

**tyco**

*Electronics*

**Components for the electrical network  
in wind turbine farms**



## Your first choice in high-performance solutions

Energy Division, a global manufacturer of products and systems for the electrical power industry, is an operating unit of Tyco Electronics. Today, Energy Division employs some 3,000 people, with annual sales totaling over \$600 million. Our products are employed extensively by power utilities and equipment manufacturers, in rail transport systems and in industry around the world. Our product range covers:

- **Cable accessories**
- **Connectors and fittings**
- **Switching, protection and lighting**
- **Insulators, insulation and identification**
- **Surge arresters**
- **Power measurement and control**

Energy Division is a customer-focused, knowledge-driven organization working at the leading edge of technology. Many factors combine to make us a strong supply partner: among them are the availability and breadth of our product offering, our presence in multiple market segments and our structural stability and financial resources.

## THE ONE-STOP SHOP

We offer a broad range of reliable and cost-effective, high-performance solutions with full customer support. This includes application and engineering assistance, hands-on field training and continuous after-sales support. Expertise of over 40 years in materials science, product design and process engineering goes into the invention, development, manufacture and marketing of our products.



**Bowthorpe EMP**



**Dulmison**



**Hellstern**

**idento®**

**Raychem**

**SIMEL**

# Our high-performance components for electrical equipment in wind turbines and for electrical networks in wind turbine farms

## Turbine

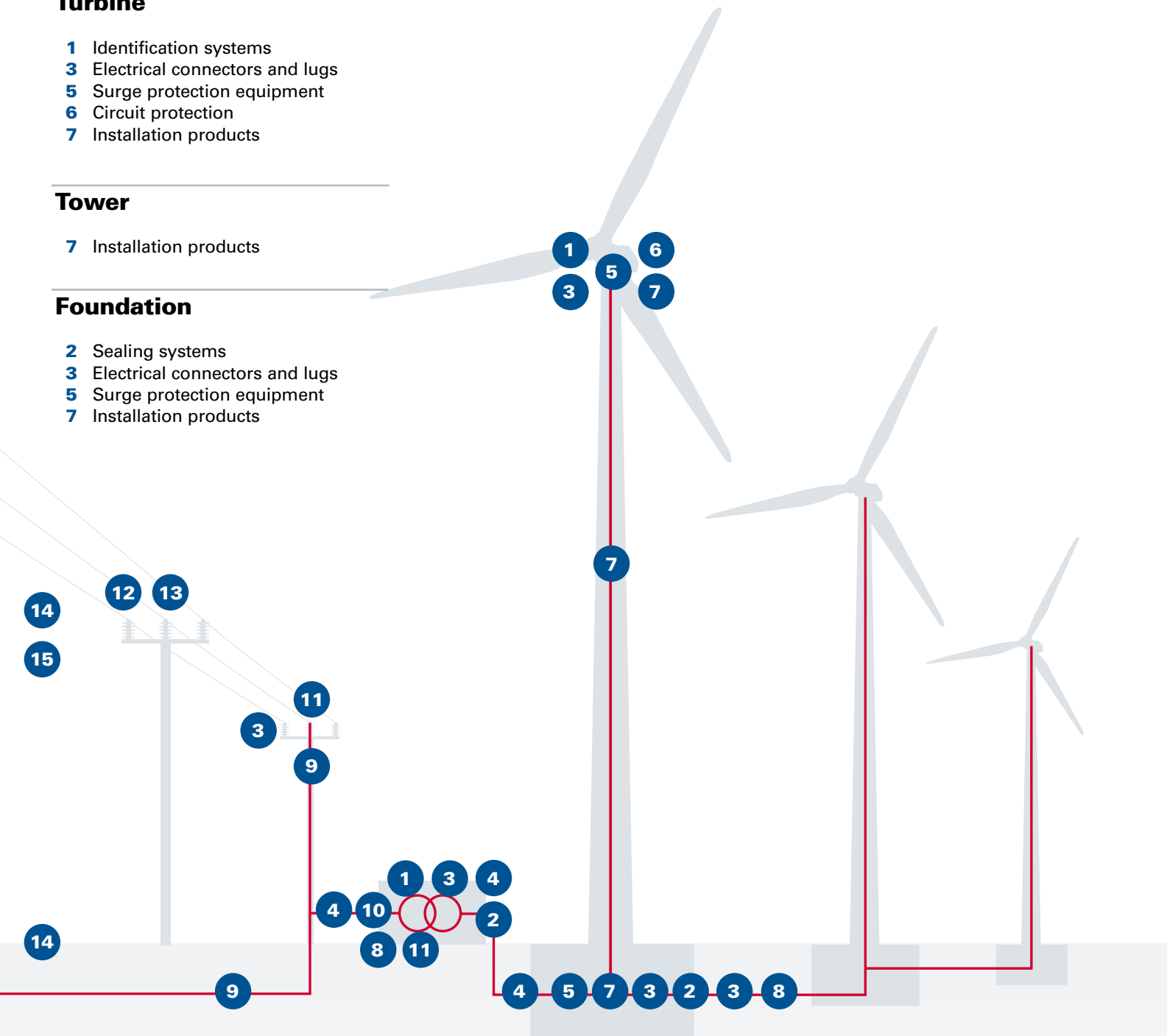
- 1 Identification systems
- 3 Electrical connectors and lugs
- 5 Surge protection equipment
- 6 Circuit protection
- 7 Installation products

## Tower

- 7 Installation products

## Foundation

- 2 Sealing systems
- 3 Electrical connectors and lugs
- 5 Surge protection equipment
- 7 Installation products



## Wind farm internal LV network

- 3 Electrical connectors and lugs
- 4 LV and MV power measurement, control and protection
- 8 LV cable accessories

## Transformer box

- 1 Identification systems
- 2 Sealing systems
- 3 Electrical connectors and lugs
- 4 LV and MV power measurement, control and protection
- 10 MV connecting systems
- 11 Insulation enhancement system

## MV distribution HV transmission

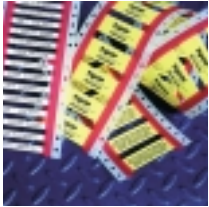
- 3 Electrical connectors and lugs
- 4 LV and MV power measurement, control and protection
- 9 MV joints and terminations
- 10 MV connecting systems
- 11 Insulation enhancement system
- 12 MV insulators
- 13 Surge arresters
- 14 HV joints and terminations
- 15 Conductors and helical fittings

## Identification systems

# 1



**Pre-marked wire and cable markers**



**Computer-printable sleeves and tie-on marker systems**



**Signs, plates and panel labels**

## Sealing systems

# 2



**Cold-applied duct sealings**



**Heat-shrinkable cable glands**

## Electrical connectors and lugs

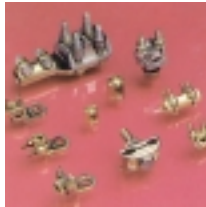
# 3



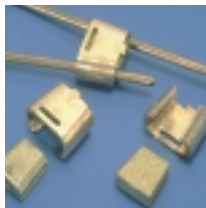
**Connectors and lugs**



**Bimetallic Lugs**



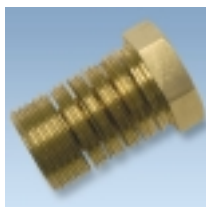
**Mechanical terminal lugs and connectors**



**Wedge connectors**



**Earthing connectors**



**Universal multishear brass bolts**



**Insulated overhead line fittings**

## Power measurement, control and protection

# 4



**Integra digital metering systems**



**Paladin transducers**



**Protector trip relays**



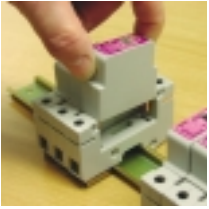
**Analogue instruments**



**Current transformers**

## Surge protection equipment

# 5



**Snap in modules for AC power protection**



**Distribution surge protectors for AC power systems**



**Data barriers for data/network protection**

## Circuit protection

# 6



**Loadlimiter MCB distribution board system**



**Loadline moulded-case circuit breakers MCCBs**



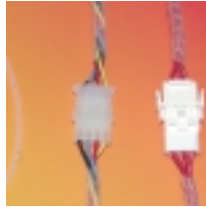
**Z frame ACBs**

## Installation products

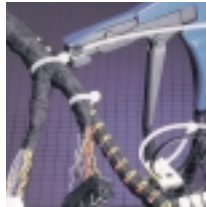
# 7



**Cable riser clamps**



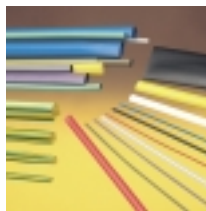
**Cable binding**



**Cable ties**



**Insulating tapes**



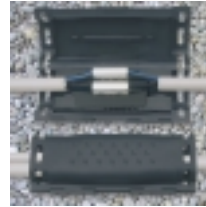
**Heat-shrinkable tubings**

## LV cable accessories

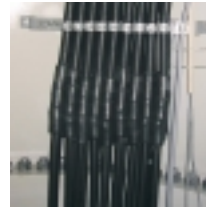
# 8



**Resin inline and branch-off joints**



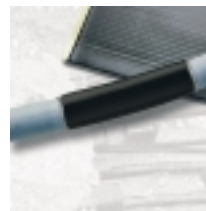
**Gel-filled inline and branch-off joints**



**Cold-applied insulating sleeves**



**Heat-shrinkable terminations**



**Heat-shrinkable tape**



**Heat-shrinkable cable repair sleeves**

## MV joints and terminations

# 9



**Cold-shrink / push-on joints**



**Heat-shrinkable branch-off joints**



**Heat-shrinkable joints**



**Cold-shrink / push-on terminations**



**Heat-shrinkable terminations indoor**



**Heat-shrinkable terminations outdoor**

## MV switchgear connections

# 10



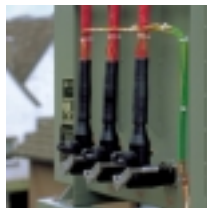
**Push-on unscreened separable connection systems for SF<sub>6</sub>-switchgear**



**Push-on screened separable connection systems for SF<sub>6</sub>-switchgear**



**Push-on right-angle and straight unscreened bushing boots**



**Push-on screened right-angle adaptors 1c 250A**



**Push-on screened straight adaptors 1c 250A**



**Push-on unscreened separable connection systems for SF<sub>6</sub>-switchgear including surge arresters**

## Insulation enhancement system

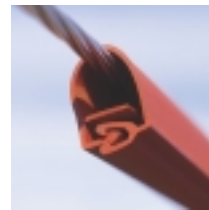
# 11



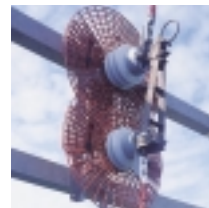
**LV insulation enhancement products for transformer connections**



**Flexible insulated busbars**



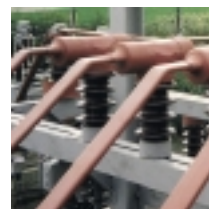
**Overhead line protection**



**Squirrel guards**



**Bird protection cap**



**Busbar insulation system**

## MV insulators

# 12



Composite insulators



Modular lightweight insulators



Porcelain insulators

## Surge arresters

# 13



LV surge arresters



MV surge arresters



HV surge arresters

## HV joints and terminations

# 14



Heat-shrinkable joints for polymeric cables up to 72 kV



Heat-shrinkable terminations up to 72 kV

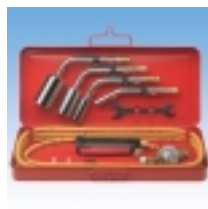


Composite outdoor terminations for polymeric cables up to 170 kV



Compact switchgear dry terminations up to 145 kV

## Installation tools



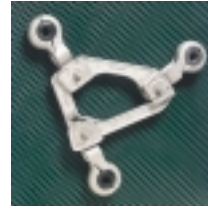
Gas torch



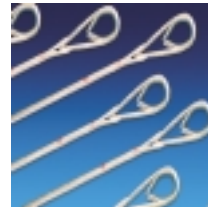
Compression tool

## Conductors and helical fittings

# 15



Dampers



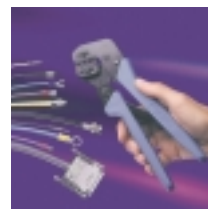
Heliformed guy dead ends



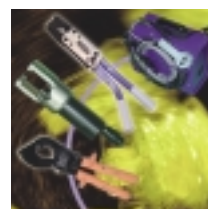
Heliformed guy conductor ties



Dog bone dampers



Crimping tool



Compression tools

# Energy Division is a worldwide leader with innovative solutions from the power plant to the end user.



## Cable accessories

- Low voltage accessories
- Medium voltage joints
- Medium voltage terminations
- Medium voltage switchgear connection systems
- High voltage accessories
- Nuclear qualified products



## Connectors and fittings

- Interconnection products for control wiring
- Solderless terminals and splices
- Terminal blocks
- Bolted connectors and clamps
- Insulation piercing connectors
- Copper compression connectors and lugs
- Bimetallic connectors and lugs
- Mechanical connectors and lugs
- Wedge pressure technology connectors
- Heliformed, cast and compression fittings
- Transmission line spacers and dampers
- Application tooling



## Switching, protection and lighting

- Energy saving products
- Photocontrols
- Photocontrol accessories receptacles, shorting caps, relays
- H.P.S. starter
- Test equipment
- Time controls
- MCB distribution board systems
- Moulded case circuit breakers
- Fuse combination units
- Panel board systems
- Transient voltage surge suppression (TVSS) for mains power, data/network, telecommunication
- Flexible insulated bars



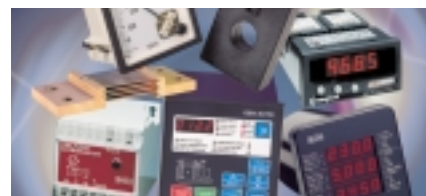
## Insulators, insulation and identification

- Insulators
- Insulation enhancement
- Wire identification and labels



## Surge arresters

- Low voltage surge arresters
- Medium voltage surge arresters
- High voltage surge arresters



## Power measurement and control

- Digital metering systems
- Kilowatt hour energy meters
- Transducers
- Protector trip relays
- Meter relays
- Digital indicators
- Analog instruments
- Current transformers
- Shunts
- Generator set controllers

**tyco**  
Electronics

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**Energy Division – economical solutions for the electrical power industry: cable accessories, connectors & fittings, electrical equipment, instruments, lighting controls, insulators & insulation enhancement and surge arresters.**