



# ELECTRICAL POWER: ELECTRICAL PROTECTION & CONTROL

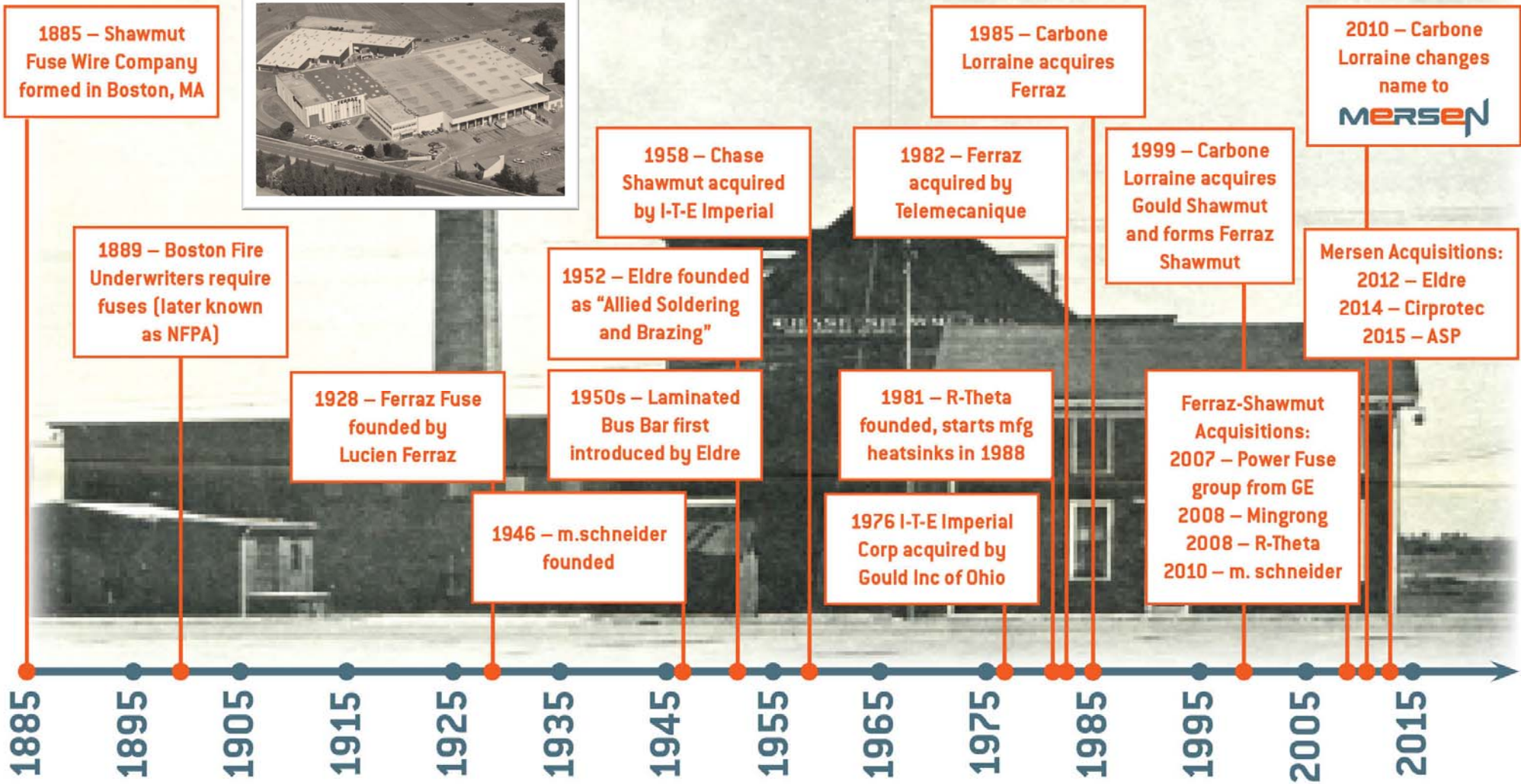


# ELECTRICAL POWER

- **WE ARE A LEADER IN ELECTRICAL POWER MANAGEMENT**
- **WE ARE A GLOBAL PARTNER OFFERING OUR CUSTOMERS THE BEST SOLUTIONS THANKS TO OUR EXPERTISE AND IN-DEPTH KNOWLEDGE OF THEIR APPLICATIONS**



# OVER 130 YEARS OF EXPERIENCE



# MARKETS

## INDUSTRY

Drives  
Motors & Generators  
Process Industries  
HVAC  
Welding  
Machine Tools  
Oil & Gas



## TRANSPORTATION

Railway  
Marine  
EV/HEV  
▪ Heavy Duty  
▪ Passenger  
Aeronautics



## ELECTRICITY

PRODUCTION,  
TRANSMISSION &  
DISTRIBUTION

Solar  
Wind  
Conventional  
EES  
Power Back-up / UPS  
Power Quality  
HVDC  
Transmission  
Distribution  
Lighting



## DEFENSE

Missile  
Aircraft  
EV/HEV  
Communication  
Radar















































## DATA/TELECOM

Datacenter  
Video Surveillance  
Wireless 3G/4G  
Radar  
Broadcasting



# COMPETITIVE STRENGTHS

Generation	Transmission	Distribution	Use
             	     	         	             

## MERSEN'S ADVANTAGES

- Global Presence
- Brands
- Product Portfolio
- Technical Services
- Specification
- Customer Care
- Digital

# APPLICATION-ORIENTED BUSINESS MODEL

**ELECTRICAL POWER IS COMPRISED OF TWO BUSINESS UNITS EACH ADDRESSING SPECIFIC APPLICATIONS WITH A BROAD BUT COHERENT PRODUCT PORTFOLIO:**

- **Solutions for Power Management (SPM)**
  - SPM designs innovative and application engineered solutions for OEMs in the Power Electronics and Power Distribution markets, integrating high performance cooling, signal & power bus bars, and semiconductor protection fuses
- **Electrical Protection and Control (EPC)**
  - EPC provides a reliable and differentiating global platform of electrical protection and controls components and services serving OEMs, panel builders, utilities, contractors, and end-users in LV and MV power distribution markets

# EPC PRODUCT PORTFOLIO

## UL FUSES & FUSEGEAR

- Low Voltage Fuses
- Medium Voltage Fuses
- DC Fuses
- Solar Fuses
- Fuse Holders, PDBs
- PV Combiner Boxes
- Fused Coordination Panels



## IEC FUSES & FUSEGEAR

- Low Voltage Fuses
- Medium Voltage Fuses
- DC Fuses
- Solar Fuses
- Fuse Holders
- PV Combiner Boxes
- DIN Fuse Switch Disconnectors



## SURGE PROTECTION

- UL SPD
- IEC SPD
- Solar SPD
- Components (TPMOV®)

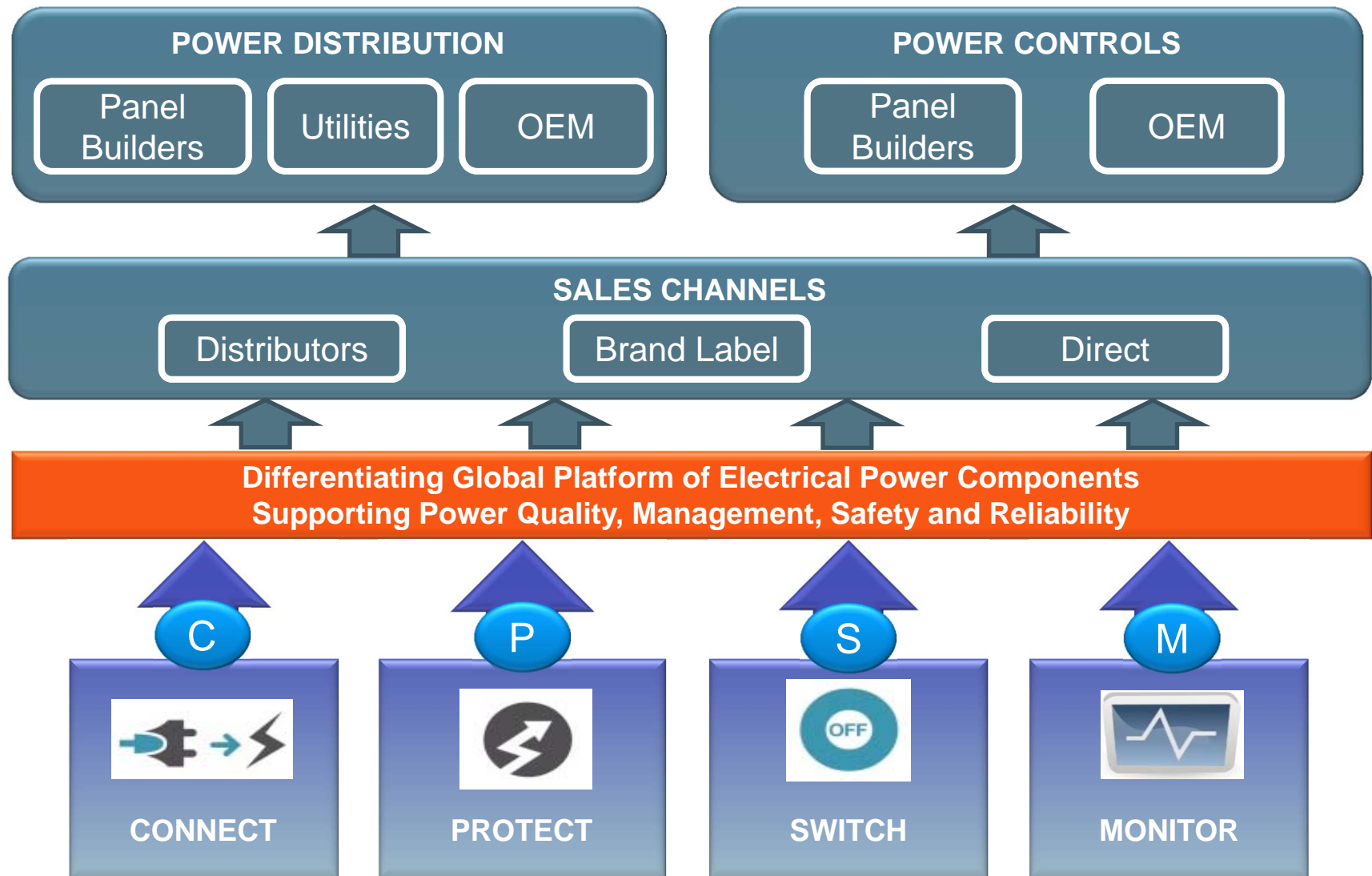


## POWER TRANSFER FOR RAIL VEHICLES

- Earth Return Current Units
- Current Collectors
- Fuse Boxes
- Connection Boxes
- On-board Switches



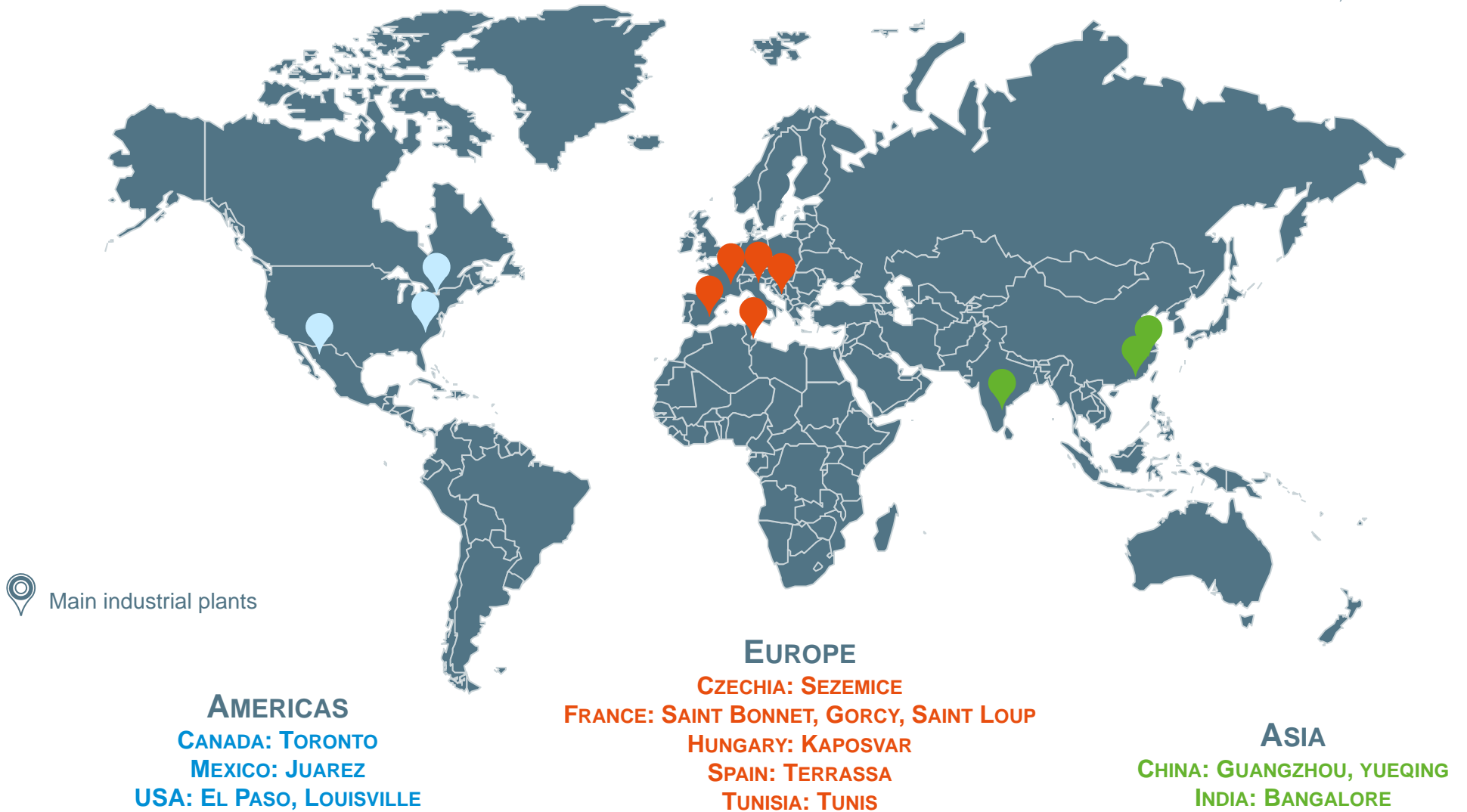
# EPC VALUE PROPOSITION





# EPC INDUSTRIAL FOOTPRINT

As of December 31, 2015



# MERSEN EXPERTISE

**WE BRING EXPERTISE TO OUR CUSTOMERS WITH PRODUCTS AND SOLUTIONS DESIGNED TO MEET OR EXCEED THEIR EXPECTATIONS**

**WE DIFFERENTIATE BY HELPING OUR CUSTOMERS:**

- Protect electrical systems and people who use them
- Improve electrical safety, performance, and reliability
- Reduce system downtime
- Develop technical solutions that increase competitiveness
- Reduce investment costs, total cost of ownership, and working capital
- Increase global capacity
- Seize opportunities in emerging markets






**MERSEN**  
*Expertise, our source of energy*

# GROUP HISTORY

- Advanced Materials
- Electrical Power
- Mersen Group

<b>1885</b>	<b>1891</b> The Fabius Henrion plant is built (electric motors, dynamos, and lamps).	<b>1892</b> Le Carbone is founded in Paris and specializes in the manufacture of brushes for motors.	
<b>1895</b>	<b>1893</b> Graphitization process is discovered by a Group engineer.	<b>1897</b> First International subsidiary is set up in Germany.	
<b>1905</b>		<b>1906</b> First team is deployed in the United States.	
<b>1915</b>			
<b>1925</b>	<b>1927</b> Fabius Henrion became Compagnie Lorraine de Charbons pour l'Électricité		
<b>1935</b>		<b>1937</b> "Le Carbone" and "Compagnie Lorraine de Charbons pour l'Électricité" merge to become Groupe Carbone Lorraine.	
<b>1945</b>			
<b>1955</b>	<b>1953</b> The chemical engineering business is started up in Pagny sur Moselle		<b>1950</b> Le Carbone Lorraine takes over the worldwide distribution of products for Ferraz
<b>1965</b>	<b>1961</b> The Amiens plant is built to manufacture carbon brushes for electric motors.		
<b>1975</b>			
<b>1985</b>	<b>1988</b> Pechiney moves above the 50% ownership mark. The Industrial seal business is transferred to Carbone Lorraine.		<b>1985</b> Ferraz is acquired.
<b>1995</b>	<b>1991</b> Stackpole's (United States) electrical and high temperature applications assets are acquired.	<b>2007</b> Chongqing plant, the Group's first manufacturing facility in China, is inaugurated.	<b>1998</b> Unit specialized in cooling systems is set up. <b>1999</b> Gould-Shawmut group's EP division is acquired. <b>2006</b> PE positions strengthened with R-Theta acquisition.
<b>2005</b>	<b>2008</b> Calcarb, the world n°2 in rigid carbon felt, is bought.	<b>2010</b> Positions are strengthened in solar energy through the purchase of a majority shareholding in Yantai	<b>2008</b> Xianda and Mingrong Electrical Protection (MEP), Group's first acquisitions in China, are purchased. <b>2011</b> Eldre acquired: largest worldwide pure player in LBB
<b>2015</b>	<b>2010</b> A majority shareholding in Boostec, a silicon carbide specialist, is acquired.	<b>2010</b> CARBONE LORRAINE CHANGES ITS NAME TO 	<b>2014</b> Majority stake in Cirprotec, spec. in lightning/SPD <b>2015</b> ASP, Chinese leader overvoltage protection, acquired