable (1.5 mm) with a plug, fixing brackets and accessories for panel mounting.

POWER STRIPS FOR DISPATCH DESKS

Power strip mounted above the desktop

Accessories:
3 network sockets, RJ 45 (CAT 5) – a fully shielded socket outlet for mobile computer connection,
a feeder cable (3 m) for data transmission, fixing brackets and mounting accessories.

Power strip mounted directly to the desktop

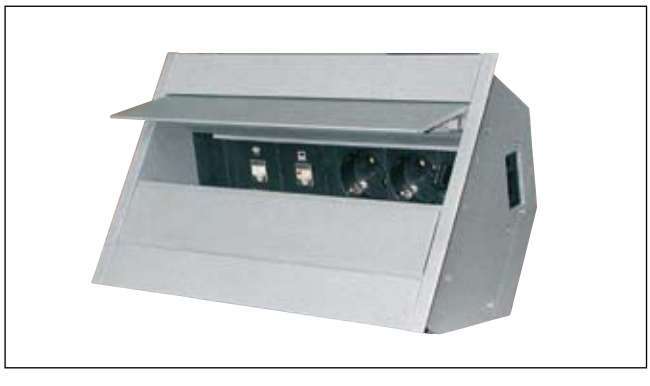
Dimensions:
324 x 74 x 87 mm

Accessories:
3 network sockets, RJ45 (CAT5) – a fully shielded socket outlet for mobile computer connection, RJ12 – (ISDN) a fully shielded socket for phone connection, fixing brackets and mounting accessories.

Power strip fixed into the desktop plate

Dimensions:
324 x 74 x 87 mm

Accessories:
2 or 4 network sockets, 1 or 2 RJ45 (CAT5) – fully shielded socket outlets for mobile computer connection, RJ12 – (ISDN) a fully shielded socket for phone connection, fixing brackets and mounting accessories for panel installation.



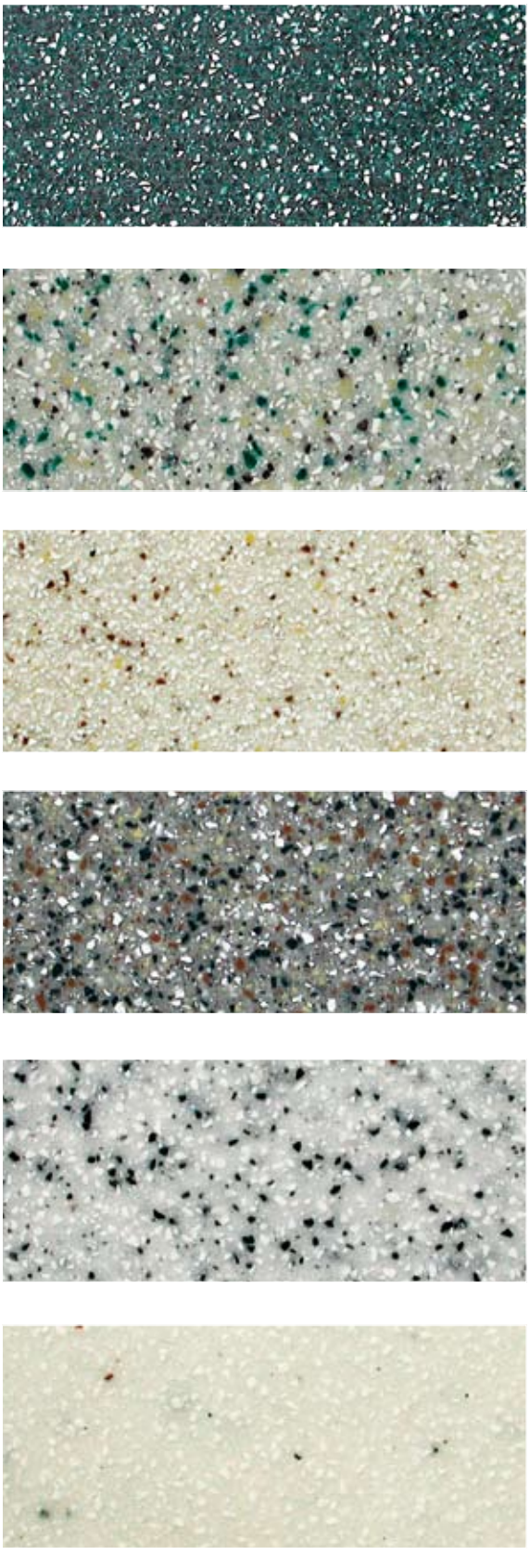
CORIAN AND PARACOR – MODERN FINISHING MATERIALS

Desktops, sides, top segments and other elements of control desks can be made of modern materials such as Corian or Paracor/Plexicor.

- The materials are acryl-mineral composites which are excellent for producing solid and hygienically clean surfaces. Manufactured in the form of boards, they provide a variety of colours with different shades and patterns. Desktops are usually made of boards 6 and 13 mm thick.
- Their homogenous structure can be easily cut, milled, planed, drilled, shaped and connected at will to meet specific requirements, which makes it possible to realise even extremely complicated projects.
- All joints and connections are made with two-ingredient glues, mixed in appropriate ratios at a temperature not lower than 15 °C. Gluing durability is at least 30 MPa.
- Corian and Paracor materials are pleasing to the touch and they feel warm. Their smooth surface makes them very easy to clean.
- They do not absorb odours or liquids, nor they attract static electricity. There are no contradictions as to their contact with food. They are classified as fire retardants.
- They are resistant to the majority of chemical agents, high temperatures and mechanical damage (cracks, scratches). Any signs of wear and tear can be easily removed without a trace.
- A wide selection of more than forty colours and textures (pastel, uniform, grainy or striated) offers exceptional design and production possibilities.

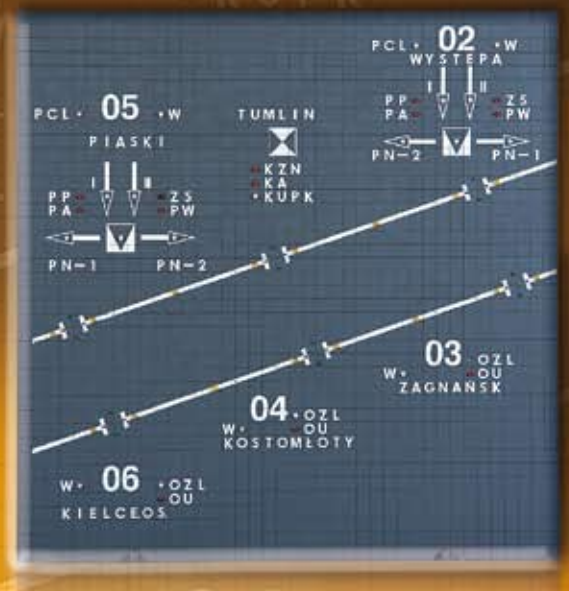
Dome of the ARCUS desk made of white Corian

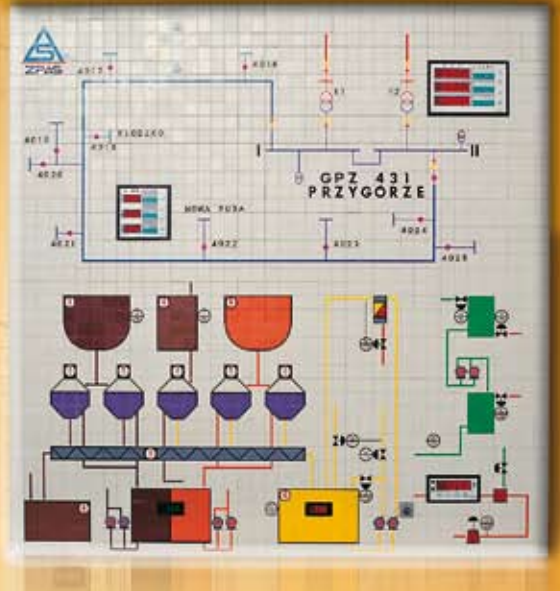
NOTE:
- CORIAN® is a registered trademark of DuPont company
- PARACOR/PLEXICOR boards are manufactured by PARA-CHEMIE GmbH company from Germany.



Sample colours of boards made of Paracor (a texture resembling a stone surface).

MIMIC BOARDS





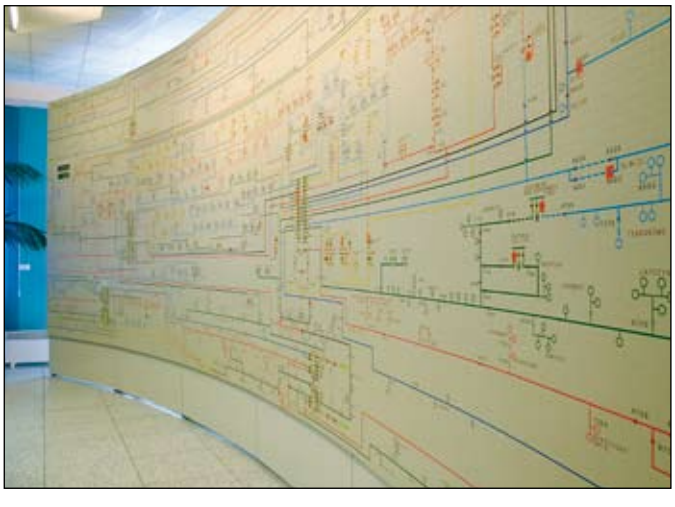
GENERAL DESCRIPTION OF MIMIC BOARDS

Mimic panels allow to graphically represent technology processes, diagrams of power networks, water supply and distribution network, gas grids, plans and other individually arranged solutions. With the application of modern, complex and automated technologies, mimic boards serve as a visualisation tool effectively supporting control and management processes. Thanks to the use of modules incorporating light components, it is possible to instantly visualise expanding and changing processes and to reflect the operating condition of devices by means of LED signalling with an option of control from front panel devices.

ZPAS-NET is a leading producer of dispatch mimic boards in Poland. Mimic matrix boards are mainly produced for the power sector, for electric power stations, heat and power generation plants, sewage treatment plants, the mining industry, chemical industry, water supply systems, monitoring systems of industrial facilities, etc. Virtually all local and regional power dispatch centres in Poland are equipped with our mimic boards.

Assembly and commissioning of mimic boards at customers' facilities are performed by teams of specialists. Our experts also expand, modernise, develop and modify existing boards. We offer quick and continuous maintenance services. ZPAS-NET keeps abreast of changing market requirements, launching innovative solutions dictated by emerging needs related to the visualisation of power networks and industrial processes.

Mimic boards are available in two dimensions: STM, with 25 x 25 mm raster, and DTM, with 24 x 24 mm raster.



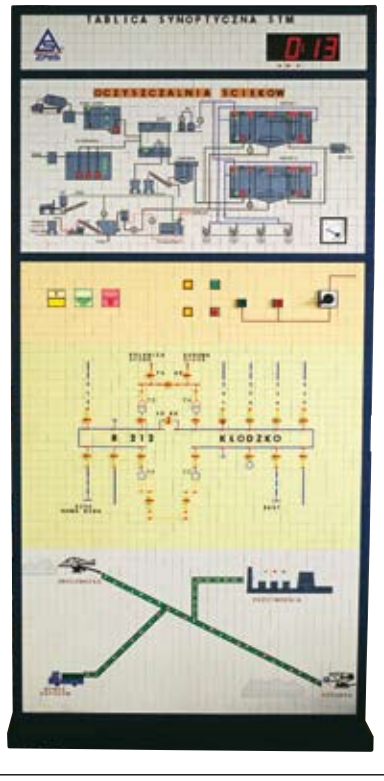
DTM boards are perfectly suited for incorporating analogue indicators without the necessity to use additional covering elements. The basic lighting components of mimic boards are LED modules (with one or many LEDs). There are also other elements fixed in the board's surface, including pushbuttons, switches, controllers, digital displays, analogue and digital meters, signal boxes, analogue and digital clocks, monitors, visual screens, etc. Updating and changing of board images is quick and easy thanks to special caps placed on the frames.

Self-latching caps used in the DTM and STM systems allow for expansion according to individual needs. The matrix surface takes one of four forms: straight, radial (polygonal), broken-type and cabinet-type (wall-mounted). Thanks to specially profiled edges, it is possible to finish boards without visible divisions between individual panels. Cycolac, the material used to make board panel elements, is highly flexible, extremely resistant to temperatures and lightweight. In addition, it has hygiene and fire retardation certificates issued by Polish Scientific Institutes. The material makes it possible to obtain products which are very resistant, flexible and visually attractive. Mimic boards with diagrams are easily adjustable and expandable depending on user needs; flexibility is the main advantage of the design offered. All clean caps can be inserted quickly and easily into any point on the board. Panels with devices and caps can be easily installed in control desks, rotary frames and control cabinet doors.

REFERENCES FOR MIMIC BOARDS

Boards for the power industry

- **NATIONAL POWER DISPATCH CENTRE**
  A non-standard arch-shaped board with an original shape and colour of the background. The board has a shape of an unfolded cylinder, with a chord length of 6 m (the board's height) and arc length of ca. 8 m. Background colour - dark blue.
- **REGIONAL POWER DISPATCH FACILITIES**
  Katowice, Poznań, Radom...
- **LOCAL DISPATCH UNITS AND POWER CONTROL CENTRES**
  Białystok, Bielawa, Bielsk Podlaski, Brodnica, Chełm, Chodzież, Choszczno, Dąbrowa Tarnowska, Dębica, Dębno Lubuskie, Dzierżoniów, Gdańsk, Gdynia, Grudziądz, Kędzierzyn-Koźle, Kluczbork, Krasnystaw, Legionowo-Warszawa, Lubań, Łomża, Międzyzdroje, Myszków, Nowa Sól, Oborniki Śląskie, Ostrołęka, Piła, Poznań, Rypin, Starogard Gdański, Stargard Szczeciński, Strzegom, Tomaszów Lubelski, Toruń, Trzebnica, Wałbrzych, Wejherowo, Wielopole, Włocławek, Wyszków, Zamość…
- **IN-HOUSE DISPATCH CENTRES**
  Będzin, Białystok, Bydgoszcz, Gorzów Wielkopolski, Wałbrzych, Zielona Góra...
- **ELECTRIC POWER STATIONS**
  Bełchatów, Dolna Odra, Porąbka-Żar hydroelectric power station, Jaworzno II, Jaworzno III, Konin, Kozienice, Opole, Pątnów, Połaniec, Siersza, Skawina, Turów, Niedzica hydroelectric power stations…



Boards for technology industries

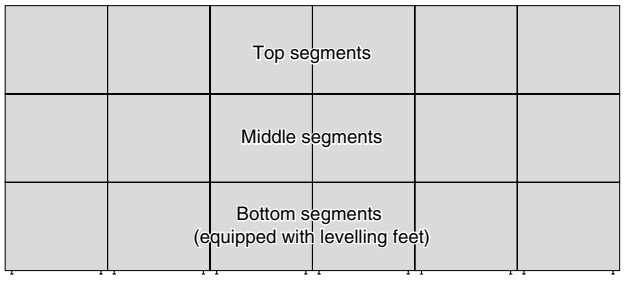
- **HEAT AND POWER GENERATION PLANTS**
  Białystok, Bydgoszcz, Cieszyn, Chrzanów, Czechnica, Gdańsk, Kalisz, Katowice, Karolin, Kraków, Łódź, Siedlce, Siekierki, Starchowice, Tarnobrzeg, Tychy, Władysławowo…
- **WATER SUPPLY/DISTRIBUTION COMPANIES AND MUNICIPAL SERVICES COMPANIES**
  Będzin, Bydgoszcz, Dziećkowice, Legnica, Łódź, Płock, Przemyśl, Puławy, Słupsk, SUW Dąbrowa in Łódź, Warsaw-Śródmieście, Zakład Wodociągów i Kanalizacji Łódź (a water supply and sanitation company) – dispatch room in the water production section, Zakład Wodociągu Praskiego in Warsaw (a water supply company), ZUN Ropica Polska, Żary…
- **WASTEWATER TREATMENT PLANTS**
  Bielsk Podlaski, Bydgoszcz, Gniewkowo, Gorzkowice, Gostyń, Gubin, Hel, Jędrzychowice, Kłaj, Knurów, Konin, Koronów, Kostrzyń, Legnica, Leszno, Mielno, Nowa Sól, Radocha k/Sosnowca, Radomsko, Radzyń Podlaski, Rawicz, Staszów, Suwałki, Ścinawka Dolna, Szlachcin, Trzemeszno, Ustka, Wałcz, Zbęszyń.
- **CENTRAL RAILWAY CONTROL STATIONS**
  Częstochowa, Iława, Kielce, Lublin, Opole, Poznań, Sopot, Warsaw…
- **CONTROL ROOMS FOR UNDERGROUND RAILWAYS AND TRAM NETWORKS**
  Warsaw Underground – stations A1-A15, Warsaw Underground at Plac Wilsona, municipal transport companies: MPK Kraków, MPK Poznań (“quick tram” line)
- **GAS COMPRESSOR PLANTS**
  Gdańsk-Gdynia, Jarosław, Mańkowice, Mirocin…
- **MINES**
  Hard coal mines: Bielszowice, Borek-Miechowice, Chwałowice, emergency management centres in Czeladź, Janina, Jasmos, Murdzki, Piekary, Rymer, Siemianowice, Śląsk, Szombierki-Bytom, Zdzieszowice, Ziemowit, Zofiówka.
  Brown coal mines: Adamów, Bełchatów, Sośnica, Turów…
- **SUGAR FACTORIES**

  Lublin, Łubna, Opole, Opole Lubelskie, Ostrowy, Ropczyce, Włostów, Wrocław…
- **TMONITORING BOARDS**

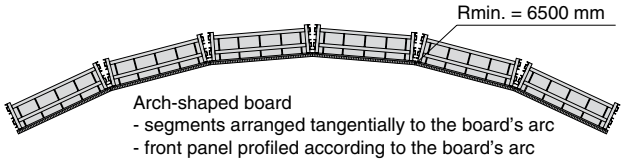
  Swimming pool in Gostyń, National Library in Warsaw, Renaissance Tower building in Warsaw, Polish-German Federation building, Polkomtel building, ELPRO in Berlin, Hotel Port Okęcie, Hotel Poznań, Hotel Zakopane, Huta Zawiercie (a steel plant), KDM in Warsaw, Okęcie Airport in Warsaw, Wrocław Airport, PFC Poznań, Supreme Court in Warsaw, Telekomunikacja Polska S.A. in Warsaw.

DESIGN OF MIMIC BOARDS

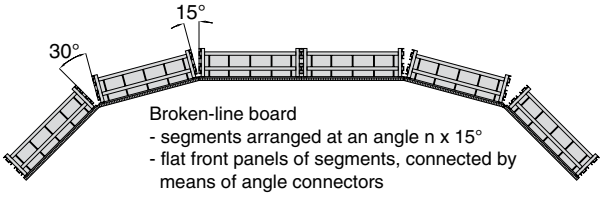
Free-standing boards



Flat board
- with evenly aligned segments
- flat front panel

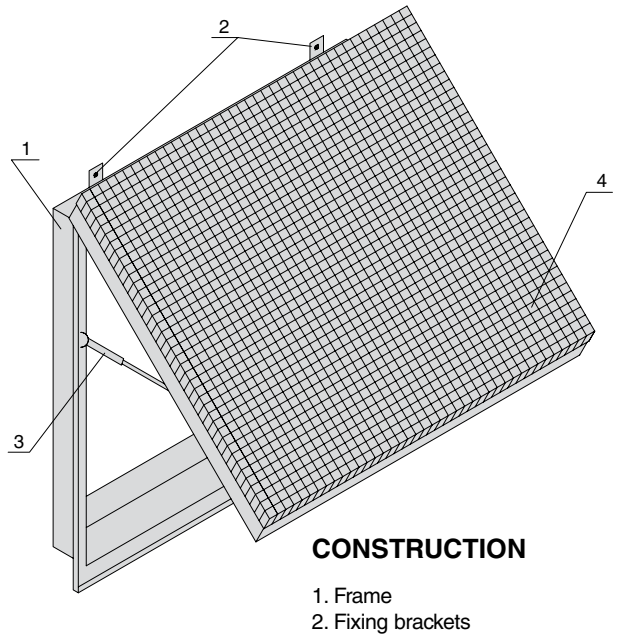


Arch-shaped board
- segments arranged tangentially to the board's arc
- front panel profiled according to the board's arc
- minimum radius of the arc R = 6500 mm



Broken-line board
- segments arranged at an angle n x 15°
- flat front panels of segments, connected by means of angle connectors

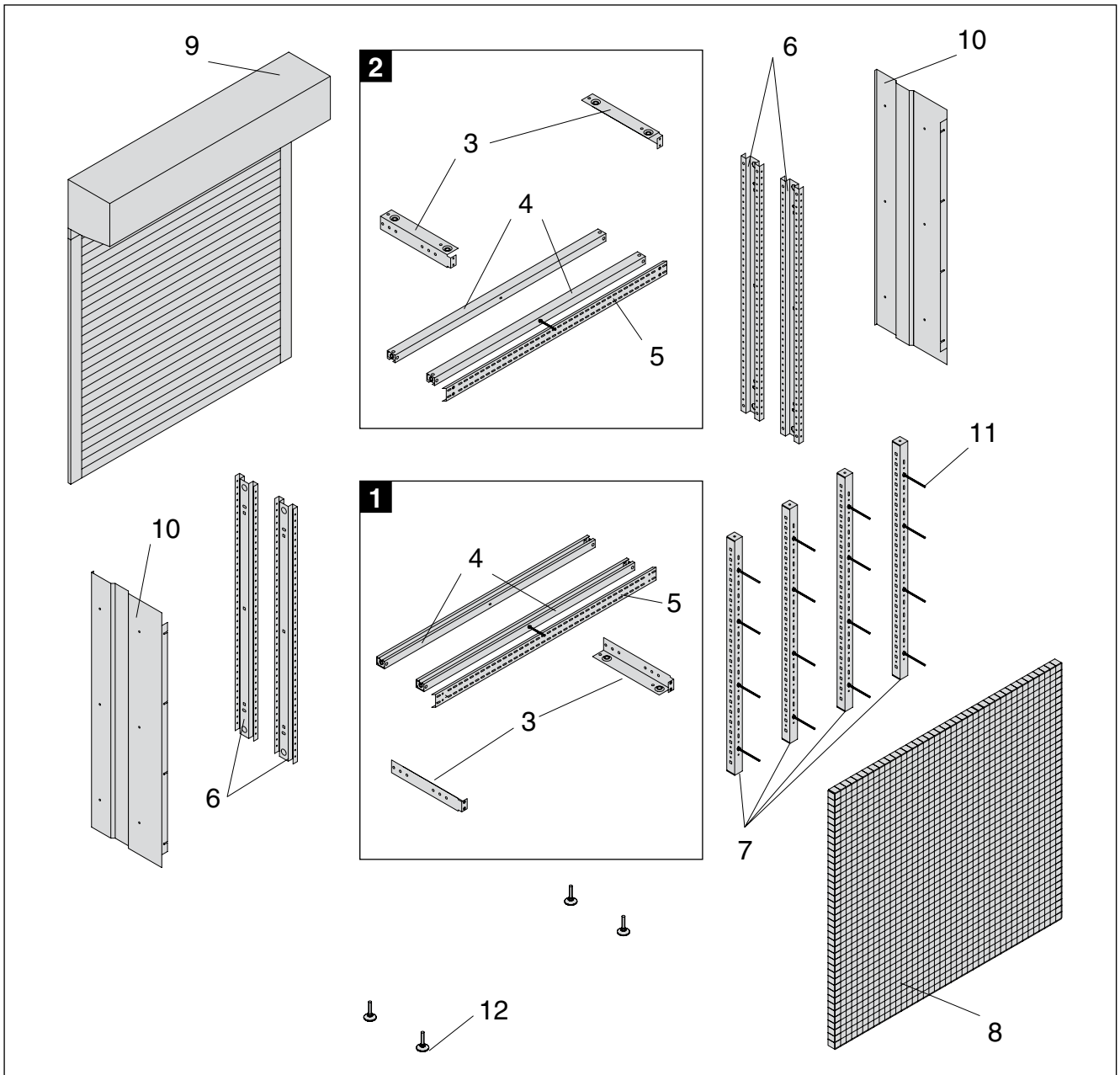
Wall-mounted cabinet-type boards

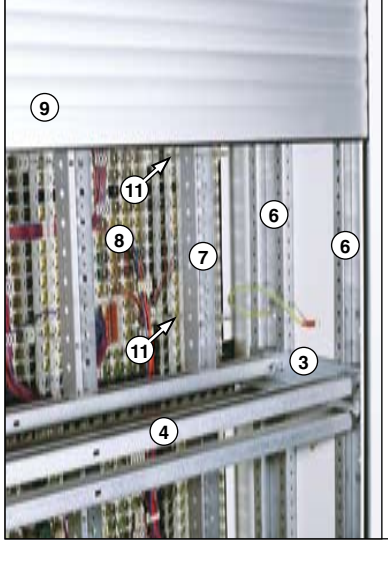


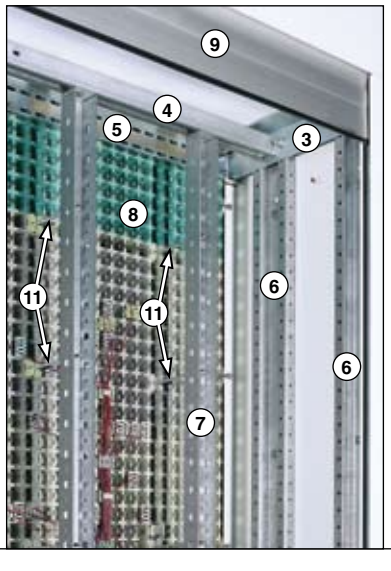
CONSTRUCTION

1. Frame
2. Fixing brackets
3. Gas shock-absorber
4. Front section with a matrix panel

ELEMENTS OF THE SUPPORT STRUCTURE OF FREE-STANDING BOARDS





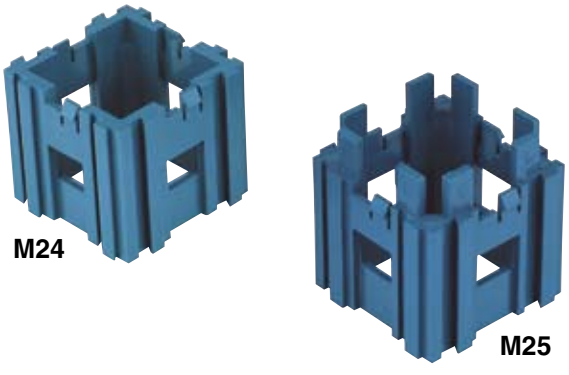


CONSTRUCTION

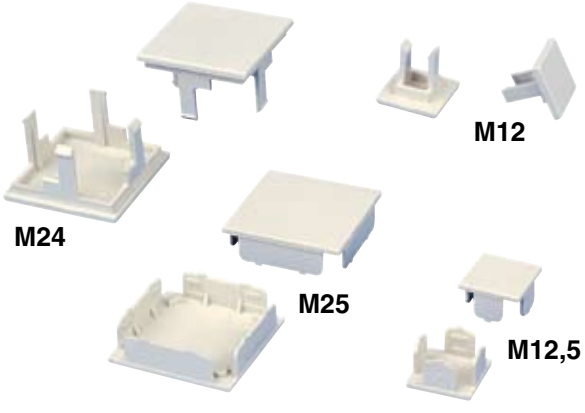
1. Lower frame
2. Upper frame
3. Angle sections
4. Connecting rails
5. Front channel section
6. Connecting sections
7. Mounting brackets
8. Truss panel made of plastic frames with 24 mm or 25 mm grid units (material: Cycolac plastic)
9. Aluminium roller shade
10. Side cover
11. Pins
12. Feet

MATRIX ELEMENTS OF MIMIC BOARDS

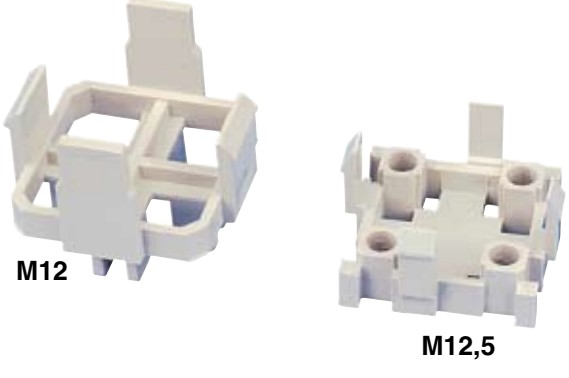
Matrix boards are available in two systems:
- DTM 24 x 24 mm, made of M24 and M12 modules,
- STM 25 x 25 mm, made of M25 and M12,5 modules.



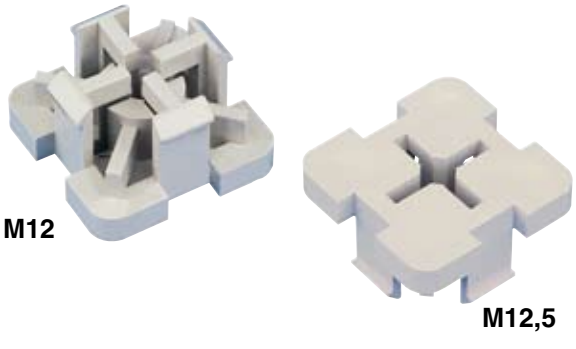
FRAME
An element of the self-supporting board structure, forming the central frame of the board's front panel into which caps are inserted.



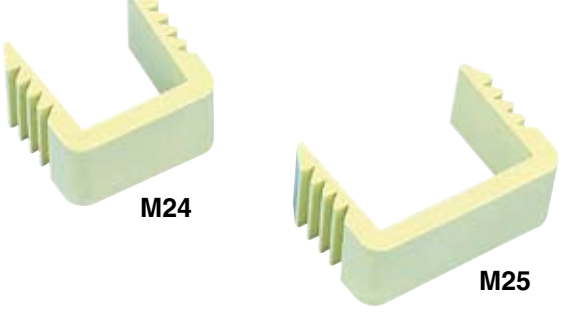
CAP
An element forming the front section of the board, featuring matrix elements plotted by screen printing.



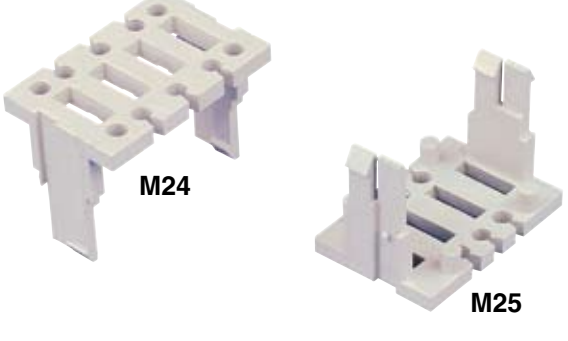
FRAME EXTENSION
Mounted inside the frame, designed for cap fixing.



FIXING CATCH
Mounted inside the frame, used to fix the board to the support structure.



CLIP
An element used to fix cable bundles on the inside of the front panel.
An element cooperating with cable bundle support.

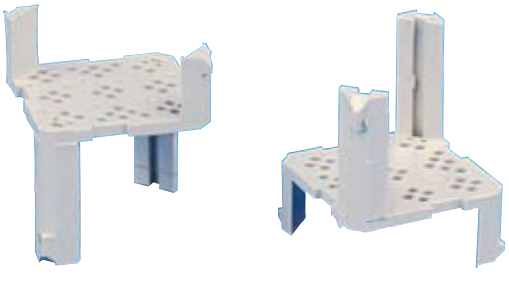


CABLE BUNDLE SUPPORT
An element cooperating with the clip, protecting conductors extending from the lighting modules in the rear section of the board.

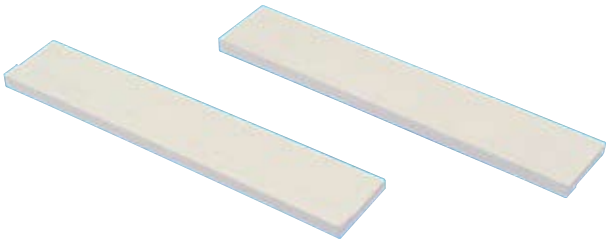
MATRIX ELEMENTS OF MIMIC BOARDS

ILLUMINATED ELEMENTS
Mounted in caps. Designed for the diffusion of light emitted by LEDs.

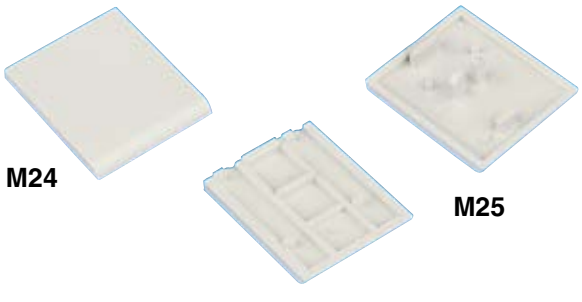
PCB HOLDER
An element used to fix the PCB in the frame.



LED CONNECTOR
Used to fix LEDs via single-roll strips to the exclusion of PCB.

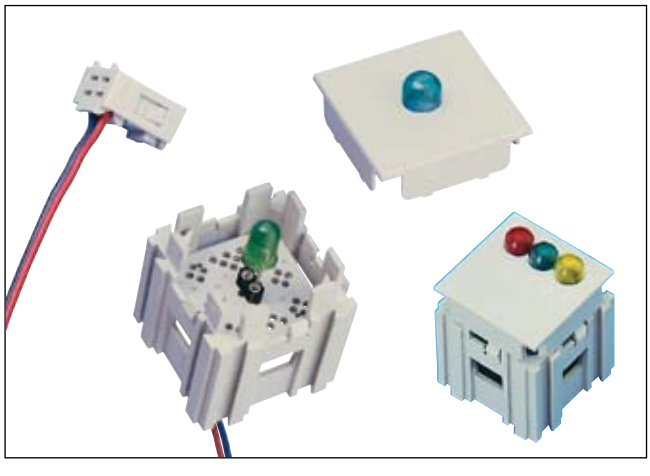


FRAME
Used to mount various meters and other devices on the board's front panel.



SIDE COVERING PANEL
Fixed on the external side walls of the board's frames.

ANGLE CONNECTOR
Used for joining elements of the board's front panel at an angle.

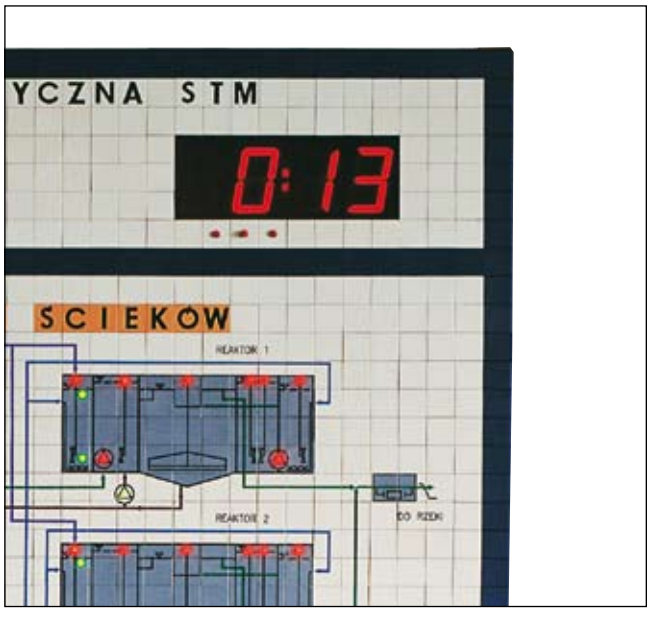


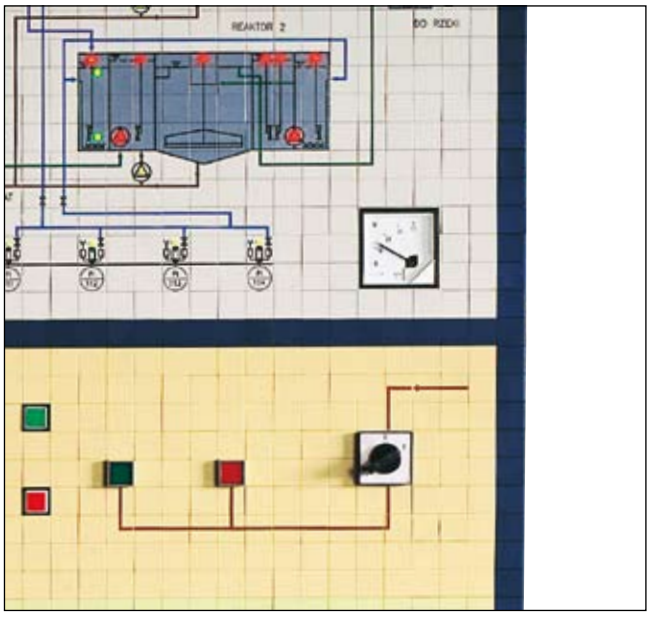
The signalling elements in STM and DTM mimic boards are LEDs. In order to ensure high effectiveness of visualisation, high-luminosity LEDs are used. A variety of LED types and dimensions are employed, depending on particular signalling requirements, e.g. red, green, yellow, blue, single- and multi-colour.

Upon customer request, LEDs are equipped with current-limiting resistors, separation diodes or other matching circuits depending on the type of controller used. Within the matrix, LEDs can be extended to the terminal strips, terminal plates or plates with ends adjusted to a particular controller type.

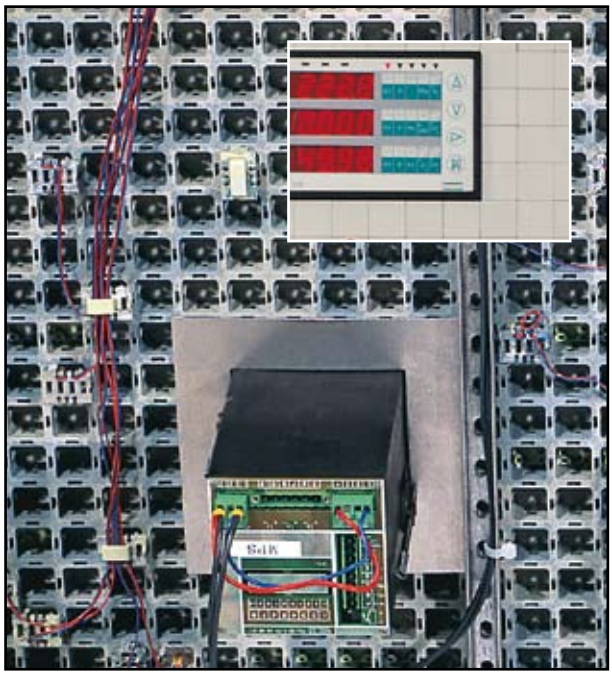
DEVICE ASSEMBLY

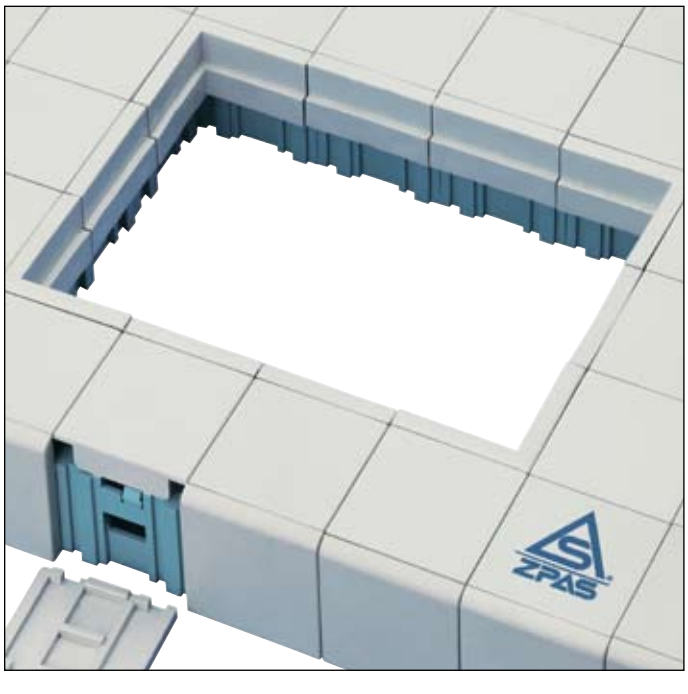
ZPAS-NET mimic boards offer a possibility of installing meters, indicators, displays, switches, controllers, etc., however in consideration of the fact that customers use a wide variety of different devices, their installation in the mimic boards is always tailored to individual needs and requirements.





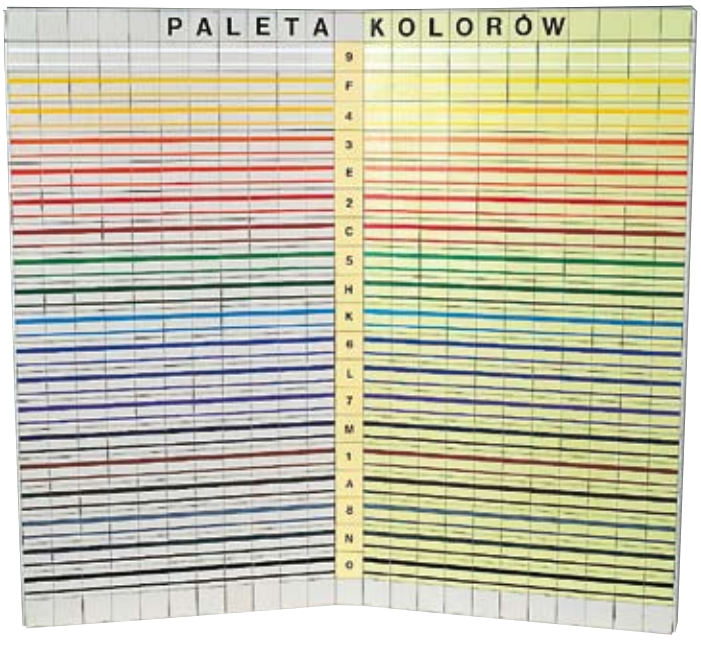
Since the majority of devices is designed for assembly on thin front panels made of sheet metal, some devices must be provided with special clamping rings or support brackets (particularly if the weight of a given device may cause front panel deformation).





If the dimensions of a device do not correspond to a multiple of the board's module, we offer a range of adaptor elements which allow for construction of a special frame helping to adjust the device to the module. Controllers and switches are usually mounted by means of adaptor plates with front sections covered with the same surface patterns as the front sections of the boards. Details concerning installation methods are individually agreed with the customer.

FRONT PANEL COLOUR SCHEMES



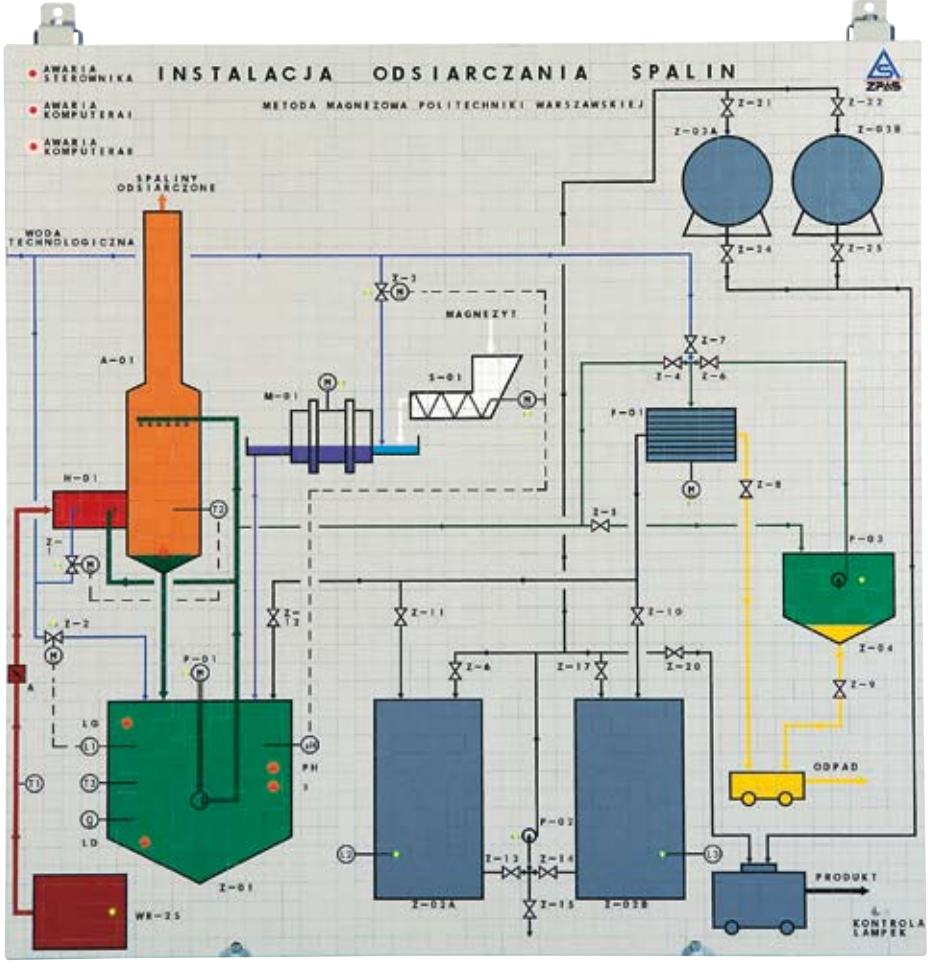
NOTE:

The background colour of the board can be freely selected, however on account of proven ergonomic properties, the following colours are recommended:

grey

light green

beige



KSD SIGNAL BOXES

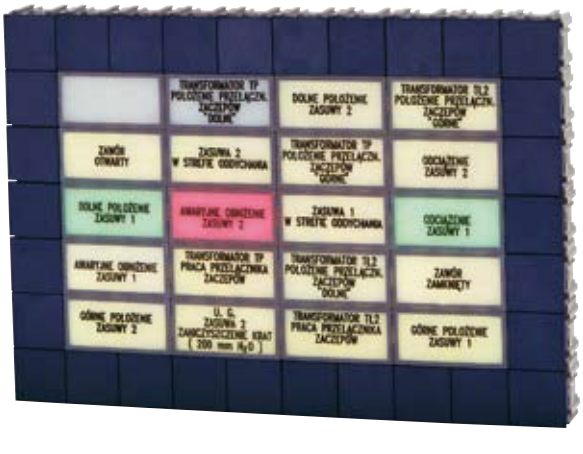
KSD-type signal boxes are designed for signalling status of the facility. They are mounted in matrix frames; caps of the signal boxes are flushed with the surface of the front panels of STM boards and control desks. Sets of signal boxes enclosed in aluminium frames can also be fixed in metal, wood-like or other plates (e.g. cabinets, desktops and top segments).

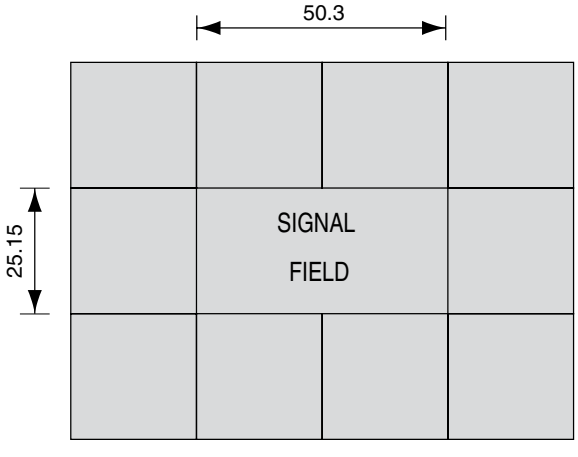
Technical data

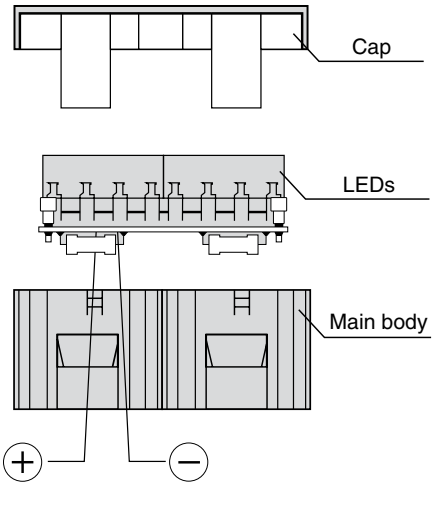
- Control voltage - 18-24 V DC
- Power consumption - ca. 80 mA
- Colour of illumination - red, green, yellow
- Dimensions - 50.3 x 25.15 mm
- Outlets - rack and panel connector, terminal strip or other types, based on individual arrangements

Design

Each box incorporates three basic elements: a main body, a LED plate and a cap (non-transparent white). The surface of the cap has an inscription, sign or symbol plotted by screen printing or engraved. Another possibility is the use of transparent caps with inscriptions made on mat film or tracing paper placed underneath. Signal boxes are made as single units or in multiple sets in any configuration.







KCS-1 CENTRAL SIGNAL BOX

KCS-1 central signal boxes are complete central audiovisual signalling systems designed for power industry applications or other industry sectors. The main task of central signal boxes it to inform the operating staff of an electric power station, a switching station or a production process control unit of the actuation of protective devices, breakdowns or irregularities in the operation of equipment and other undesirable events. Thanks to their modular structure, KCS-1 boxes enable operators to control any number of input channels.

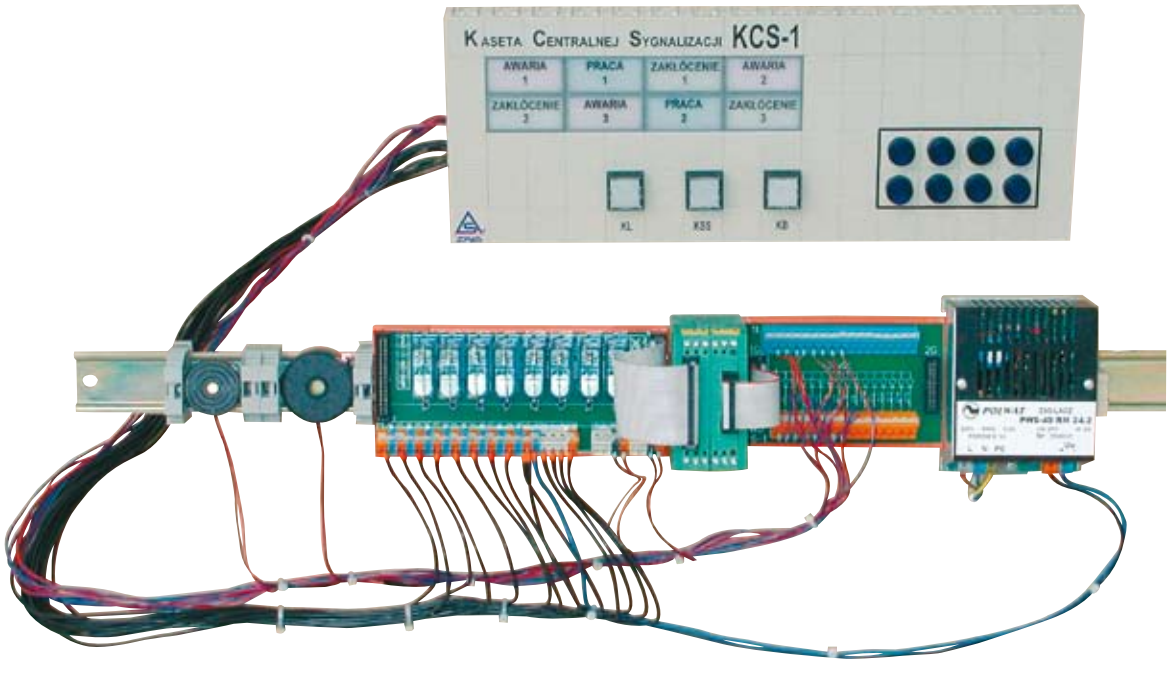
The central module of each box is provided with in-built programming functions (individually for each channel):

- emergency function with memory and delay time,
- repeater function (signalling device),
- function of engine or pump operation control,
- NOT-operation function of the input status,
- buzzer activation and deactivation,
- protection against accidental information deletion,
- blackout detection,
- interference removal system.

Input signals include voltages fed to relay coils, monitoring the achievement of boundary values of technical parameters, the flow of operating media, engine or pu

Input signals:

sound signalling – two piezoelectric buzzers placed directly on the TS-35 strip next to the central unit and NO-contacts of relays (with an option of connecting an additional warning horn or buzzer).
visual signalling – KSD signal boxes designed for mounting in the front panel of the matrix board. Sets of KSD boxes, placed within an aluminium frame, can also be installed in 19" panels, in dispatch desktops or tops. As independent elements, they can be used in the so-called distributed signalling systems.



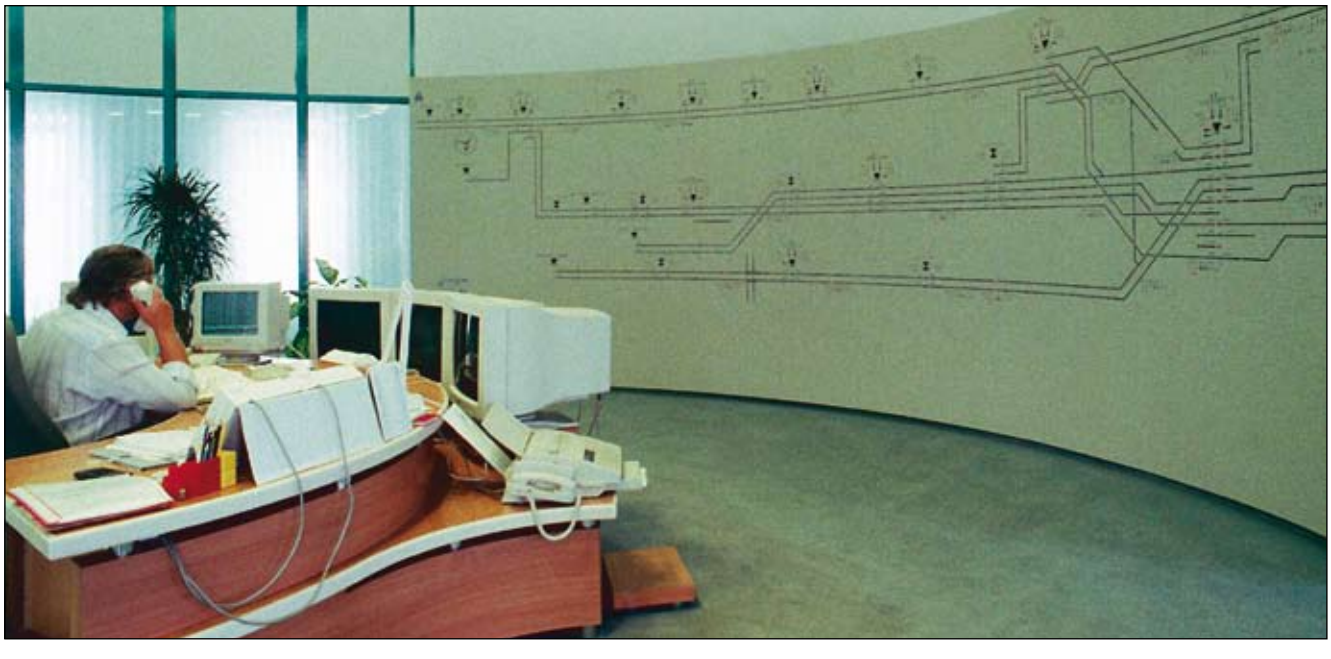
KCS-1 central signal box with accessories. Central module of the box, relaying strip, indirect strip, power unit and sound signalling buzzers are installed on the TS-35 rail; control buttons and KSD signal boxes (visual signalling) are extended to a sample element of the front panel of the matrix board.

SAMPLE REALISED PROJECTS

National power dispatch centre in Warsaw

A mimic board of a non-standard spherical shape, covering an area of ca. 80 m^2.

Central rail control station



SAMPLE REALISED PROJECTS

Sugar factory in Lublin

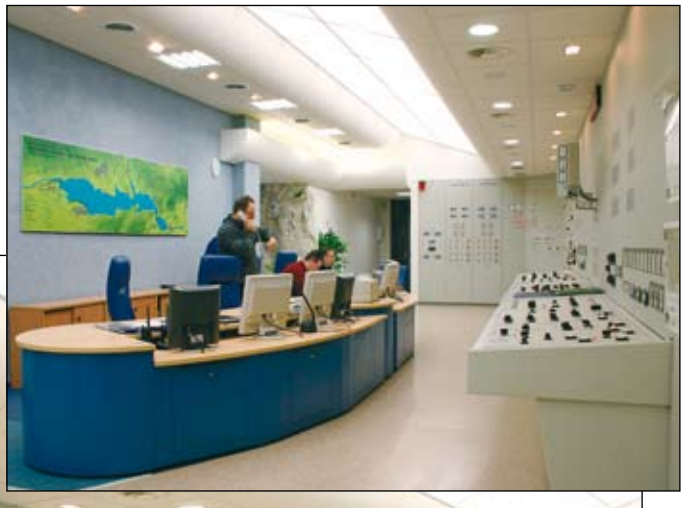
Regional power dispatch facility in Katowice

SAMPLE REALISED PROJECTS

Niedzica S.A. Hydroelectric power station

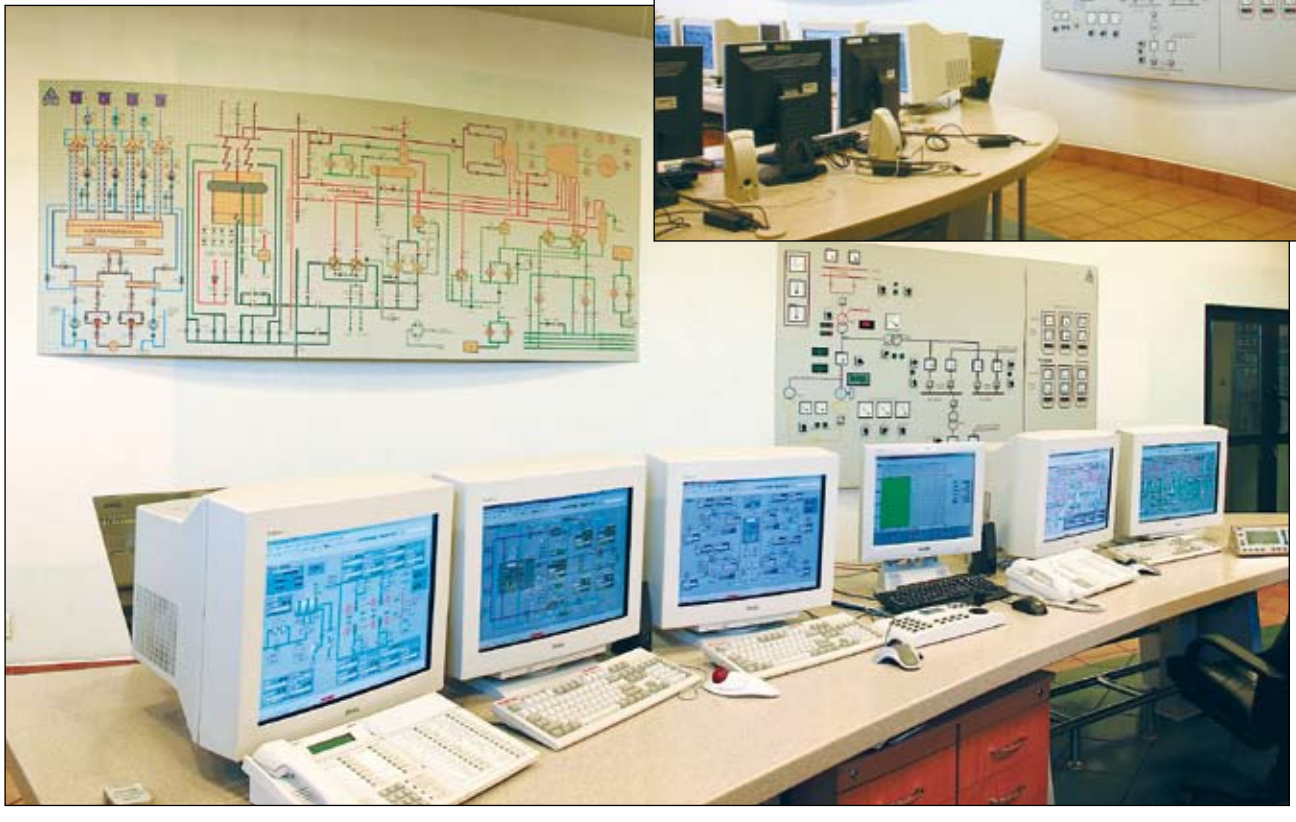
- block control rooms in the power stations

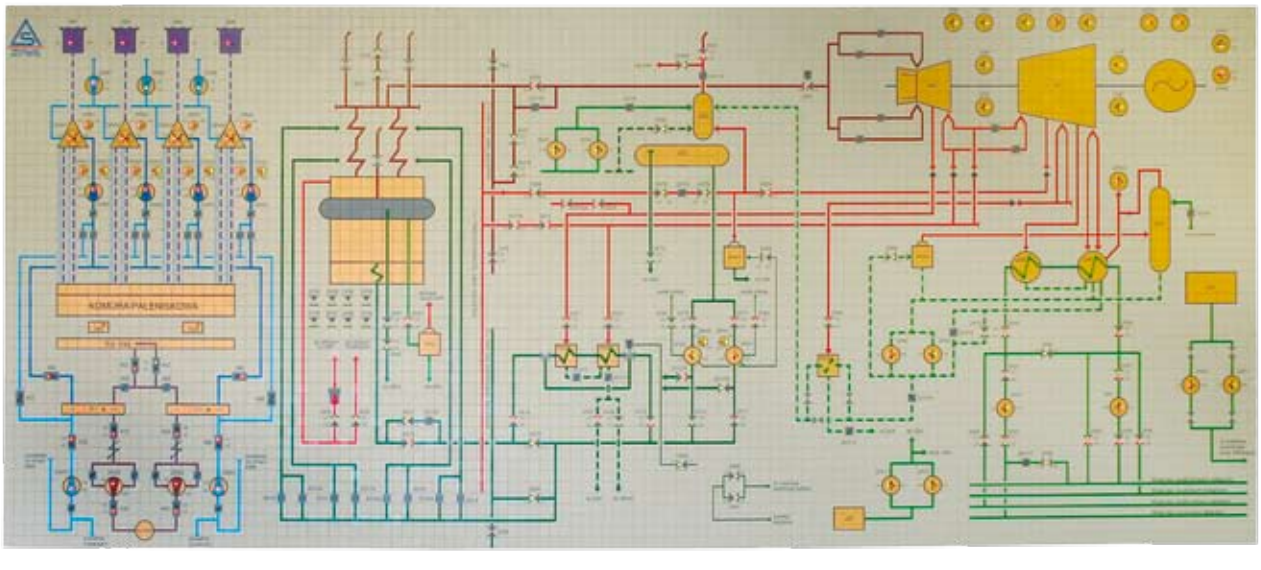
Delivery included a mimic board together with dispatch and control desks.



SAMPLE REALISED PROJECTS

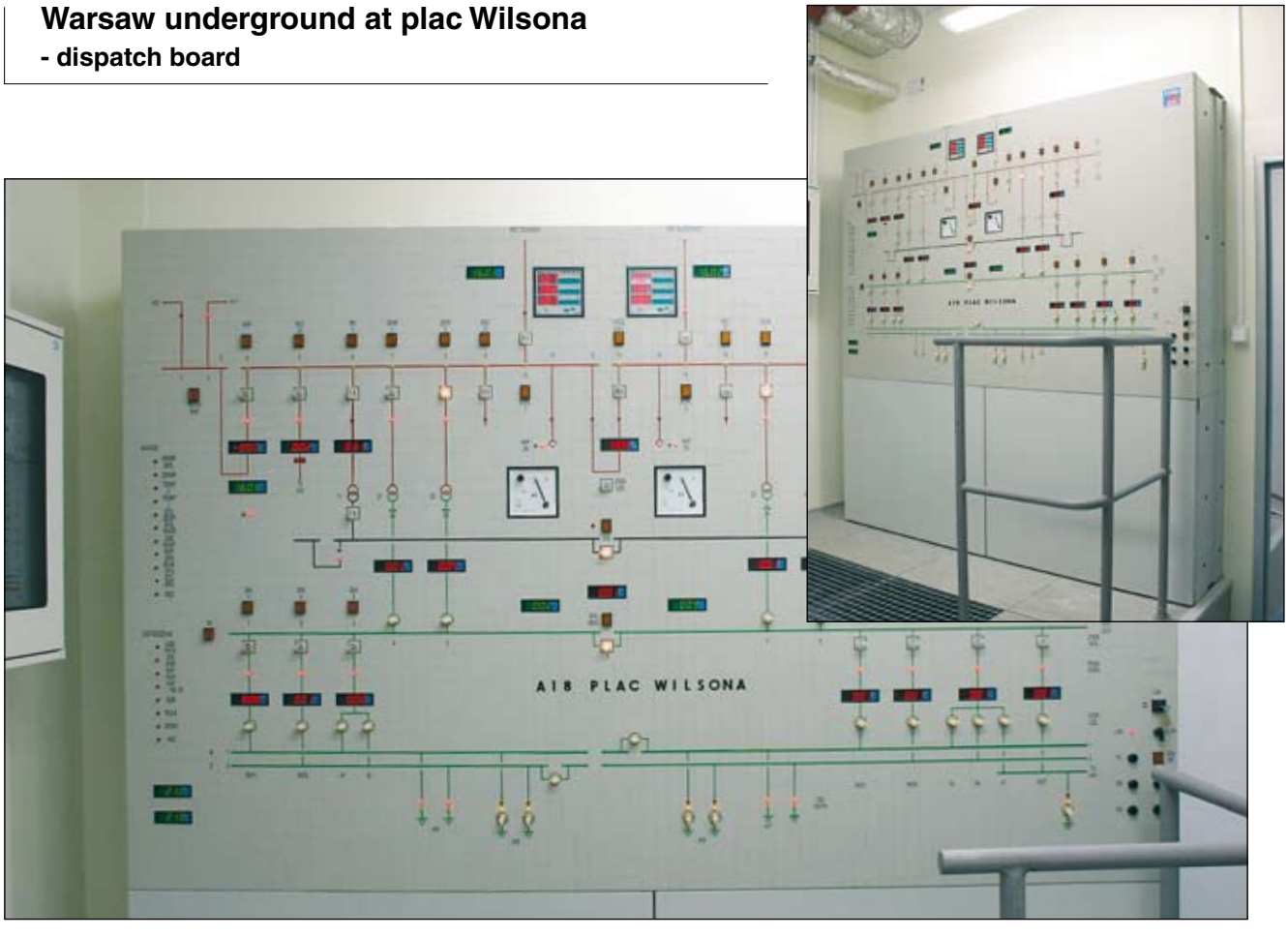
Białystok heat and power Generation plant
- block control room

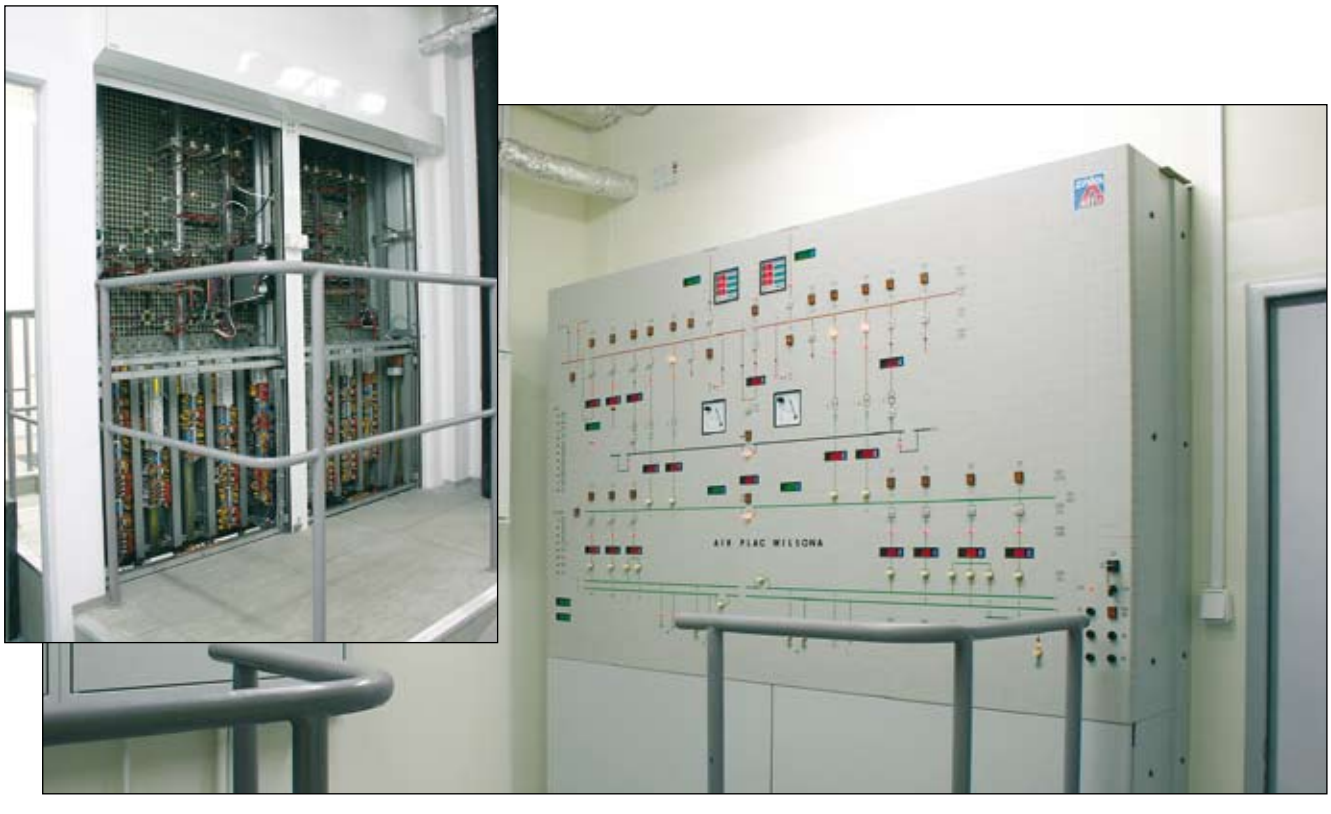




SAMPLE REALISED PROJECTS

Warsaw underground at plac Wilsona
- dispatch board

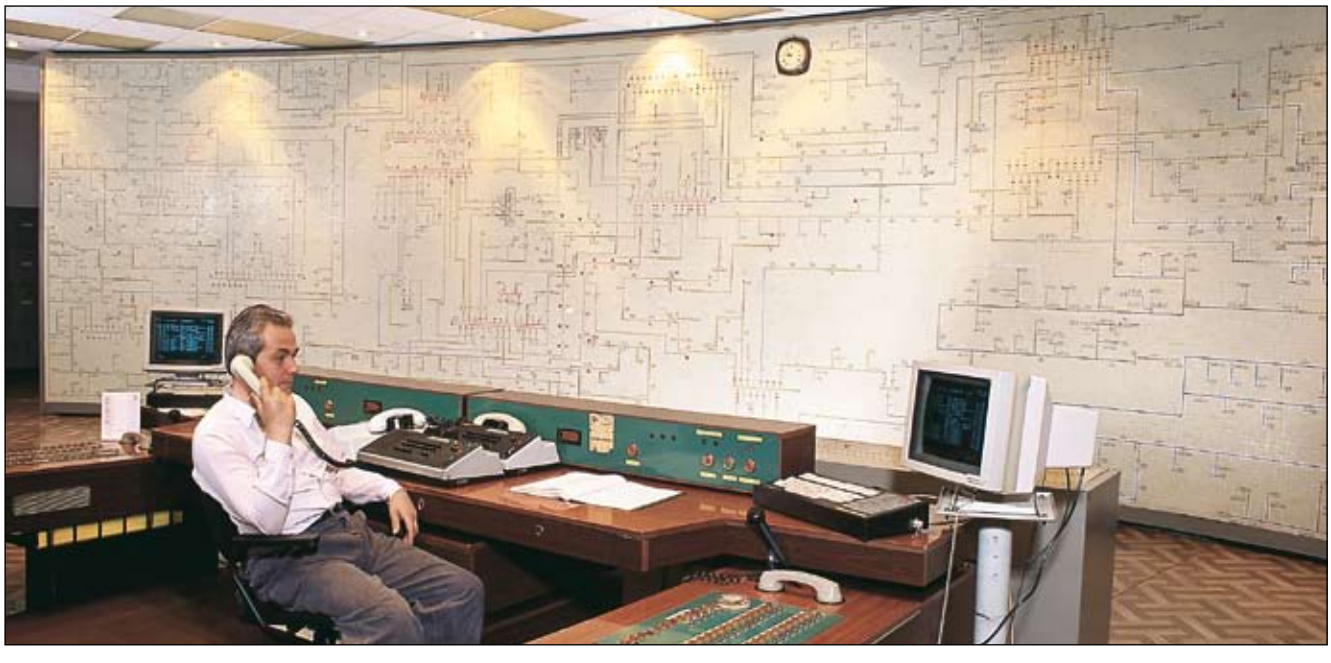




SAMPLE REALISED PROJECTS

Brown coal mine in Turów

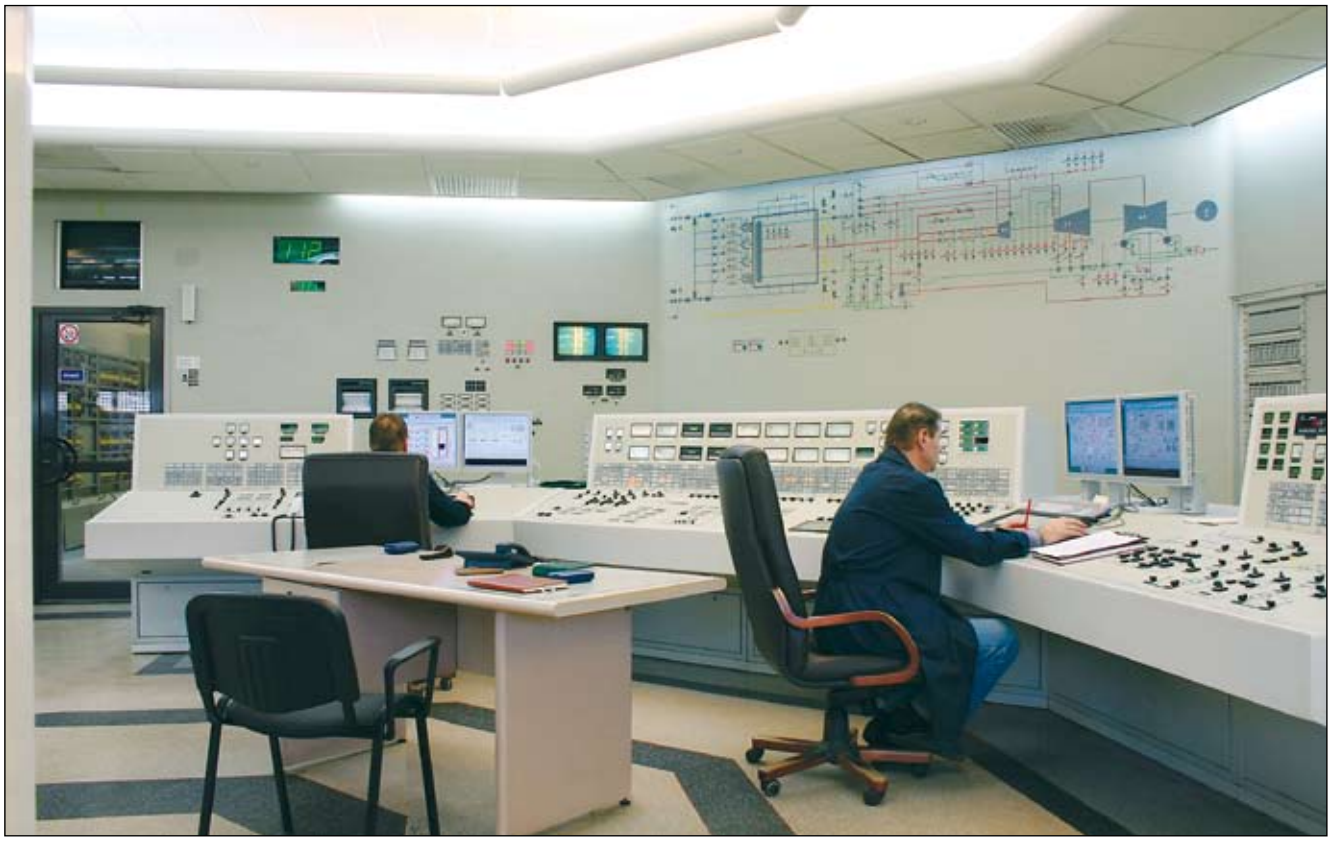
Dispatch section in the power distribution company in Wałbrzych



SAMPLE REALISED PROJECTS

Kozienice electric power station – blocks 5 and 6

Supply of a full range of mimic boards and dispatch/control desks for block control rooms



SAMPLE REALISED PROJECTS

Kozienice electric power station - blocks 9 and 10

The scope of the delivery included a mimic board with dispatch and control desks.

SAMPLE REALISED PROJECTS

Regional power dispatch facility in Ostrołęka

SAMPLE REALISED PROJECTS

Water supply and sanitation company in Łódź - dispatch room in the water production section

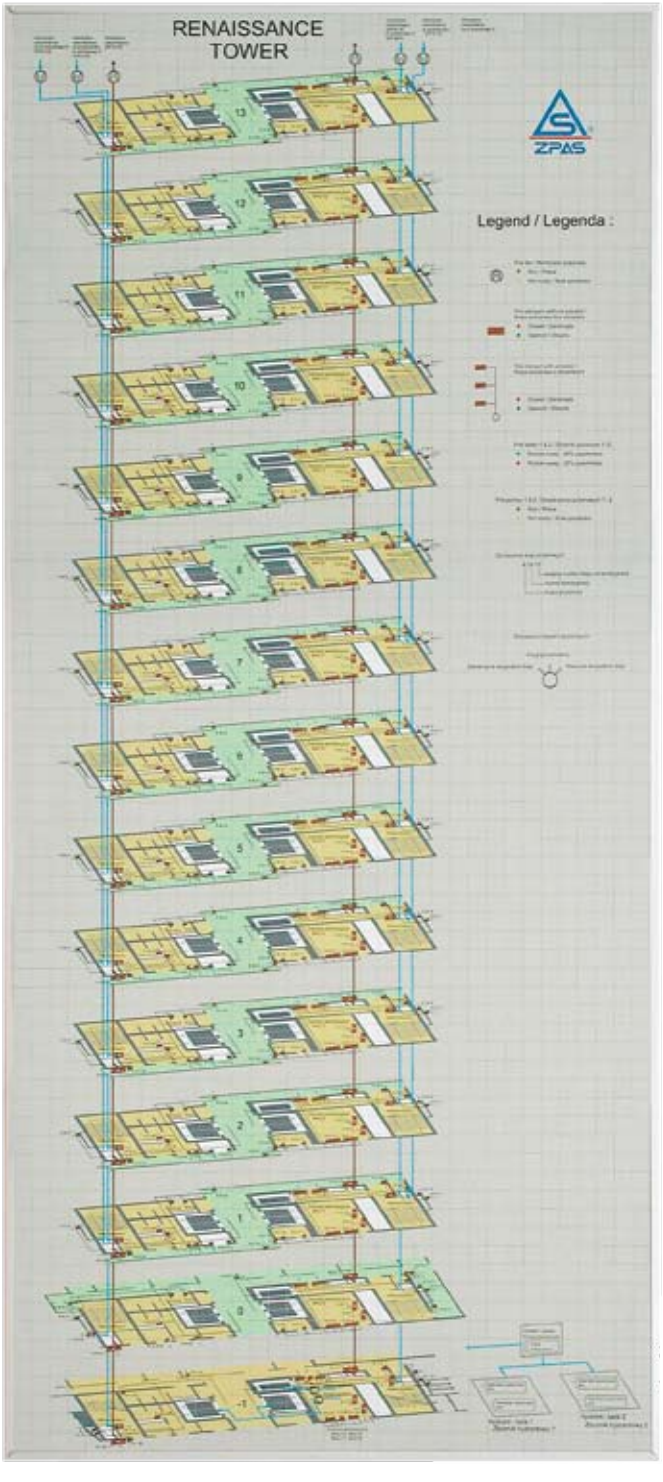
SAMPLE REALISED PROJECTS

Porąbka-Żar hydroelectric power station

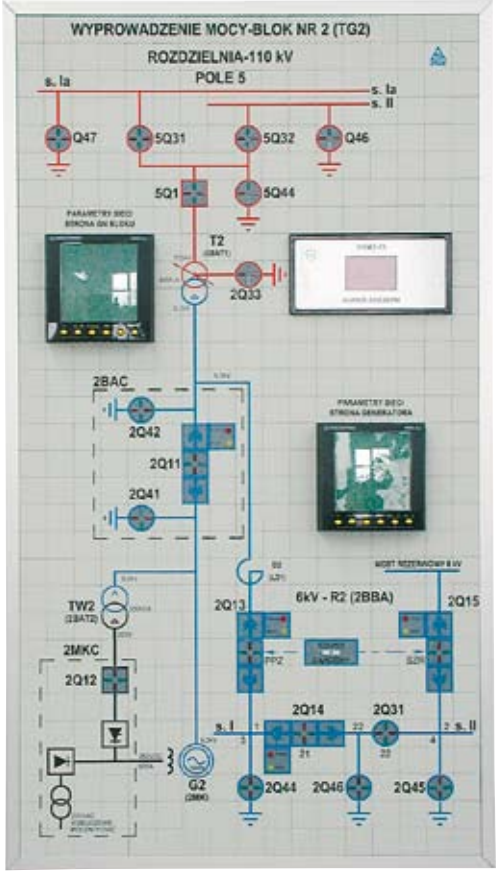
The scope of the delivery included the mimic board and control desk shown in the photographs.

SAMPLE REALISED PROJECTS

Matrix boards in aluminium frames



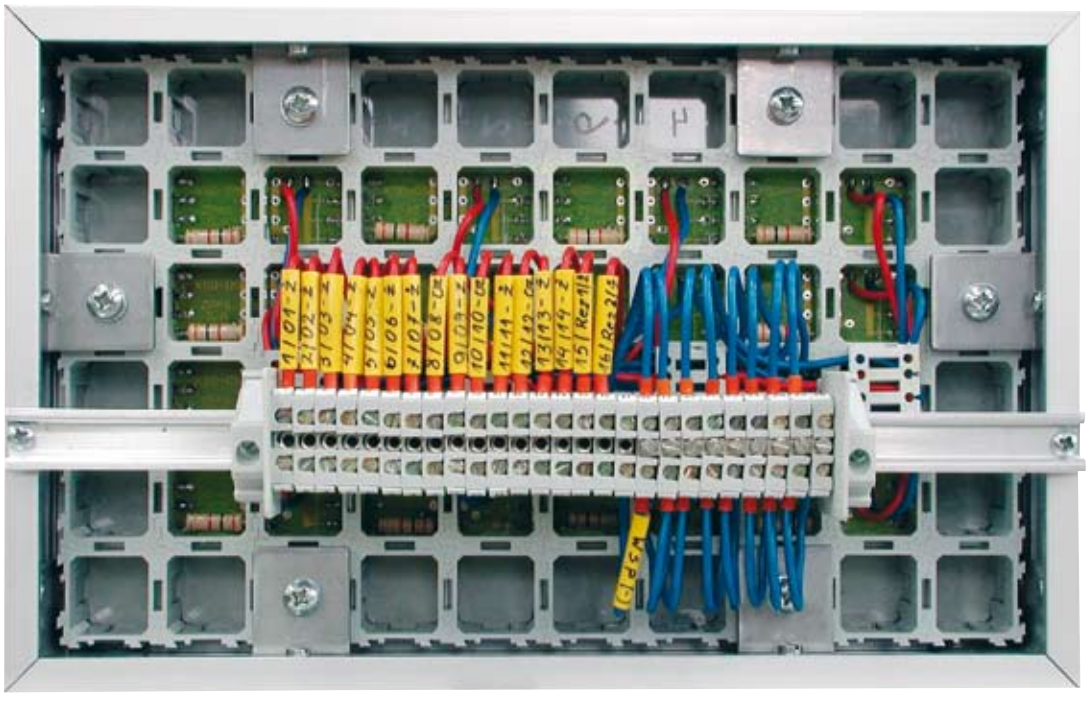
Board designed for monitoring the fire alarm system in Warsaw's Renaissance Tower.



Board featuring a diagram of a power supply system.

SAMPLE REALISED PROJECTS

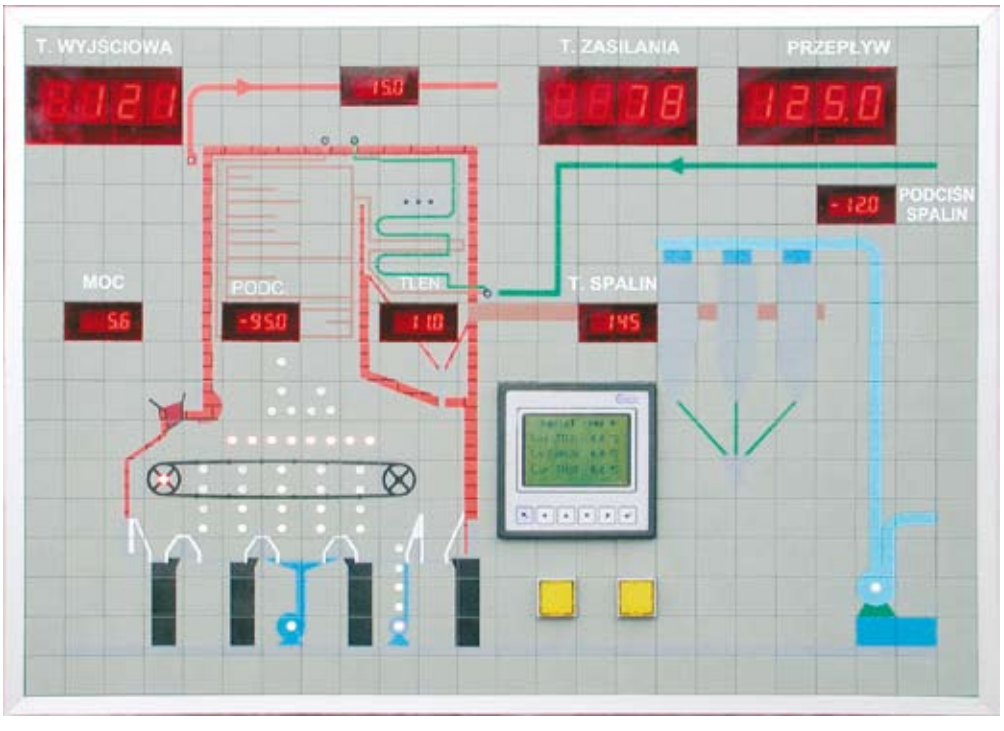
Matrix boards in aluminium frames

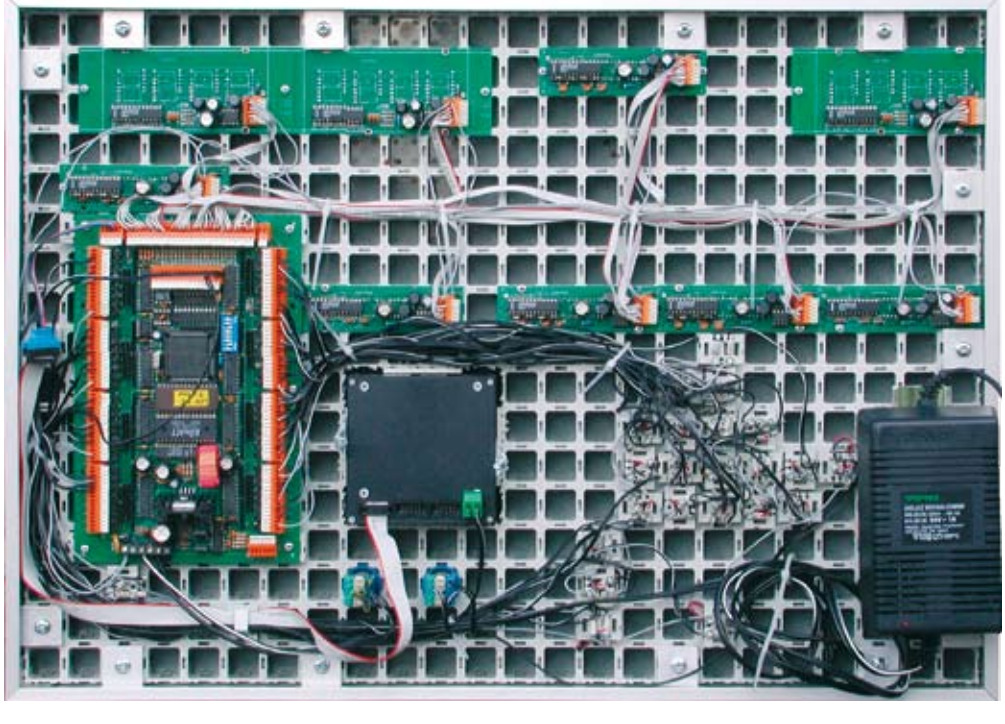


Signalling box designed for mounting in the control desk.

SAMPLE REALISED PROJECTS

Matrix boards in aluminium frames





Control and monitoring of operations of an industrial facility.

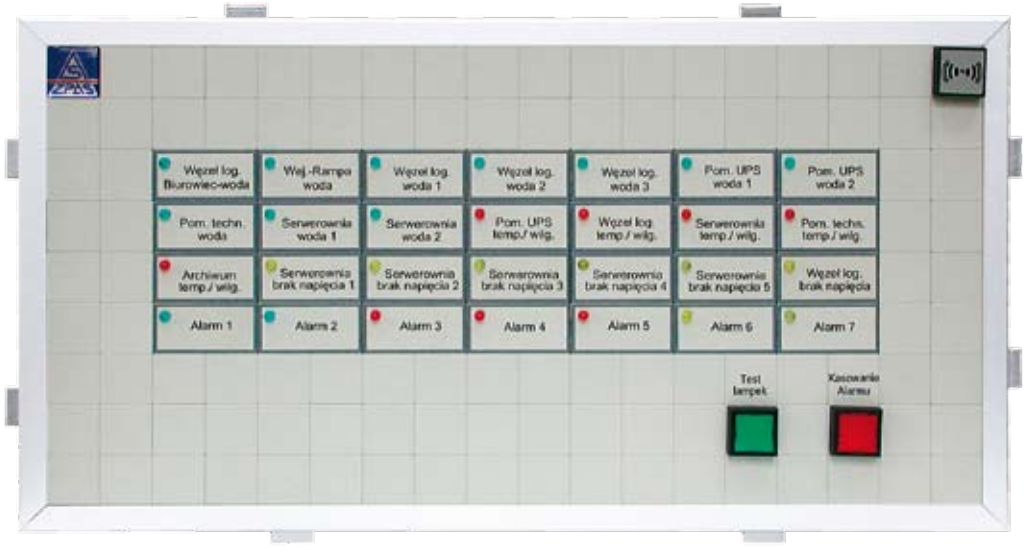
SAMPLE REALISED PROJECTS

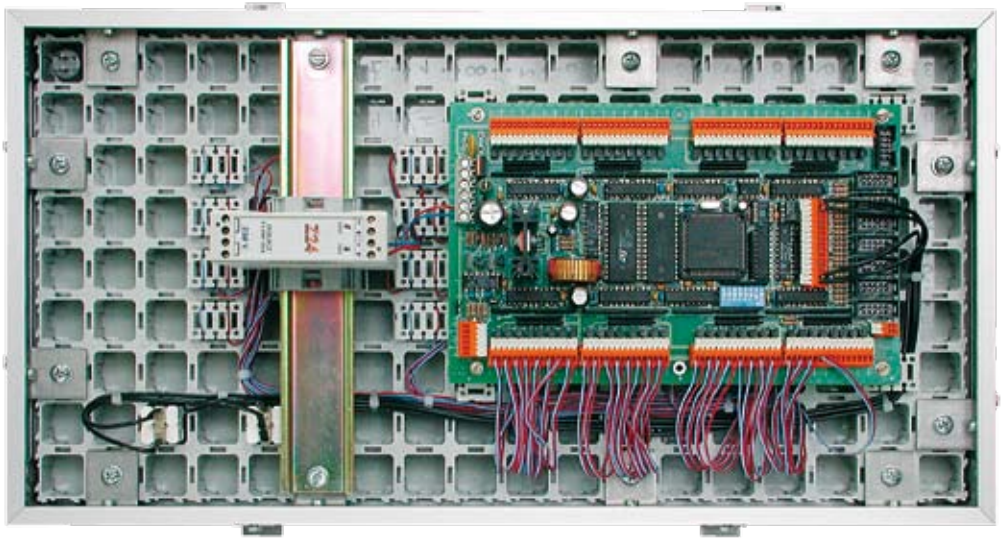
Matrix boards in aluminium frames

Boiler room control system

SAMPLE REALISED PROJECTS

Matrix boards in aluminium frames





Monitoring of climatic conditions in a server room, based on the ZPAS Control Oversee system. The system records relevant data via LAN, communicates emergency conditions by short text messages and makes it possible to visualise the facility on a computer screen and mimic board.

NOTATKI

Control and dispatch desks
Mimic boards

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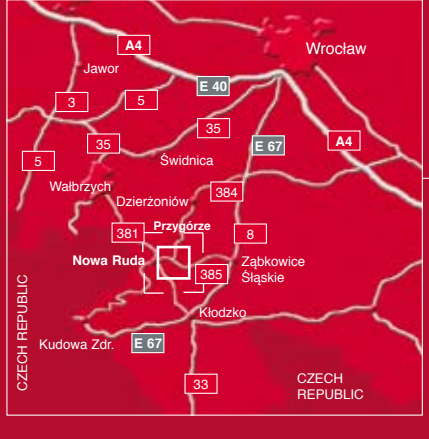

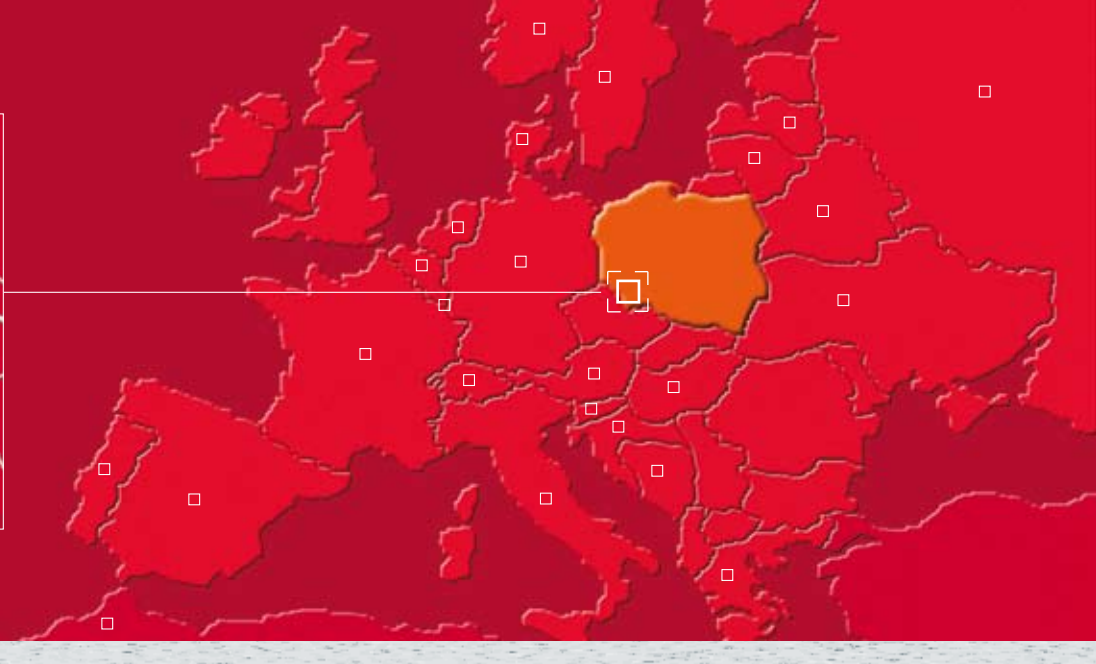

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