

## Zenergy Power – Company Overview

Zenergy Power plc is a UK registered and London listed energy technology company employing superconductor technologies. Comprising three operating subsidiaries located in Germany, USA, and Australia, Zenergy is providing products and services for renewable power, electric power reliability and security, and energy efficiency. Superconductor materials are capable of conducting electricity without any resistance and hence no electrical losses. Zenergy's pioneering achievements include:

### Smart Grid Technology

 First company to install superconductor fault current limiter into the United States electricity grid: Reducing risk of blackouts, protection of equipment, improved reliability, and preparation for integration of renewable energy.

#### Renewable energy generators

E.ON to install world's first superconductor generator in a hydro power station in 2010:
>30% increase in generator capacity, 25% decrease in offshore wind power cost.

### Industrial metal heating

World's first commercial superconductor devices in production since 2007:
50% reduction of energy consumption, 25% increase in productivity.

Zenergy Power is an energy technology company providing products and services for commercial superconductor applications. These products and services respond directly to the demands of large electricity consumers for efficient, compact, ultra-powerful, environmentally-friendly, and cost-effective solutions.





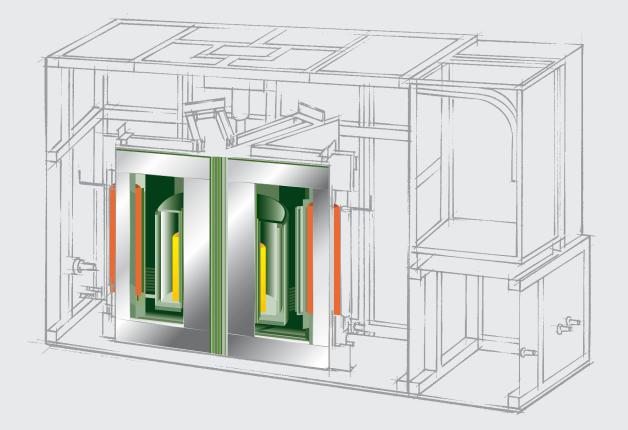
# Fault Current Limiter – The Smart Grid Technology

Acting like a firewall, Zenergy's Fault Current Limiter (FCL) protects power grid equipment against damaging power surges caused, for example, by short circuits or lightning strikes. The FCL significantly reduces the risk of power grid failures and interruptions in power supplies.

### Benefits:

- Suppression of overloads, while the downstream power supply is maintained without any interruption and at its regular strength;
- Improved operational reliability of fully stretched grids;
- Greatly reduced risk of large scale "blackout" due to cascading grid failures following a local defect;
- Cost-effective protection of transformers and other power grid equipment against power surge damages;
- Cost-effective integration of renewable power generation into the grid infrastructure.

Zenergy's Fault Current Limiter with superconductor technology has been put into operation in the grid of US electric power utility Southern California Edison in March 2009. It is the first such device to protect a distribution circuit in the United States' electricity grid.







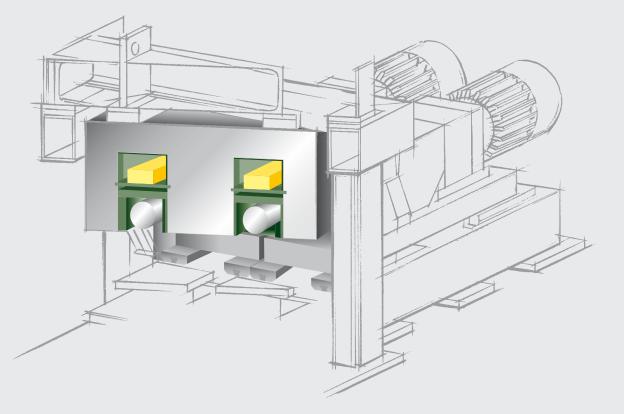
# Magnetic Billet Heater – Superior Efficiency in Non-Ferrous Metal Processing

Zenergy's Magnetic Billet Heaters set new standards for productivity, energy efficiency, and process flexibility in industrial aluminium, brass, bronze, and copper processing. The precision heating process softens raw material billets of non-ferrous metal to improve their ductility.

### Benefits:

- 25% productivity increase: Homogeneous billet temperature enables faster extrusion process;
- Improved product quality: Precisely controllable temperature levels for isothermal extrusion;
- Single block heating system with very short start-up time: Highly flexible and cost effective for just-in-time production and manufacturing of high-grade, special-alloy components;
- Compact and easy-to-install: Fast implementation in existing production layouts;
- Over 85% energy efficiency as opposed to 45% with conventional systems;
- Energy cost savings alone can amortise purchase price within five years of operation.

Magnetic Billet Heaters are produced and marketed by Zenergy and its partner Bültmann. The world's first industrial Magnetic Billet Heater commenced operations at Weseralu GmbH & Co. KG's aluminium extrusion plant, Germany, in 2008.









## Renewables

Zenergy's superconductor technology in renewable power generation enables significant cost reductions in offshore wind and hydro power generation. Applications in development in conjunction with Converteam include 10 MW class superconductor generators for offshore wind application and superconductor generators for hydro power plants.

## Benefits:

- 25% reduction in cost of power production due to generator losses cut by half;
- Lower cost of construction and transportation due to massively reduced size and weight;
- Improved reliability and lower maintenance owing to greatly improved thermal management;
- Improved grid stability due to unique reactance and overexcitation capability.

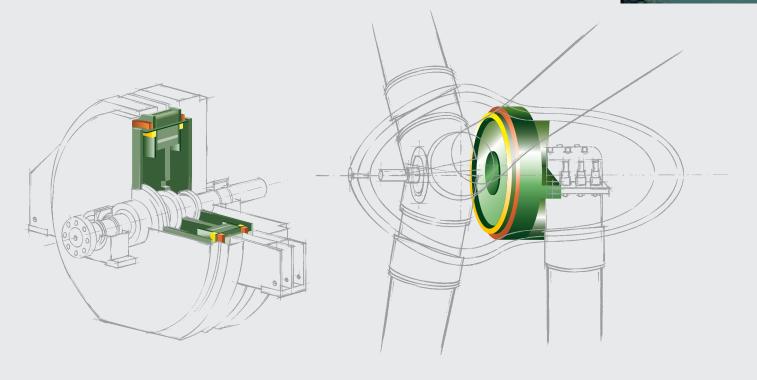
The world's first superconductor hydroelectric generator will go into operation in 2010 in a run-of-river power plant operated by E.ON in Germany.

The first wind turbine with superconductor technology, the scaled version of the 10 MW class generators, will be tested in 2010.











## **Superconductor Coils**

Zenergy produces customised, ready-to-install, highly reliable, and resilient superconductor coils, providing complete assistance with required peripheral cryogenic systems. Superconductor coils offer easy integration into technical systems with engineering opportunities those far exceed that of copper coils. They enable the development of products with unique and compelling value propositions. Important application fields include: power generation, industrial process engineering, scientific equipment, and the transportation field.

### Benefits:

- Customised coil design and manufacture available in lengths up to 3 m: Including cylinder, pancake, double pancake, racetrack, and double race track;
- High performance solutions with very low heat emissions, saving energy, space, and weight;
- Extensive project-related client support for implementation and cryogenics.

## Superconductors of the Second Generation (2G Wires)

Zenergy is developing HTS wires of the second generation (2G) based upon Yttrium-Barium-Copper-Oxide (YBCO). 2G wire uses a layering architecture: The surface of a metallic carrier tape is first coated with a buffer material and then with a layer of YBCO. For production, Zenergy is developing an all-chemical process which offers superior economics.

### Benefits:

- 20-50% price advantage over other 2G manufacturing processes;
- World's only all-chemical manufacturing process for 2G wires;
- Patent-protected;
- Sustainable market and product strategy.







## **Zenergy Power: Simply Better**

Zenergy Power plc produces and develops superconductor wires, components, and devices. Superconductivity is a key technology for meeting the 21st century's challenges in the fields of energy technology and climate protection.

### Zenergy key differentiators are:

- The only pure play superconductor company (London Stock Exchange ('LSE') AIM listing ZEN.L);
- The first company in the world to sell industrial-scale commercial superconductor applications;
- The first supplier to install a Fault Current Limiter in the US electricity grid;
- The first industrial superconductor device operating worldwide Magnetic Billet Heater;
- IP protection with over 100 patents and patent applications pending;
- Sustainable products addressing multi billion Euro markets.

#### Long-Term cooperation agreements with leading technology partners:

- Bültmann (Magnetic Billet Heater)
- Converteam (Renewables)
- E.ON (Renewables)
- GTT Technologies GmbH (2G wires)
- Honeywell (2G wires)
- Kema (Hydro)
- NEETRAC The National Electric Energy Testing Research and Applications Center (FCL)
- ThyssenKrupp VDM (2G wires)

Zenergy is fully integrated in the network of superconductivity research and cooperates with universities and research laboratories all over the world, such as Sandia National Laboratories and RWTH Aachen.

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