



# PENBRO KELNICK

Since the early 1950s, Penbro Kelnick has gradually established itself as one of South Africa's leading suppliers of specialised electrical products for the Railway, Telecommunications, Utilities, Mining and Industrial sectors. Besides the extensive range of standard products, we have become renowned for our tailor-made solutions assisting our customers with their special requirements.

## CREDENTIALS

Penbro is part of a large group of companies with diversified products and competences in the fields of electrical and mechanical technologies.

### Quality

- Penbro maintains the implementation of industrial standards according to **ISO9001: 2015**
- Penbro is working towards qualifying to **ISO 45001**

### Certifications and qualifications

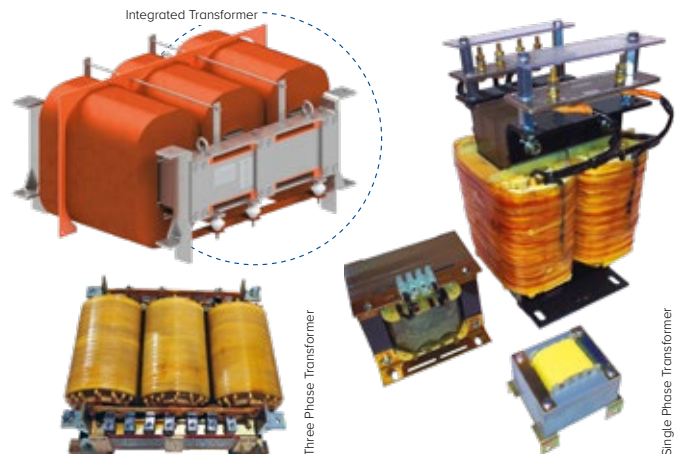
- Our specialised welding team is certified to **ISO 3834 part 2** thanks to the diligent support of Penbro's Technical and Quality Assurance department and working towards the **EN15085 certification**
- **Penbro is ISO9001:2015 certified**
- **A proud Level 4 contributor to BBEE**



## TRANSFORMERS

### Single and three-phase transformers

- Custom designed primary, secondary voltages and VA rating requirements
- **Power range:** Up to 200kVA.
- Multiple voltage taps on primary and secondary windings to customer request
- We offer metal enclosures to suit the application



### Skills and training

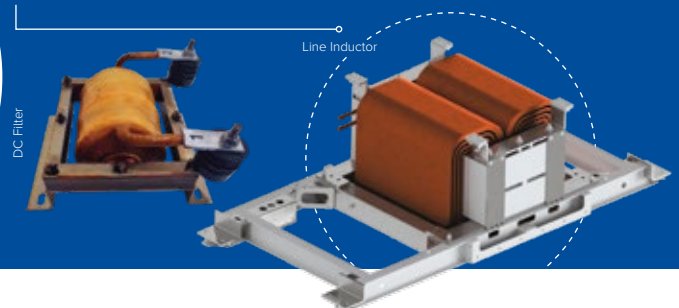
- Penbro maintains special processes such as welding, torque tightening, riveting and crimping under strict control to guarantee high quality standards
- Internal training to operators on work instructions and special processes are provided by our team of experts or else by qualified persons in the industry



### Inductors

Penbro is the sole supplier of the under-carriage 4kV line-filter inductor for the PRASA X'Trapolis Train.

- Our inductors are built to stringent railway specifications and tested at our state-of-the-art test facility
- We also offer industrial application inductors for AC snubber networks and surge suppressors
- All inductors are resin dipped at our impressive 10,000 litre vacuum impregnation plant



# RESISTORS

## Harmonic Filter Resistors

Harmonic filters greatly improve the quality of supply of power by dampening unwanted harmonic frequencies from the grid supply induced by losses, faulty equipment and resonant frequencies etc.

- Medium and high-voltage range
- Stamped grid element technology
- Category IV insulation for high levels of pollution
- Naturally cooled



Harmonic Filter

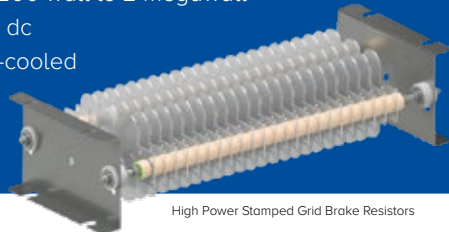


## Braking Resistors

Penbro is the proud supplier of brake resistors to Transnet's electrical and diesel locomotives including the Class 20/21E; Class 22E, Class 23E and the PRASA X'TRAPOLIS Train.

Brake resistors for AC variable speed drives are used to dissipate energy generated by the motor during the stopping of a large motor. Typical applications include emergency stopping of a motor, crane control, hoist control and conveyor belt control.

- **Power range:** from 200 watt to 2 megawatt
- **Voltage range:** 3kV dc
- Naturally and force-cooled



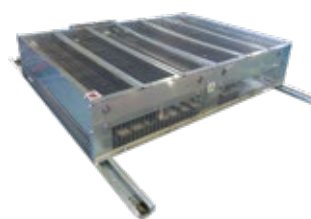
High Power Stamped Grid Brake Resistors



Gibela Train



Roof Mounted Brake Resistor for Electric Multiple Unit (EMU)



Wire Wound Resistor Assemblies



## Wire Wound Resistors

- **Power range:** 20 – 500 watt
- **Resistance range:** 2Ω – 90kΩ
- Low temperature coefficient
- Chemical and heat-resistant silicon coating
- Vitreous enamelled and "Coiled-coil" are also optional

Meddle Coa Wire Wound



## Motor Slip Starting Resistor

- Up to 4MW motors
- Naturally and forced cooled
- Stamped grid technology

Motor Slip Starter Resistor



## Neutral Grounding Resistors (NGR)

NGRs are implemented to the power distribution grid for the protection of transformers by creating a grounded neutral point, through the resistor with fault-current monitoring equipment.

The high energy absorbing characteristic of the resistor and the fault current detection provide invaluable protection for the system.

- Low and medium voltage range



Neutral Grounding Resistor



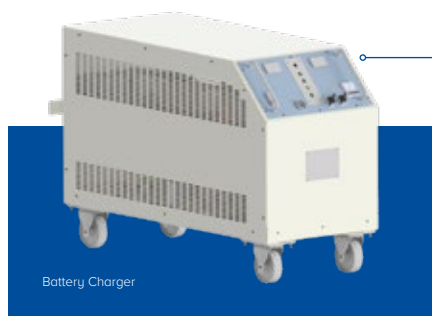


# ELECTRONICS

## Industrial Battery Chargers

Penbro has supplied the industry with specialised industrial and railways battery chargers for over 40 years with ongoing installation, commissioning and after-sales support.

- **Output voltage range:**  
2 – 300Vdc for sealed lead-acid, wet cell and nickel-cadmium batteries
- **Output current range:**  
5 – 500A
- **Regulation:**  
Constant voltage and constant current control
- **Ripple voltage:**  
<5% @ 300Hz ripple frequency
- Automatic and manual battery test functionality with alarm indications
- Mains supply voltage monitoring with alarm indications
- Low voltage battery disconnect features



## Locomotive Cabin Heaters

Penbro custom designs heaters for locomotive cabins to customer specification.

- We have designed heaters for numerous locomotives including the Class 36D and Class 7E2
- **Operating voltages:** 74 and 110Vdc
- **Power rating:** 3kW
- **Settings:** Cool fan, low and high heat



## Power Supplies and Rectifiers

We also supply a wide range of power supplies available in standard 19 inch wide modular enclosures with standard 2U, 3U and 4U module heights.

- **Output voltage range:** 1 – 300Vdc
- **Current Output:** Up to 8000A
- Variable current and voltage control with full voltage and current regulation
- Enclosure sizes, material, colour and IP ratings to customer requirements



## Uninterruptible Power Supply (UPS) Systems

The supply of Penbro UPS systems not only includes the stand-alone UPS module, but also includes a complete turn-key solution with on-site commissioning and after-sales support by our highly experienced technical support team.

- **Power range:** 600VA – 9MVA
- **Redundancy:** N+1
- **We proudly offer a renowned product range including:** Itys, NetysRT, Masters, Delphys static switches, Socomec and Tower





# METAL FABRICATION

## Machining Capabilities

Penbro has established itself as a highly competent supplier for the design and manufacturing of a large variety of metal enclosures and parts custom-built to stringent client specifications. One such project is the supply of radio-frequency shielded enclosures for South Africa's Square Kilometre Array Radio Telescope. All Penbro products including the battery cabinets, mimic panels, battery chargers, inverters, power-supplies and load-banks are supplied enclosed with a Penbro designed enclosure.



Siemens Substation Collection



Complete substation solution including mains isolation, surge protection, distribution and change-over panel all offered in Penbro-engineered enclosures.

Complementing our metal fabrication facility, we boast the following equipment capable of processing materials up to 20mm in thickness.

- Highly experienced design team applying CAD and CNC programming software namely Inventor and SigmaNEST
- An impressive array of CNC bending brakes, laser cutters and punching facilities



**Other innovative metal fabricated products produced by Penbro as continuous supply to a wide range of customers include:**

- Sound-reducing enclosures for generators
- Metal-work for dust filtration systems used on vehicles
- Automatic Teller Machine (ATM) enclosures
- AC and DC distribution cabinets



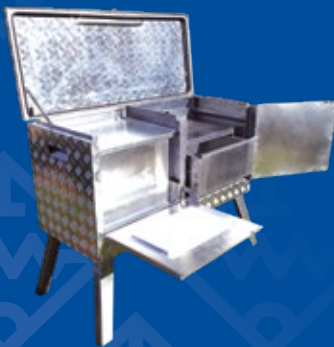
Dust Filtration Enclosure / Ram Filter



Metal fabricated enclosures for interactive displays



Safe Enclosure



Aluminium Multi Cabinet



Penbro Trailer for Generator



Genset Enclosure



## CONTACT INFORMATION

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