



TECHNOLOGY LEADERSHIP

ABB is driving the Internet of Things, Services and People
→ Turning data into productivity gains

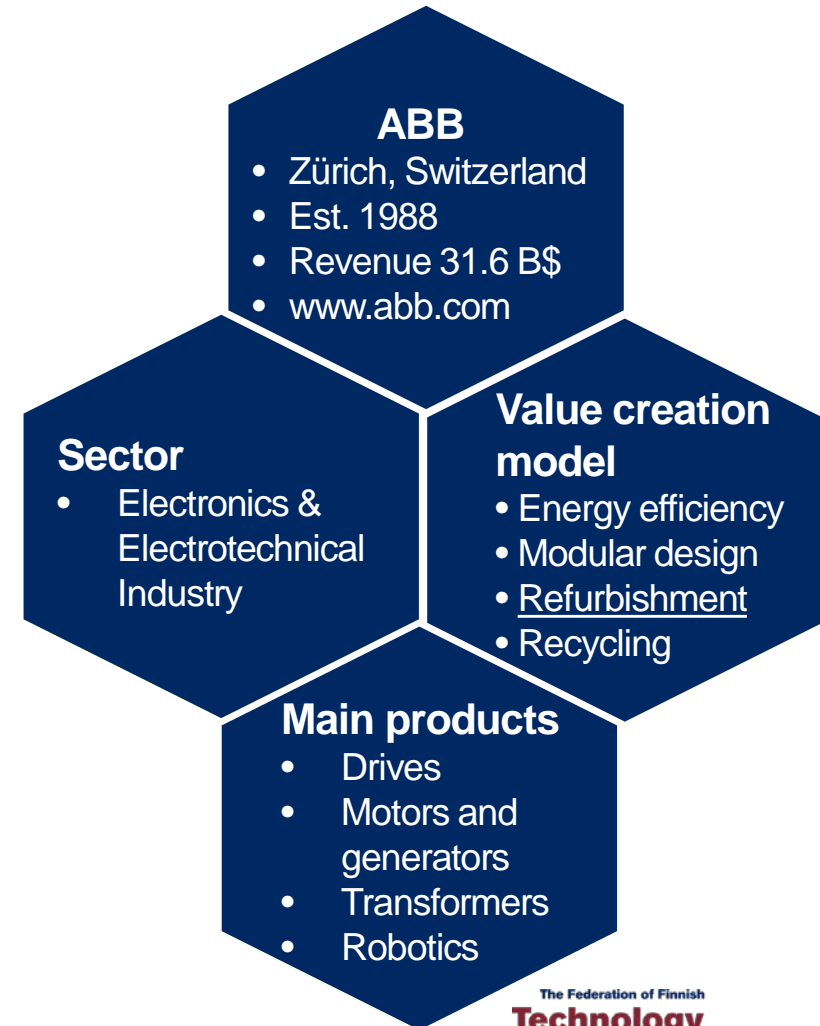
<http://www.abb.com/>

Contact person:

Jussi Aarnivuo, Country Environmental Manager, HSE, ABB Oy

Email: jussi.aarnivuo@fi.abb.com

Mobile: +358 50 33 26034



The Company



- **ABB** is a **global leader in power and automation technologies**. The product assortment is extremely wide. Furthermore, various product lines are very different when it comes to the expected product lifecycles: big part of products may be in use up to 40 years, for other product lines the lifecycle is considerably shorter.
- From Circular Economy's point of view, it is important to understand the impact of **expected product lifecycle** on the selection of focus areas: For products with long expected lifecycle, the focus should be on the product design and manufacturing decisions, and on **the use phase**.
- ABB **energy efficient and energy saving products**, like motors and drives, save energy and keep CO² emissions out of our Earth's atmosphere throughout the lifecycle. **It is estimated that motors consume 28 % of the world's electricity**.
- ABB's drives saved the globe in 2014, for example, energy consumption, which is equivalent to what 110 million households use in energy.
- ABB products are **designed for durability**, service and maintenance support to the long product lifecycle.



The Challenge / Opportunity: Design for durability



- **Service and maintenance** are important elements of durability. ABB provides maintenance for products that have been in use up to 30 years. In general, lifecycles for all ABB products is long – close to 25 years for almost all the product.
- **Product development cycles** are long especially for many products. Ecodesign can change materials used, but the Laws of Physics have not changed, so it is difficult to do any fundamental changes in their design. However, in other product lines, development work is active: For instance, ABB develops supercapacitors, has adopted permanent magnets in motors and generators, and is combining inverters and motors to the same unit.
- **Modularity** has always been an essential part of ABB's product design. From durability point of view, modularity gives the customer option to choose an optimal configuration for the product.
- In the future, ABB may have to consider whether lifespans of the products being produced are optimal. If the regulation changes, the company may have to change their design philosophy as some products may be “too good”, i.e. last longer than the **optimal lifecycle** from the Circular Economy point of view.



ABB Drives: Drive Exchange service is an environmentally friendly choice



- **Drive Exchange** service is a fast, reliable and cost-effective alternative to repair, buying a new drive or performing maintenance.
- Reasons to choose ABB Drive Exchange service
 - **Cost savings**: up to 30 % of the cost of a new drive, but with equivalent performance.
 - **Reliability**: exchange units have a one-year *warranty* and are tested according to the original specifications.
 - **Sustainability**: the original drives are *refurbished*, used to refill exchange unit stock or *recycled* according to local regulations.
- Drive Exchange is the cost-optimal, reliable and **environmentally friendly** choice.

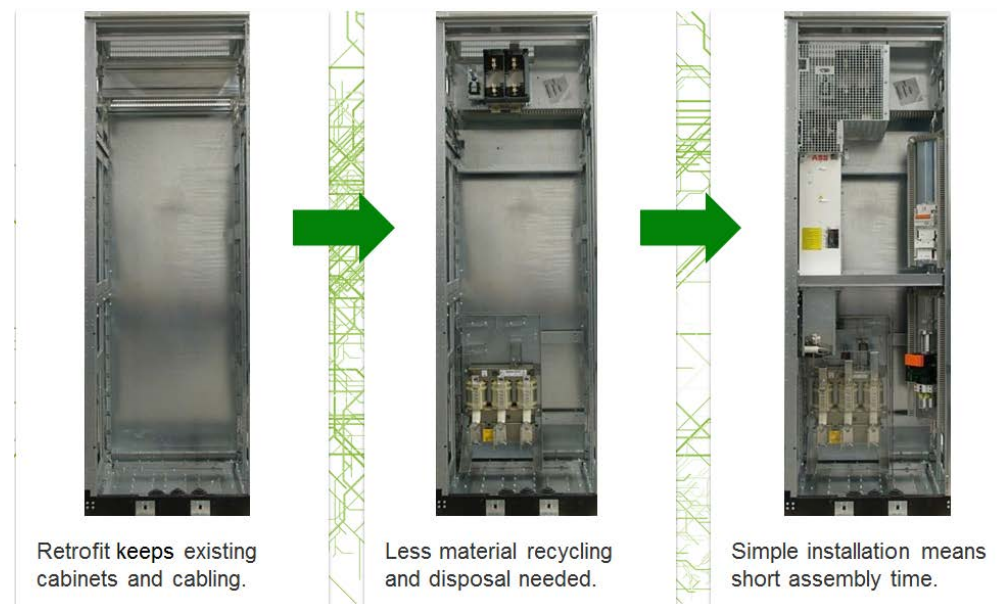


Contact person:
Ilkka Kihniä, Product Management
Drives Services, ABB Oy, Drives
Email: ilkka.kihnia@fi.abb.com
Mobile: +358 50 33 22194

ABB Drives: Less material recycling and disposal needed with Retrofit service



- **Retrofit services** is a fast and efficient way to modernize the your drives.
- Retrofitting brings **immediate performance improvements** to your plant and process.
- Retrofit's step-by-step installation helps avoiding lengthy shut-downs.
- Retrofit updates drive technology and **keeps the existing control and automation system**.
- Retrofit guarantees availability of **spare parts** and technical support.
- Nearly 1000 Retrofits delivered to different industries: pulp & paper, metals, food & beverage, marine, pumps and fans



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Ilkka Kihniä, Product Management
Drives Services, ABB Oy, Drives
Email: ilkka.kihnia@fi.abb.com
Mobile: +358 50 33 22194

ABB Transformer Service: Services throughout the transformer life cycle



- Time Based or Condition Based Maintenance
 - The **time based maintenance** is carried out at predetermined intervals of time or on the base of prescribed criteria and aimed at reducing the probability of failure or the working deterioration of the element.
 - In the **condition based maintenance** the asset condition is monitored and performance degradation is tracked.
- Repairs
 - **Repairing** a transformer instead of replacing it can **substantially reduce investment costs** and provide a faster turnaround.
 - **Refurbishment** can be an intermediate action when no failure has occurred and the ageing of the active part has reached a stage where the continued reliability of the transformer is unacceptable.
- Spare Parts and Consumables
 - Genuine high quality **spare parts and consumables** with fast turn-around time, using ABB's extensive network, thus reducing downtime.
 - ABB can **manufacture-to-order** many **retrofit nobel parts** such as tap changes and bushings, thus extending the life time of your transformer

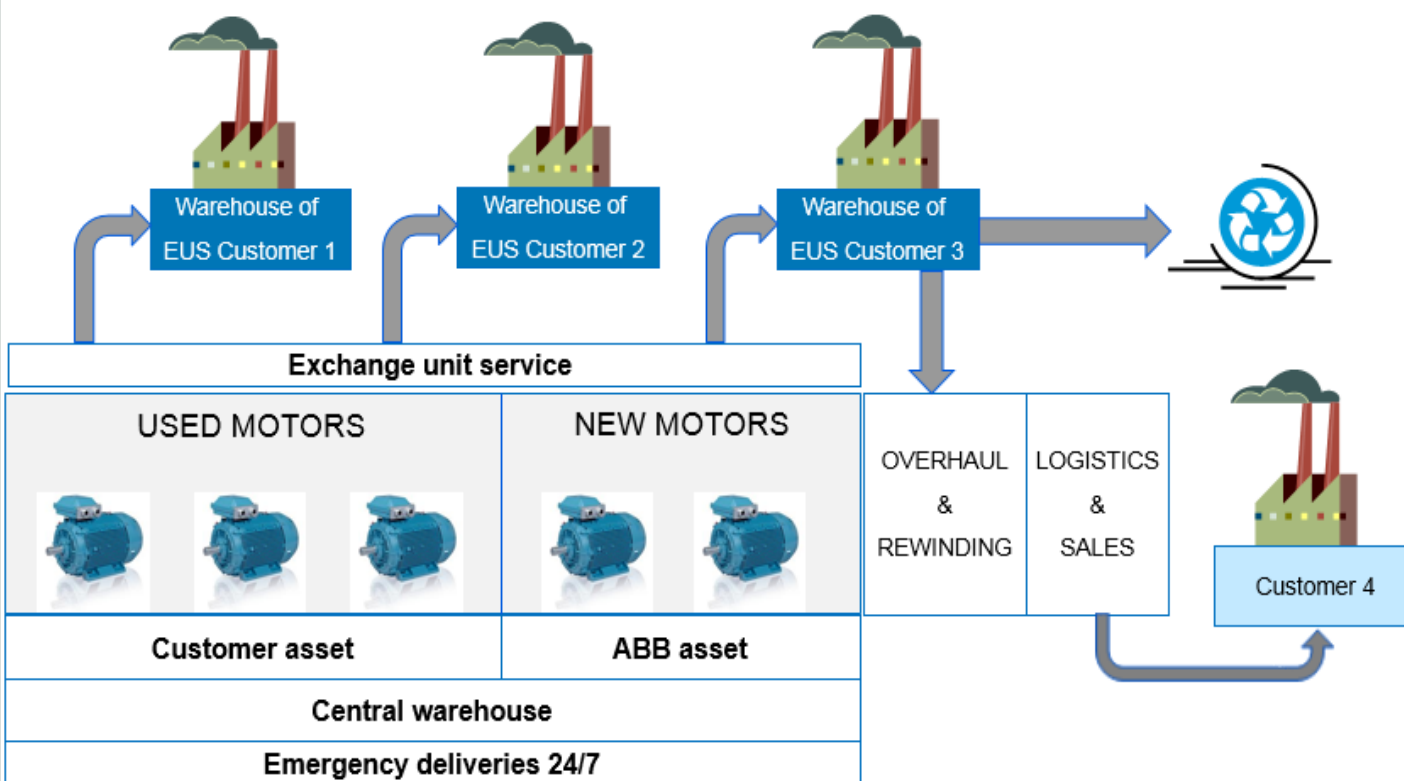


Contact person:
Kimmo Forsman, Manager
ABB Oy, Transformer Service
Email: kimmo.forsman@fi.abb.com
Mobile: +358 50 33 41997

ABB Motors and Generators: Exchange unit / "Motor Hotel" Concept



Exchange unit & fixed price service contract Exchange unit service



Joint use motor management model for LV IEC motors

Main customer benefits

1. **COST SAVINGS** – used motors up to 50% cost of a new motor
2. **OPTIMIZED PURCHASES** – motors purchased only for real need
3. **LV MOTOR ASSET MANAGEMENT** – Less capital invested to spare motor stock

Contact person:

Jyrki Leino, Sales Manager
ABB Oy, Motors & Generators
Email: jyrki.leino@fi.abb.com
Mobile: +358 50 33 23370