

Ingeteam

READY FOR YOUR CHALLENGES

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KEY FIGURES



Present in **24** countries and new markets.



4,100+ employees around the world.



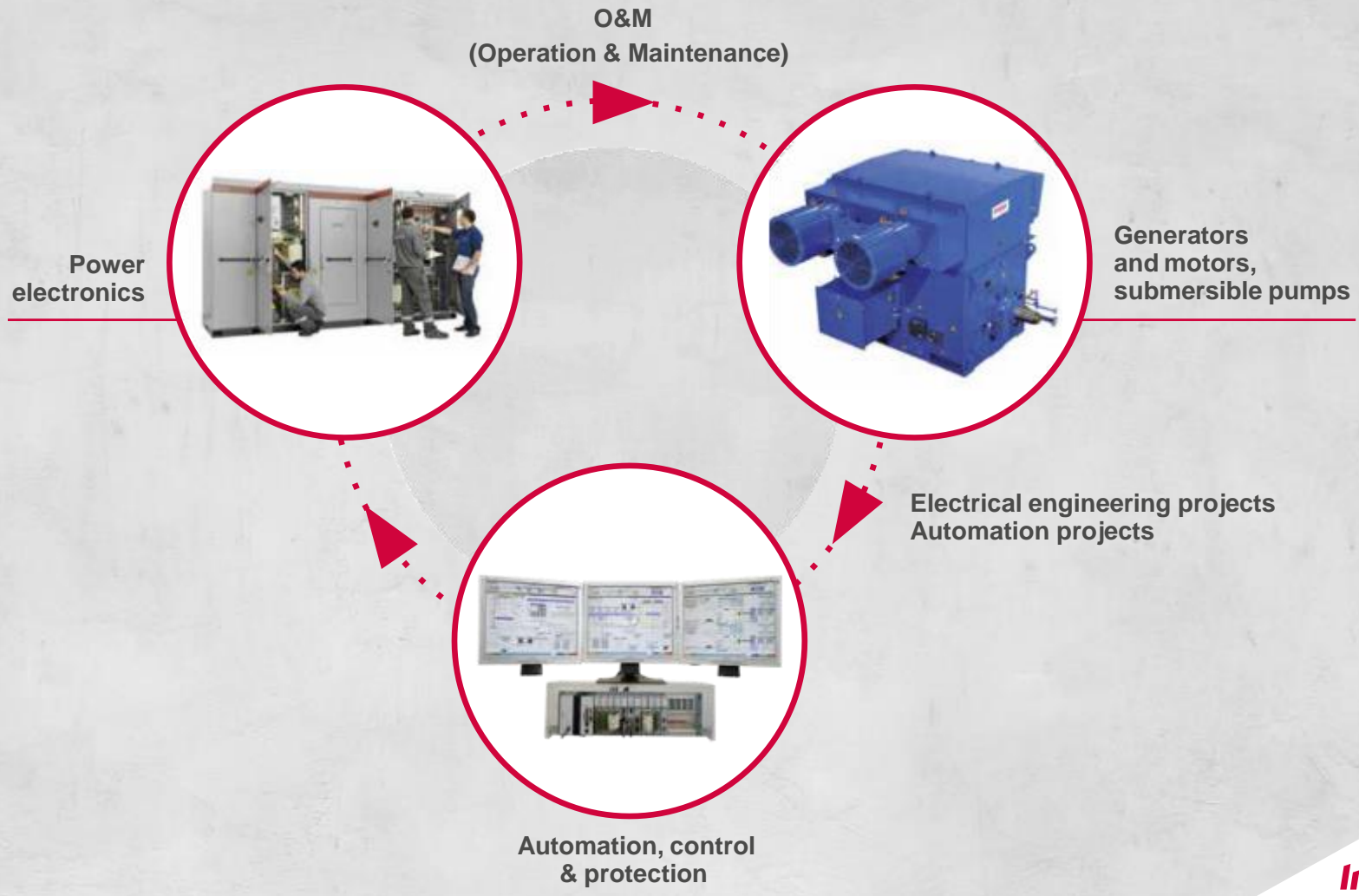
5.5% of turnover invested in R&D every year.



More than **80 years** in the electrical sector.



TECHNOLOGICAL CORE, SOLUTIONS AND SERVICES



BY THE NUMBERS - WIND

#1
INDEPENDENT
SUPPLIER OF
WIND POWER
CONVERTERS



26
YEARS OF
EXPERIENCE



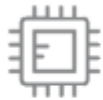
52 GW
INSTALLED WIND
POWER
CAPACITY



9.2 GW
O&M
PROJECTS



30,000
POWER
CONVERTERS
SUPPLIED



8%
MARKET
SHARE



5.5%
ANNUAL
INVESTMENT
OF TURNOVER
IN R&D



4,100
EMPLOYEES

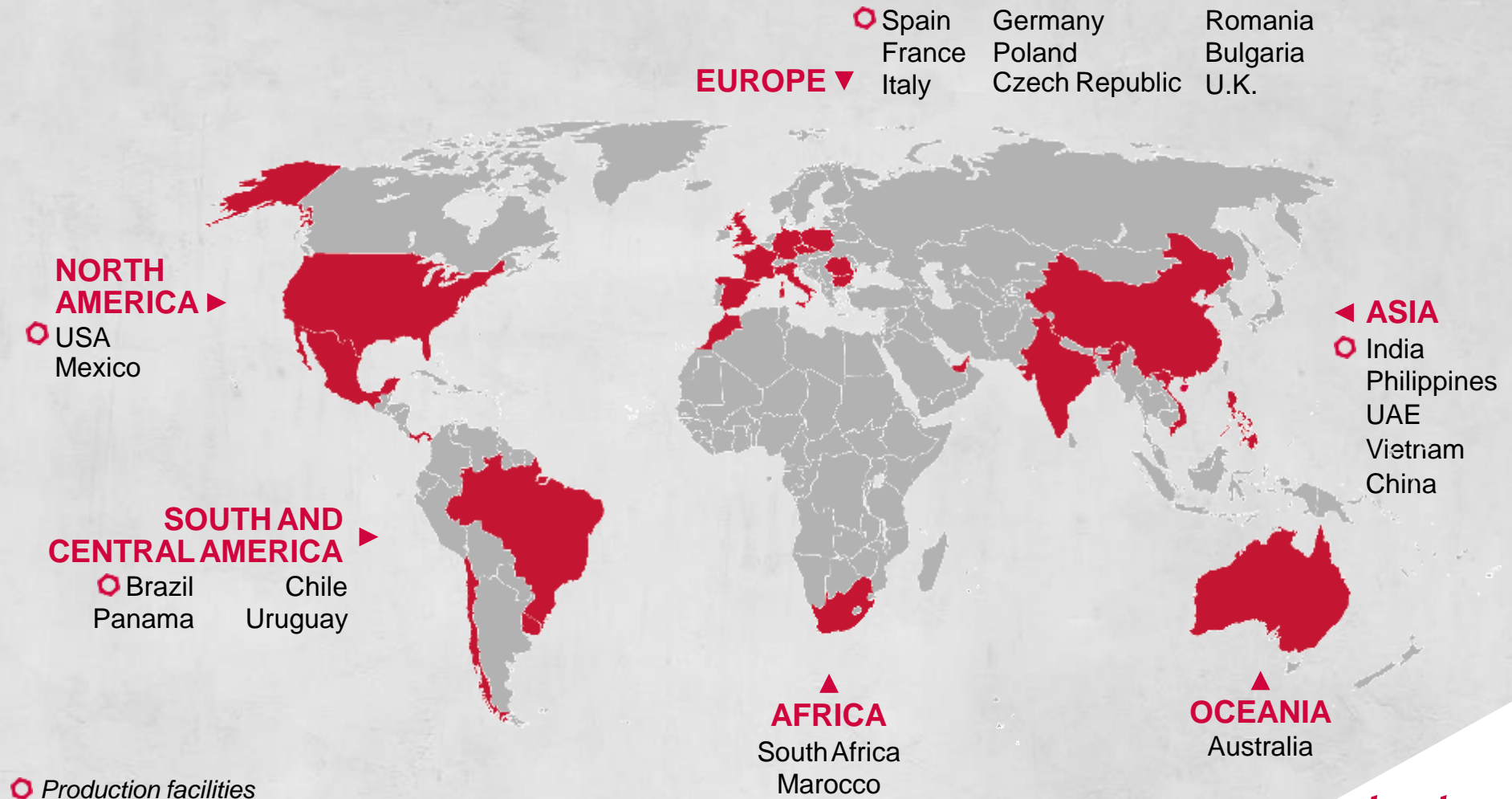


24
LOCATIONS



4
PRODUCTION
SITES

GLOBAL FOOTPRINT



PRODUCTION FACILITIES



SPAIN

Power converters,
control panels

Sesma (Navarra)
Zamudio (Bizkaia)
Ortuella (Bizkaia)

Square meters (m²): **16,800**
Personnel (Px.): **350**



BRAZIL

Power converters,
control panels

Campinas
(Sao Paulo)

Square meters (m²): **5,250**
Personnel (Px.): **125**



USA

Power converters,
control panels,
Electric machines

Milwaukee
(Wisconsin)

Square meters (m²): **12,500**
Personnel (Px.): **170**



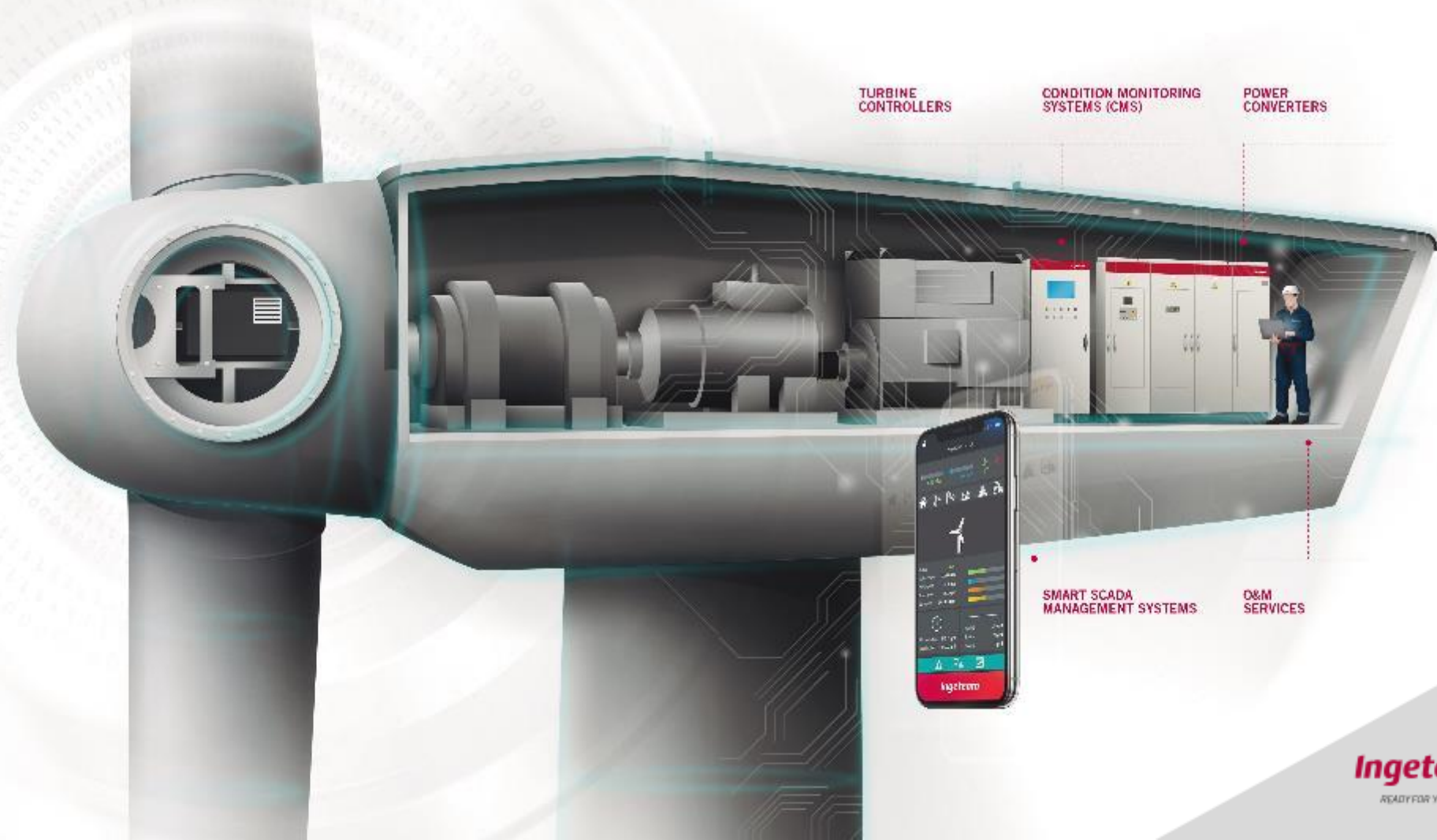
INDIA

Power converters,
control panels

Tamil Nadu
(Chennai)

Square meters (m²): **4,900**
Personnel (Px.): **82**

PRODUCT RANGE



POWER CONVERTERS

FULL CONVERTER – LOW VOLTAGE

General Data		
Rated power range	< 5 MW	5 MW - 10 MW
Conversion line		
Converter type	Back to back	
Semiconductor type	IGBT	
Efficiency (at rated power)	> 97%	
Generator type	IG/EESG/PMG	
Application	Onshore	Onshore/Offshore
Product certification	CE (UL, CSA... on request)	
Electrical Data		
Output voltage	690 V	
Grid voltage range	± 10%	
Frequency	50/60 Hz	
Grid Filter		
Power converter THD (i)	< 3%	
Generator Filter		
dV/dt	< 1 kV/us	
LVRT		
LVRT compliance	Strictest grid codes (EEG2009, EON2006, Q/GDW 392-2009, FERC 661-A)	
Cooling		
Type	Air cooled Water cooled (Liquid)	Full water cooled (Liquid)
Temperature range	5°C to 50°C	
Derating 2% each 1 C°	50°C to 55°C	
Cold/Hot climate version	On request	
Mechanical Data		
Protection degree (IP)	IP54	
Corrosion class	C3H	
Communication Protocols		
	All industry standards	

Highlights:

- Designs for low, medium & high speed generators
- High energy density:
700kW/m³
- GL2010 certified



POWER CONVERTERS

FULL CONVERTER – MEDIUM VOLTAGE

General Data		
Wind turbine rated power	< 7.5 MW	7.5 MW - 15 MW
Conversion line		
Converter type	Back to back	
Semiconductor type	HV-IGBT	
Efficiency (at rated power)	> 97.8%	
Generator type	IG/EESG/PMG	
Application	Onshore/Offshore	
Product certification	CE (UL, CSA... on request)	
Electrical Data		
Output voltage	3,000 V	
Grid voltage range	-10% to 20%	
Frequency	50/60 Hz	
Grid Filter		
Power converter THD (i)	< 5% (other values on request)	
Generator Filter		
dV/dt	1.5 kV/us (other values on request)	
LVRT		
LVRT compliance	Strictest grid codes (EEG2009, EON2006, Q/GDW 392-2009, FERC 661-A)	
Cooling		
Type	Water cooled (Liquid)	
Temperature range	-10°C to 55°C	
Cold/Hot climate version	On request	
Mechanical Data		
Protection degree (IP)	IP54	
Corrosion class	C3H/C4H	
Communication Protocols		
	All industry standards	

Highlights:

- High modularity to simplify installation in both nacelle and tower
- Full redundant control hardware
- Higher efficiency and lower cabling cost
- Maintenance-friendly
- GL2010 certified



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