



# **MV IRON-CORE REACTORS**

## **FOR MEDIUM VOLTAGE NETWORKS**



**MEHER MANGOLDT INDUCTORS PVT LTD**

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A **MEHER** +  **HANS VON MANGOLDT** Joint Venture



## Company Presentation

**MEHER MANGOLDT INDUCTORS PVT LTD** located in Bangalore is a joint venture between HANS VON MANGOLDT, Germany and MEHER Group, India for design & manufacture of Iron Core & Air Core Reactors. The joint venture will focus on addressing the Indian market needs & will expand into other targeted regions.

The combination of R&D activities across Europe & India will reinforce capabilities that are critical for developing contemporary products & enhance long term competitiveness. The unique experience of over four decades of Mangoldt combined with three decades of strong presence of Meher's in this field in India will offer a distinctly superior long term value proposition to customers in India and across selected geographies.

INDFARAD Technologies the business unit of Meher Group which manufactures reactors under the brand name of INDFARAD transferred its entire business to Meher Mangoldt.

### **About HANS VON MANGOLDT GMBH & CO. KG (HvM)**

HvM is leading producer of iron core reactors for all applications like power factor control, power inverters such as wind & solar, industrial drives, UPS battery charger for more than 45 years. The focus of production is the application of correct manufacturing of iron core reactors and inductors for the right application.

HvM certified products meet the highest quality standards and are in use worldwide. Through continuous improvement in measurement technology and the development of our products, we are a reliable partner for our customers and the market leader in many countries.

<http://www.mangoldt.com>

### **About MEHER GROUP, India**

Headquartered in Bangalore, India, since 1977, MEHER Group has business interests in strategically selected areas in energy domain such as Aluminum Electrolytic Capacitors, Reactors/Inductors, Thin Film Dielectrics and Dynamic Braking Systems.

Meher group has presence across wide range of customers in the energy domain such as Power Electronic & Electrical OEM's, Distributors, Trade, Panel Builders & Solution providers as well as Large Industrial Groups.

[www.meher.com](http://www.meher.com)

Visit our website: [www.meher-mangoldt.com](http://www.meher-mangoldt.com)

# MV IRON-CORE REACTORS

## Unique Expertise

The success that our reactors have enjoyed is no miracle. Our achievement is the result of;

- **Sound and Detailed Engineering**

The software we have developed enables the design engineers to optimize reactor design to provide customers with a tailor-made product, in which their requirements with regard to losses, dimensions and environmental conditions are given their full attention.

- **Imaginative Manufacturing**

High-precision core lamination punching for elimination of inductance tolerances between the three phases is utilized to enable accurate reactor tuning. Applying copper or aluminum band coils using computer controlled winding machines which use cold pressure welding for the connection of copper bar terminals.

Mounting coils on PolyGap® cores and impregnation of the complete unit under high vacuum and overpressure with a high-grade thermosetting varnish. All production phases have been fine-tuned to a standard of excellence, ensuring that quality standards are maintained as demanded by the ISO 9001 and ISO 14001 specification.

- **Unique Innovative Measuring Equipment**

- Computerized test equipment for testing of reactors at nominal current with database storage.
- For type-testing our facilities at Germany have a unique three-phase harmonic generator enabling to test reactors in a realistic environment, i.e. simultaneously loaded with fundamental and specified harmonic currents(which can also be modified in respect of amplitude and angle of shift). Thus heat-run and noise dissipation tests are conducted on the reactors.
- For routine-testing we have a unique BIL test equipment, each of the MV reactors are tested with required BIL test as per the standards.



*BIL test on MV Iron Core Reactor*

- **Temperature Monitoring**

Medium-voltage reactors are available with temperature Monitoring in the core. The sensors can be micro switches (normally closed or normally open), thermistors or PTC sensors.

- **Mechanical Design Features**

Medium-voltage reactors are fitted with lifting eyes and can be supplied with an optional bidirectional sub-assembly. All reactors of this type come mounted on mounting tracks including rubber/metal mounting fittings(standard feature).

## Specifications

Voltage Class	3,6 KV to 36 KV
Frequency	50Hz and 60Hz available
Voltage Spectrum	$U_{H3} = 0.5 \%$ $U_{H5} = 6.0\%$ $U_{H7} = 5.0 \%$ $U_{H11} = U_{H13} = 3.5 \%$ relative to $U_N$
THD(U)	Limited to 9.26 %
Inductance Tolerance	$\pm 3 \%$ of $L_N$
Inductance Linearity	$I_{Lin}: k \cdot I_{CN}$ where $k=f(p)$ ( $p=6.0 / 7.0$ )
Fundamental current	$I_1 = 1.10 \cdot I_{CN}$ (for 10 % overvoltage)
Thermal current	$I_{th}: 1.0 \cdot I_{rms}$ (neglecting tolerances and capacitor aging)
Dielectric Strength	Required BIL test as per standards
Core Construction	PolyGap®
Ambient Temperature	50°C
Temperature Rise	70 K
Cooling / ventilation	Natural convection air
Temperature Switch	N.O. over temp switch included(optional)
Altitude(without de rating)	1000 meters (3280 feet) maximum

Reactors for lower THD(U) are available as well

### Meher Mangoldt Inductors Pvt. Ltd.

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Reactors manufactured in the plants at Germany & India:

- Are designed and manufactured according to the above-mentioned specifications and under the conditions laid down by ISO 9001 and ISO 14001
- Are with PolyGap®. The cores are punched out of cold-laminated steel to a standard of very high precision, thus ensuring low tuning tolerance. Have wire wound coils, or aluminum or copper band coils. With aluminum band, the copper bar terminals are welded to the aluminum by cold pressure welding.
- Are impregnated as a complete unit under vacuum and overpressure using thermosetting Impregnation varnish of temperature class H.
- Are measured at nominal current using database test equipment. If the inductance is outside the specified tolerance, the equipment does not print the name plate and test report

### Additional Offerings

Meher Mangoldt also offers high performance reactors for low and medium voltage with superior quality for:

- Alternative power
- Motor drives
- PWM inverters
- Active filters
- Current limiting
- Current smoothing
- Frequency-Blocking Filters