

Traction motors

– for railway rolling stock





Latest technology based on long experience

ABB offers a comprehensive range of products and services to the railway industry and strives to be at the forefront of technology in all aspects of its processes and products. The group has a long and consistent record of investment in research and development.

ABB has been manufacturing industrial motors for more than 130 years and has supplied more than 30 000 traction installations. These installations range from heavy locomotives for intercity expresses through to light metropolitan tramways.

ABB designs and manufactures medium power traction motors and high power traction motors. These are all state-of-the-art units and include modular motors.

ABB is committed to supporting its customers and from its long involvement in the railway industry it is very conscious of the needs for safety and reliability in public transport systems. Therefore it provides excellent support and service facilities around the clock, around the world.

ABB's products and manufacturing processes are designed to have minimum environmental impact from initial concept to the end of the product life cycle.

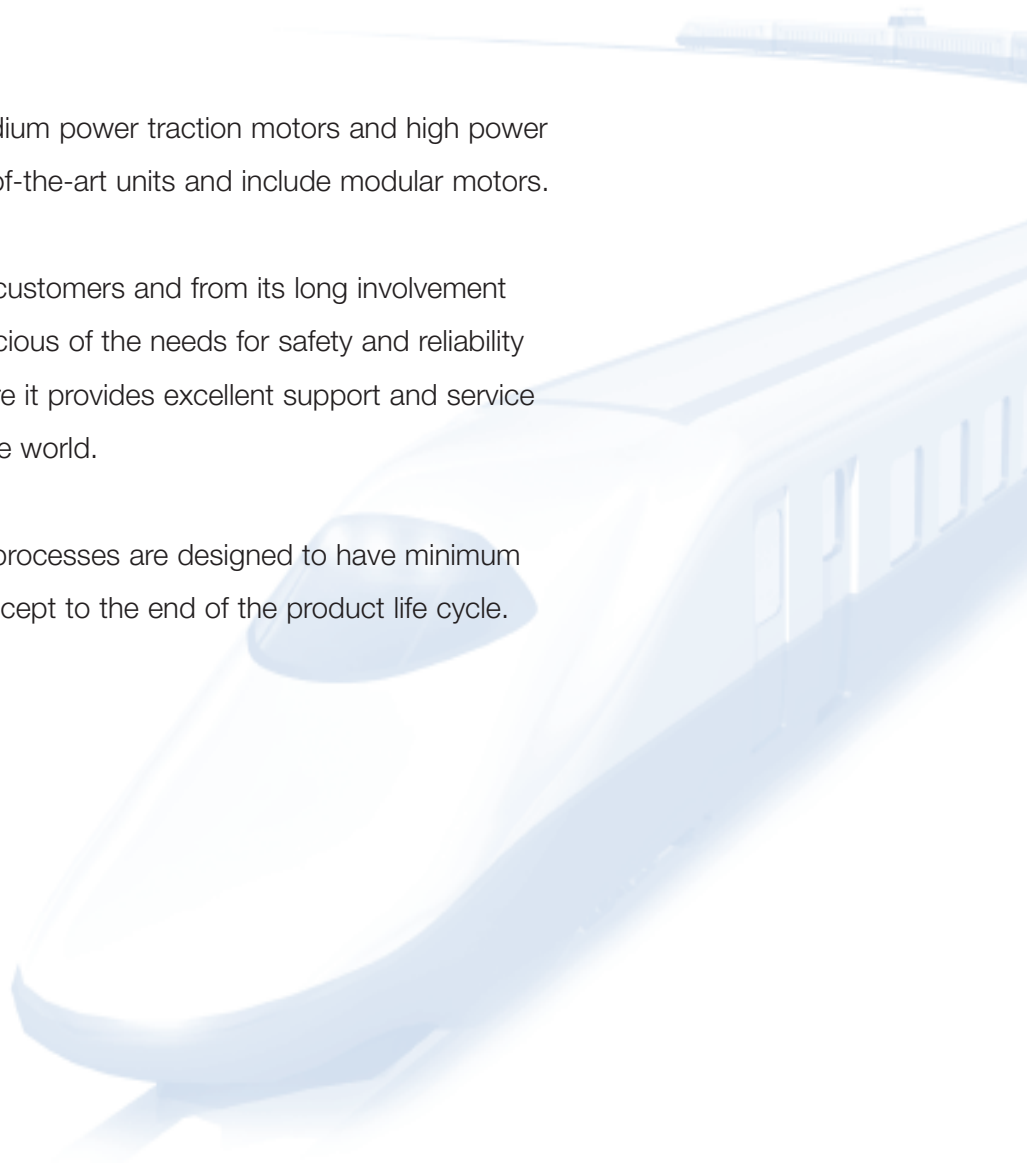


ABB traction motors

ABB supplies traction motors suitable for modern operating and environmental conditions – from deep freezing winters in northern forests to the blazing heat of tropical cities.

All these units operate reliably and competitively over very long product life cycle and are designed to have minimal environmental impact.

The range of traction motors includes the latest modular units in the medium power range and custom-built units in the high power range.

Customers are supported from design concept through all subsequent stages to ensure smooth implementation and optimum performance of the complete traction unit.

The new modular units combine ABB's advanced manufacturing technology with its experience in the railway industry to provide high performance traction motors competitively and with short lead times.

ABB traction motors are supplied to meet the full range of design requirements in terms of supply voltage, speed and torque. They can be configured with all common cooling methods. Bearing temperature transducers can be connected to the vehicle builder's condition monitoring system.

Sets of a generator and motors are offered for diesel powered units.

All motors and generators are designed and manufactured to the highest industrial and environmental standards. ABB production units are certified to ISO 9000:1 and ISO 14000.



ABB provides traction motors for local trains in:

CHINA • FRANCE • ITALY • SOUTH AFRICA • SWEDEN • UK • USA





ABB traction motors are keeping people on the move
in the metros of:

BUCHAREST • LONDON • MILAN • NEW DEHLI • ROME • STOCKHOLM



Modular traction motors

Modern industrial conditions require that products should be flexible to permit a high degree of standardisation and should be available with short lead times for engineering and manufacture.

For the railway industry this must be achieved without any loss of performance or reliability.

The new modular traction motors have mounting straps attached to the casing according to the vehicle builder's requirements. This allows the motors to be fitted into the smallest possible space. The design of the motor and the flexible mounting arrangement result in significant weight saving.

An important design feature is that the rotor cage is from aluminium, die-cast directly onto the laminations. This is a well proven and robust rotor construction providing enhanced reliability.

Modular design allows a wide selection of pre-defined rotor motor sizes. This means that ratings can be achieved according to the design requirements to ensure high operating efficiency yet retaining maximum flexibility for the bogie layout.

These compact high performance motors allow vehicle builders considerable freedom for new designs and for retrofitting.

The flexible housing design allows a variety of:

- Cooling arrangements
- Supporting brackets/bogie attachments
- Cable terminals
- Sensor mounting arrangements

This results in shorter lead times and no major engineering requirement.



High power traction motors

As the power increases so do the requirements for high performance, efficiency and the use of space. ABB has the engineering expertise and manufacturing resources to achieve the best solutions.

ABB has the design skills and experience to achieve a carefully calculated optimum solution for each application. This can be tailor-made or can be based on a standard design. The latest design tools are used at each stage in the process.

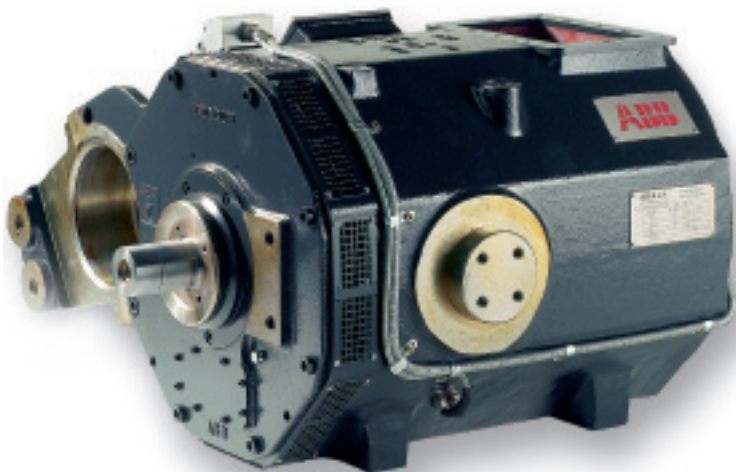
The electrical design process includes analytical dimensioning as well as FEM analysis. Careful checks are made to ensure compatibility of the motor and converter. Other checks include a torque pulse analysis.

The mechanical design development is closely coordinated with the electrical design to ensure optimum results. It includes detailed stress analysis and calculation of resonance frequencies.

These rigorous procedures and earlier well-proven designs ensure that ABB supplies efficient, reliable, long lasting, high performance motors.

The motors are manufactured using very modern equipment for key processes. The special purpose equipment includes:

- Punching and stacking laminations
- Machining centres
- Automatic frame welding centre
- Coil manufacturing and winding assembly
- VPI impregnation plant
- Veridur® insulation system class 220°C
- Motor assembly and testing facilities
- Semi-anechoic chamber for noise and EMC measurement



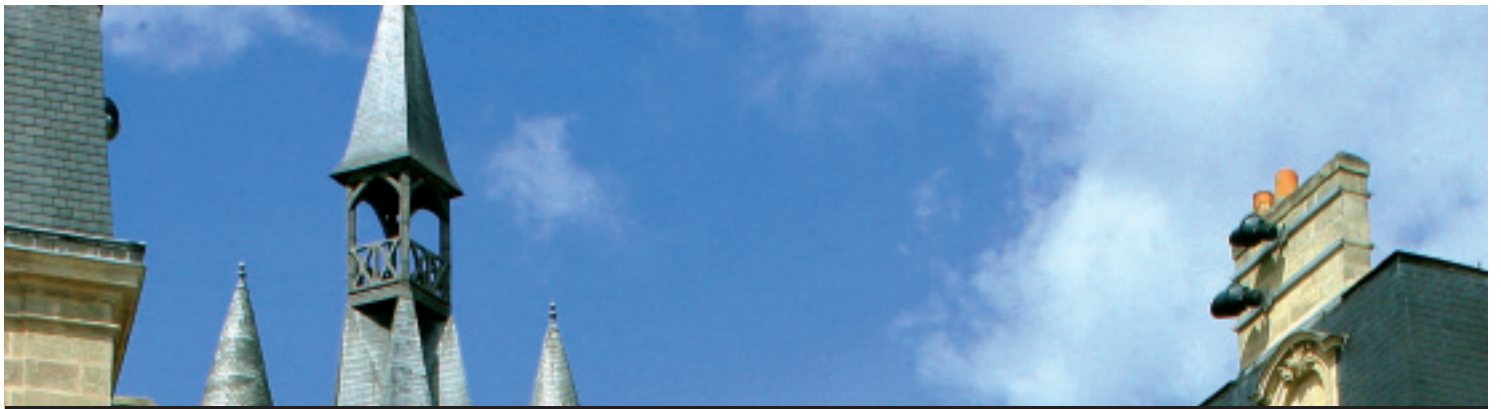
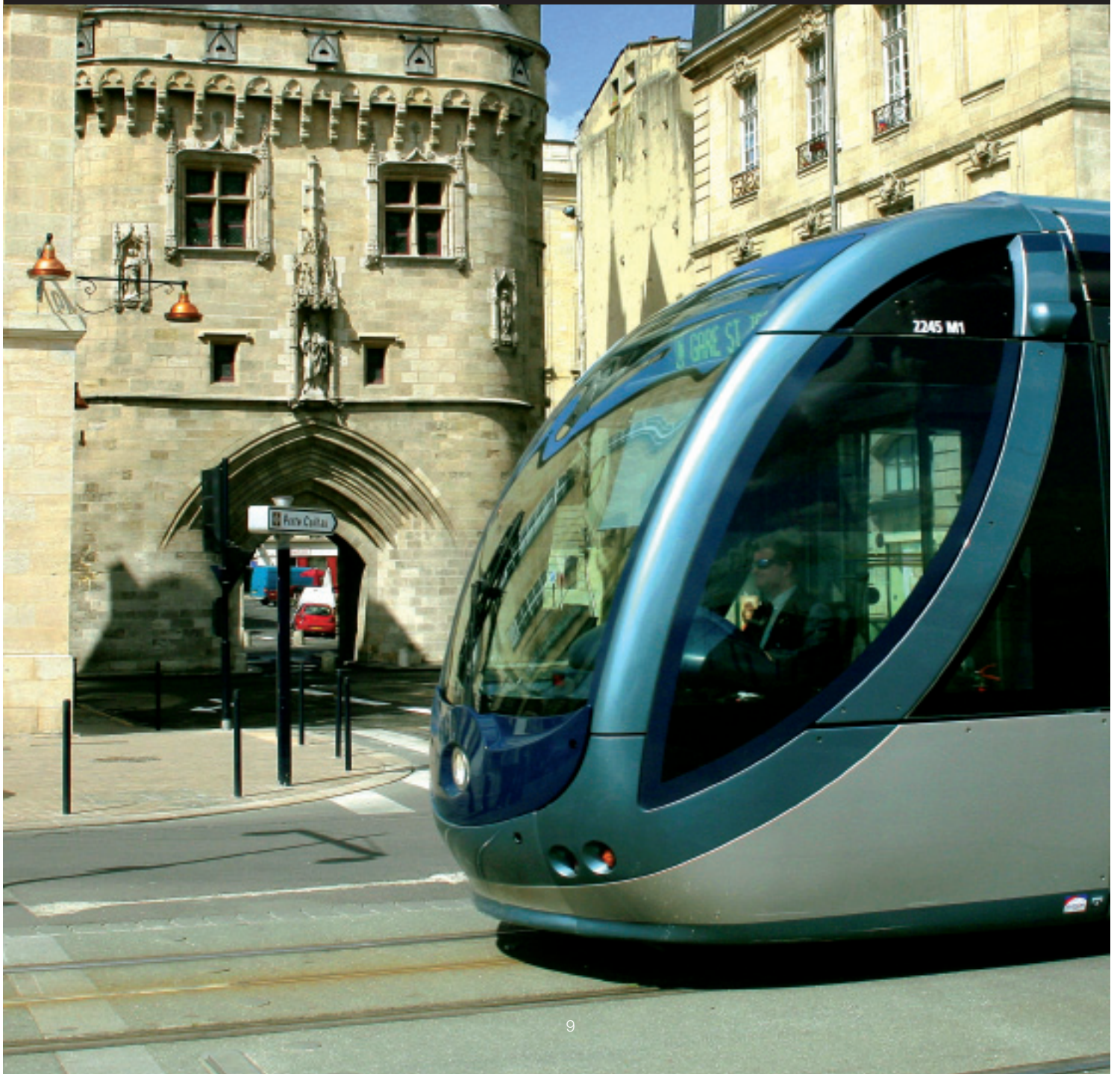


ABB traction motors help to whisk tramway passengers through the streets of:

BRUSSELS • MILAN • PORTO • PRAGUE • STRASBOURG • VITORIA



The ABB advantage

Traction motors are a long term investments requiring first class products and first class, long-term support. As a global supplier of advanced technical products ABB provides a truly comprehensive support organisation.

Quality products

ABB is a leading international group and to meet the challenge of supplying top quality products competitively and with short response times ABB has developed global manufacturing facilities and an independent supplier network. All of these arrangements are subject to stringent quality assurance procedures.

Customer support

Railways are long term projects in which good, fast communication is essential. ABB provides customer support from its manufacturing centres and through its local offices. ABB is present in more than 100 countries so that although the support is global it also has the benefits of being local.

Customer support is provided from the initial concept through to the operation and maintenance stages.

An example of customer support is the rating program to assist vehicle builders at the bidding stage. From a schedule of track gradients, distances and journey time ABB can rapidly select the appropriate traction motors. No matter what the requirement, ABB will help you find the best solution.

Service and Maintenance

ABB motors are aimed at trouble-free operation over the entire product life cycle. The motors are designed to allow quick and easy maintenance. Maintenance costs and downtime are minimized. ABB's network of service workshops provides global coverage. The after sales service organization has broad experience of electrical machines and their applications and can thus provide improved operational availability and life cycle profitability for customers.

Based upon information and experience relating to maintenance schedules and costs ABB uses life cycle management models to plan effective preventive maintenance procedures. This assists users to reduce total life cycle costs.

It is easy to work with ABB as your partner!



ABB is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in more than 100 countries and employs about 115,000 people.



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