Power Converters

High Power | Medium Power | Low Power

Traction Technology applied in Ad-hoc Client Solution
Traction Converter Concept

Our concept is based on setting up the traction converters INGETRAC as an smart integration of extensively proved Power Modules. They are comprised of all necessary elements to be fully operational, on each required application. E.g. traction inverter, brake chopper, active front end, traction/auxiliary battery charger and auxiliary inverter when necessary.

Our experience on designing and building high power modules assures that all electrical and mechanical parts have already been proven, to assure the reliability and the quality of the complete system.

**INGETRAC highlights:**

- State of the art technology (2 & 3 - level topology)
- Ad-hoc hardware & software module-based
- Compact & robust design
- Lightweight & customized mechanical design
- Low maintenance

**Control Module ELECTRA**

ELECTRA control, manages logic and regulates the variables needed for the whole traction system to operate, fulfilling the most severe requirements of the railway sector (EN 50155 certified).

The Control Module is formed by main TCU, this is optimized for controlling IGBT based inverters / choppers, and a Computer Module is in charge of diagnostic and data logging functions.

**Example of possible converter configuration based on modules**

For HS (E.g.TR0100)

- Line Voltage: 25 kV / 3kV
- Power: 2.4 MW
- Auxiliary Power: 3 x 250 kVA
- Dimensions: 2,850 x 1,050 x 2,048mm
- Weight: 2,500 kg
- Cooling: Liquid
- Temp. Range: -30ºC / 50ºC

For Locomotives (E.g. TR0700)

- Line Voltage: 3kV
- Power: 2.8 MW
- Auxiliary Power: 200 kVA
- Dimensions: 2,300 x 1,050 x 2,048mm
- Weight: 1,500 Kg
- Cooling: Liquid
- Temp. Range: -30ºC / 45ºC

Control Module ELECTRA

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Our vocation is to work side-by-side with our customers, developing the complete and optimal system solution. Throughout this process, we carry out all the simulations & tests required to guarantee the correct specification of all embedded electrical systems. This will assure a successful integration into the vehicle’s engineering.

INGETRAC modular solutions and their integration guarantee an easy performance of all preventive and corrective maintenance tasks without the need for special tools.

Our INGE TEAM licensed software allows free access to traction system parameters for diagnosis and data analysis providing a comprehensive maintenance solution.

**Key factors:**
- Low operating Life Cycle Cost (LCC)
- Predictive Maintenance (PdM)
- Maximum availability
- Focused on safety and reliability
Main References: INGETRAC High Power

**Diesel-Electric Locomotives**
- **Poland**
  - Power: 2.4 MW

**High Speed Power Heads**
- **Uzbekistan**
  - Power: 2.4 MW

**Electric Locomotives**
- **Poland**
  - Power: 5.6 MW

**Multivoltage HS Locomotive**
- **Spain**
  - Power: 3.6 MW

Key Technology Assets
- INGETEAM Group in-house R&D resources
- One of most advanced power laboratories in Europe (up to 13 MW)
- Test facilities for the complete traction chain system test validation (EN61377)

Worldwide Presence
Internationalization is a vehicle for future progress. At present we have production, commercial and service establishments in more than 22 countries.