




CUSTOMER NAME

ABB Molinazzo – Factory portrait

Dry-type transformers and reactors Rev. 5

Presenter



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Some history

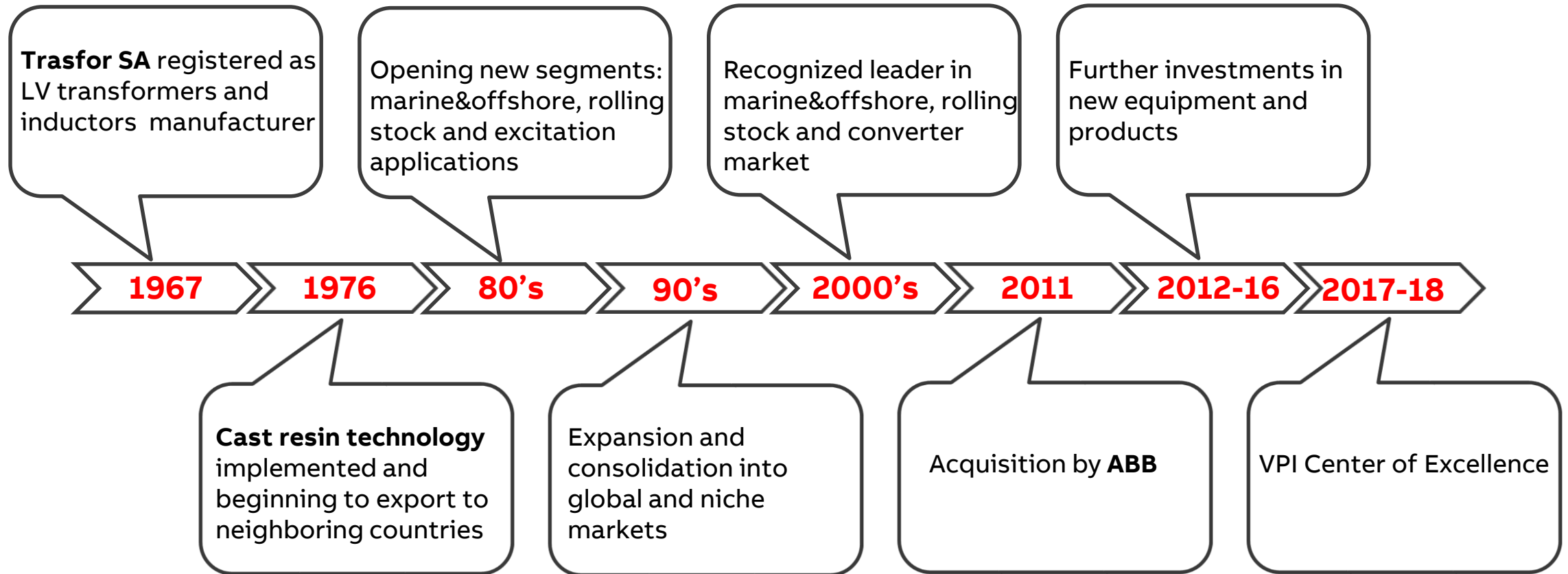
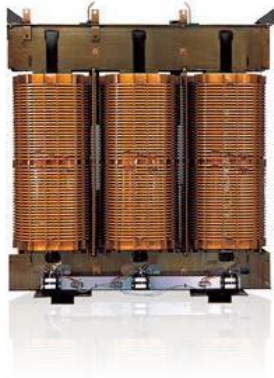


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Customized technologies for special needs

Open wound - VPI



- Highest insulation class (220°C)
- Very good price/performance ratio
- Ideal for indoor and outdoor environments
- Excellent fire behavior

Vacuum cast coil - VCC



- Smallest footprint with voltage class up to 36kV/170kV BIL
- 40+ years proven technology
- Smooth coils for easy cleaning

Reliable, ecological, safe for people and ambient, maintenance-free

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Reliable solutions for all requirements

Engineered products for all applications



Low voltage magnetics

- Transformers and reactors
- Up to 1000 V and 10 MVA



Indirect water-cooled magnetics

- Heat sinks
- Transformers and reactors



Direct water-cooled magnetics

- Internal through conductor
- Transformers and reactors



MV magnetics

- Transformers and iron core reactors
- Up to 36 kV and 25 MVA



Air-to-water heat exchangers

- Up to 36 kV and 25 MVA



Air-to-air heat exchangers

- Up to 36 kV and 25 MVA



Air-cored reactors

- Indoor & outdoor applications
- 4 MVA/ph – 36 kV



Converter duty transformers

- Transformers for rectifiers, exciters and motor VSD's
- Up to 36 kV, 25 MVA, and 48 pulse



Special applications

- Custom magnetics for rectifier duty, railways and rolling stock, wind turbines, marine/offshore, etc.

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The sequence - Overview

Markets and applications



Our long-lasting and vast experience with magnetics has allowed us to be leaders in many different markets. We operate with success, in the following:

Traction (MV wayside, auxiliary and rolling stock transformers and reactors)

Marine & Offshore (thruster, drilling distribution transformers)

Power electronics (drives & rectifier stand-alone and integrated transformers, reactors)

Power plants (excitation, auxiliary transformers and outdoor reactors)

Renewable energy (step-up/down transformers, integrated transformers & reactors)



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The sequence - Overview

Lean manufacturing



Our factory has a very large variety of tailor-made transformers, that extend from **few kVA to 20+ MVA**, manufactured by using different winding and insulation technologies, and providing diverse finishing options (**IP00, IP44, AN, Heat-exchangers, etc.**) for different customers.

Nevertheless, we are in the process of **adapting** our production to the LEAN principles, with plans to **gradually embrace other departments**. We are convinced that product optimization, accuracy and quality to be obtained from this project will provide benefits also to our customers.

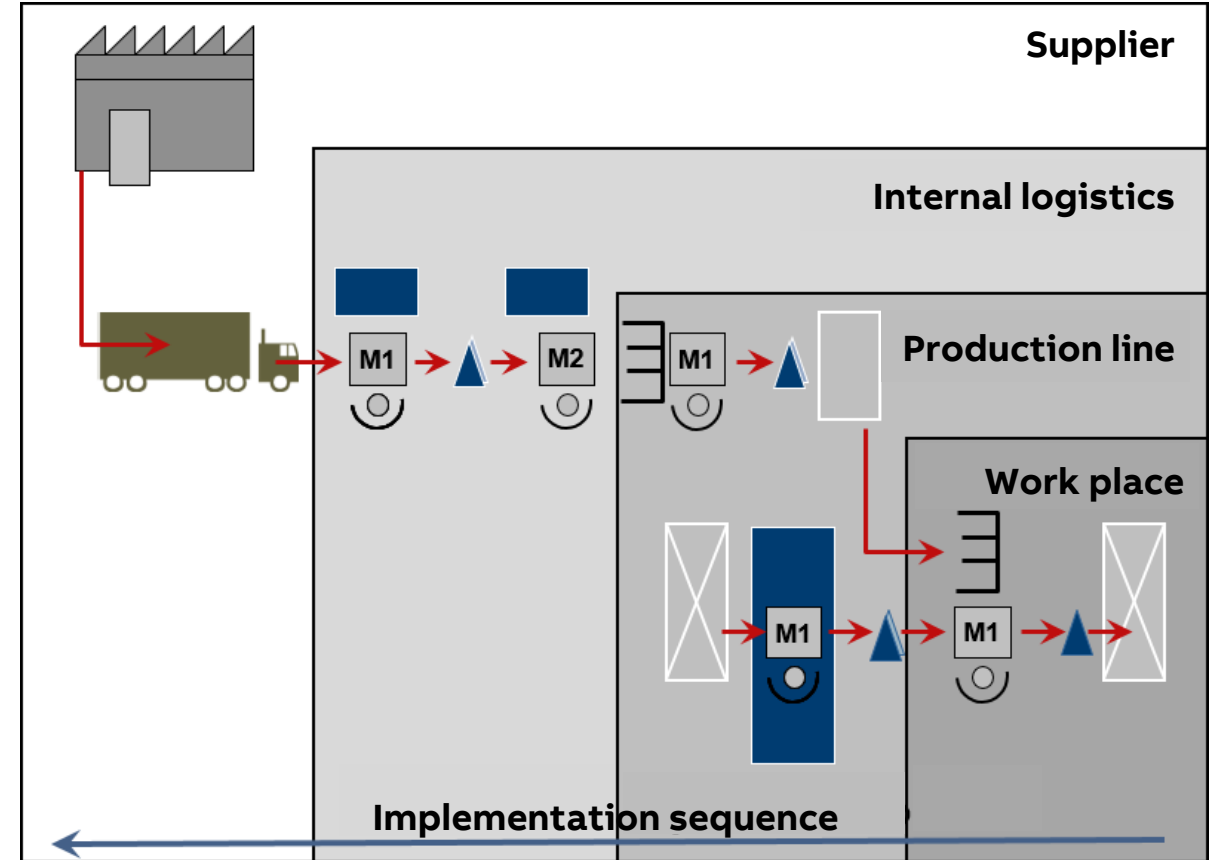
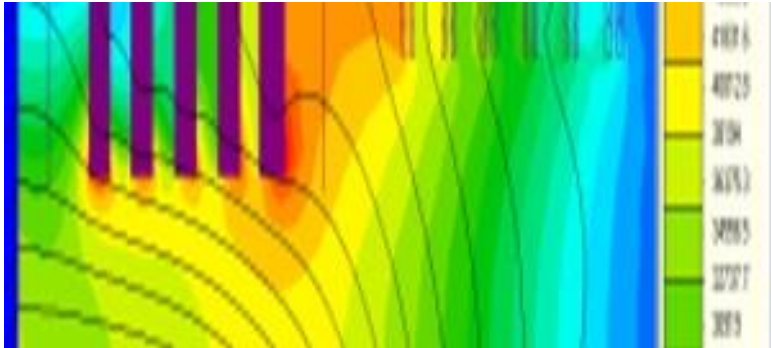


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Design – Traction wayside and rolling stock (II)

Finite element analysis



In-house software allows us to perfect the design by verifying the actual performance of the designed components, both from **mechanical and electric** point of view.

Waterproof



Special winding features developed by ABB allow a complete protection of the windings from water. Some customers have stretched us till the **5 kV applied insulation** test while the components are **immersed in water**.

Extreme temperatures



Thanks to our vast experience in this field, transformers and inductors can be designed to withstand extreme temperatures, from **-50°C to +60°C** or more, which are extremely demanding for both insulation and weldings.

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Testing

Certifications

Different markets and applications have led to obtain certifications from many different authorities.

- ISO 9001
- ISO 14001
- OHSAS 18001
- IRIS
- ISO EN 3834-2 and EN 15085

We can design in accordance with major international standards: IEC, BS, CSA, UL, VDE/DIN, ANSI, LRS, CCS, RMRS, etc.



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Markets - Renewable energy



We have entered this market more than 20 years ago, with transformers and inductors being engineered specifically to match the demanding needs of the renewable energy segment.

Product applications

Air-cooled or water-cooled transformers and inductors for system inverters

Step-up/step-down MV transformers for solar or wind power plants.

Products characteristics

Compact integrated solutions suitable for installations in system inverters. The possibility of having water-cooled solutions allows a further reduction in the components' dimensions.



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Markets - Industrial OEMs / System integrators



Our offer for this field is dedicated to power electronics OEMs where we provide integrated components and system integrators coupling the products with stand-alone transformers.

Product applications

Drives, converters, rectifiers for industries such as metals & chemical (high currents), mining (pollution) or large pumping stations, where reliability is a must.

Products characteristics

Integrated tailor-made reactors and multi-pulse transformers. Dedicated solutions can be AN, AF, AFWF, AFAF.

Stand-alone multi-pulse transformers to be coupled with drives, converters, rectifiers.



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Markets - Navy



Navy ships differ from merchant and civilian ships in terms of **design, construction and use**. Navy ships are normally made of specialized steel alloy that makes them damage resilient during the enemy attacks.

Product applications

Propulsion and distribution transformers for aircraft carriers, frigates, patrol ships, landing ships, submarines, etc., where reliability of machinery systems is essential for the safety of a nation.

Products characteristics

Thruster and distribution transformers, and their accessories, must be able to withstand extremely high accelerations (e.g.: 13g above the shock absorber).

All components adequacy are tested/verified by vibrating plate or FEA.



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Markets – Marine and offshore



We have a long track record in providing transformers and reactors for the marine and offshore markets.

High reliability and small footprint due to limited installation space are among the demanding requirements of our customers in this field.

Thruster and distribution transformers for Cruise vessels, LNG carriers, Navy ships, Dredgers, Multi-purpose vessels, Post-PanaMax Container ships

Thruster, drilling and distribution transformers for Drill ships, Floating production vessels, Semi-sub rigs, Drilling platforms,

Compact and light-weighted magnetics, whether with a simple enclosure or an IP44 AFWF configuration, ensure a perfectly controlled operating condition and consequently a more efficient and durable system.

Product applications

Products characteristics



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Markets - **Wayside traction and rolling stock**



From the early 80s, when we started producing electromagnetic components for railroad traction, we have continued working along side all the major industry engineering groups, train builders and system designers.

Product applications

Line filters, chopper reactors, auxiliary transformers for locomotives, wagons, light rail, trams

Traction and auxiliary transformers for wayside substation

Products characteristics

Compact and light-weighted, protected from harsh environment by self developed technology, high level of reliability.

Excellent environmental, climatic and fire behaviour



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Markets – Power plants



We are specialized in designing and manufacturing excitation transformers in this field.

Product applications

Excitation and auxiliary power distribution transformers for Hydro-electric plants, Combined cycle plants, Coal-fired plants

Products characteristics

Reliable and efficient transformers, that take into account voltage fluctuations and harmonics.

AN or AF transformers in IP00 or IP23 enclosures are generally required.

3Ph or 3x1 Ph solutions available



Products for various applications

Traction



Power plants



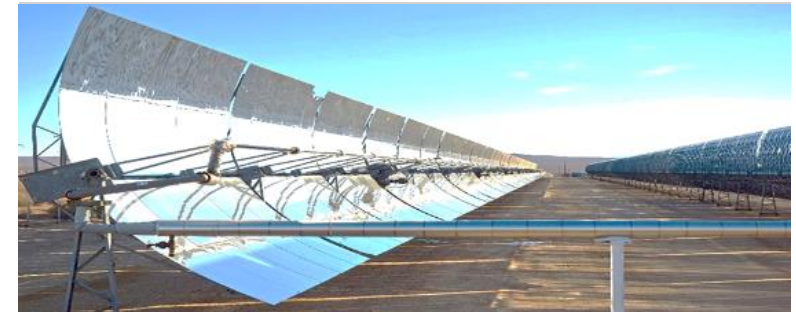
Marine, Navy & Offshore



Industry



Renewables



OEMs



Esperienze sul mercato tedesco

- La Trasfor è presente sul mercato tedesco da oltre 50anni
- L'esperienza fatta conferma che per vendere in D bisogna avere un rappresentante locale.
- Le specifiche sono spesso in tedesco e pertanto in azienda bisogna avere tecnici e commerciali che conoscono il tedesco
- Forte riduzione del livello di prezzi rispetto agli anni passati
- Viaggiare in Germania è conveniente rispetto al maggior parte dei paesi europei
- Si raccomanda di partecipare alle fiere (per noi che siamo nel settore metalmeccanico la piu' importante è Hannover Messe)
- Mercato stabile anche se ultimamente si parla di deflazione
- Sul mercato tedesco si trovano molti concorrenti, specialmente della vicina penisola che offrono con prezzi agguerriti
- Anche in Germania le ditte possono fallire, (nostro caso cliente Spagnolo e cliente finale D)
- La Germania può essere una finestra verso i paesi dell'EST (la Trasfor ha fatta vari affari appoggiandosi a rappresentanti di ditte russe con sede in D)
- DOMANDE ?



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