Alstom Power China Introduction

2010/10

We are shaping the future | ALSTOM

Agenda

The Group

Alstom China Overview

Power China Overview

ALSTOM

THE ALSTOM GROUP

we are shaping the future

ALSTOM

ALSTOM Logo History

1879

1879

1928

1930

1940

1961

1976

1976

1978

1980

1985

1989

1989

1991

1995

1998

1999

2000

Three main activities

Equipment & services for power generation

- **Alstom Power Sector**

Equipment & services for rail transport

- **Alstom Transport Sector**

Equipment & services for power transmission

- **Alstom Grid Sector**

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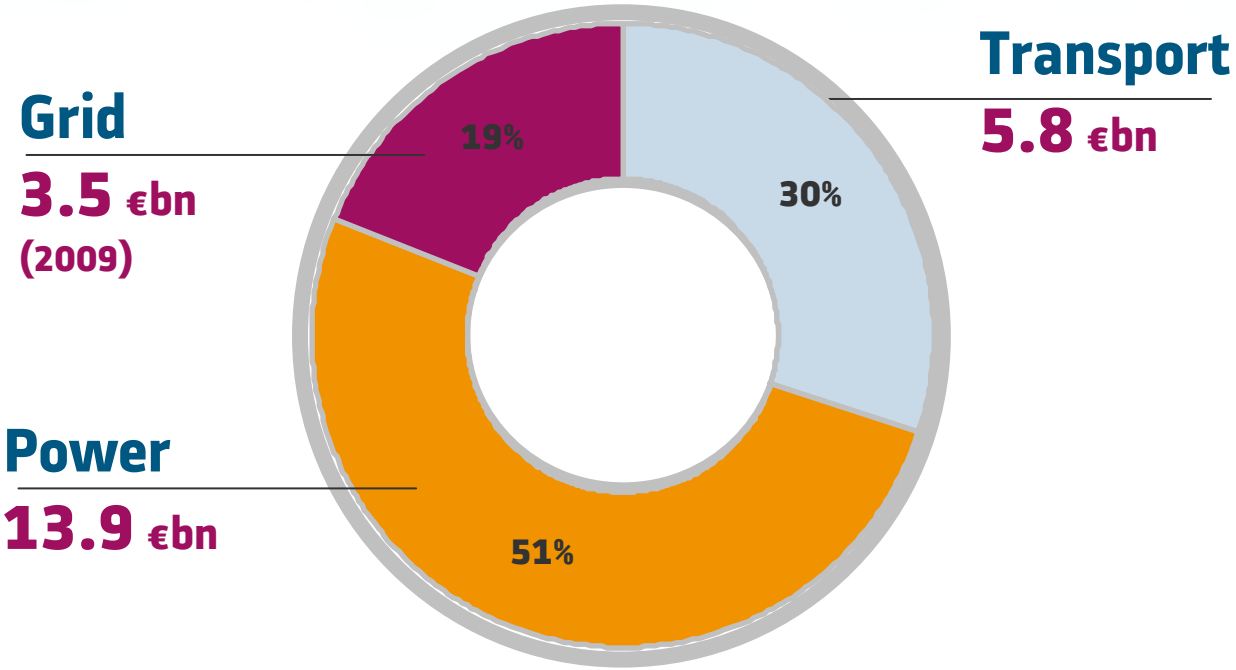
Three main activities



Total sales 2009/10 :
€23 bn*

* Proforma figures

ALSTOM

Three main activities

In the top 3 in its main activities

Rail transport infrastructure

Alstom makes 1 metro in 4 and 1 tram in 4

Power generation infrastructure

Alstom supplies major equipment in 25% of the worldwide installed power generation capacity

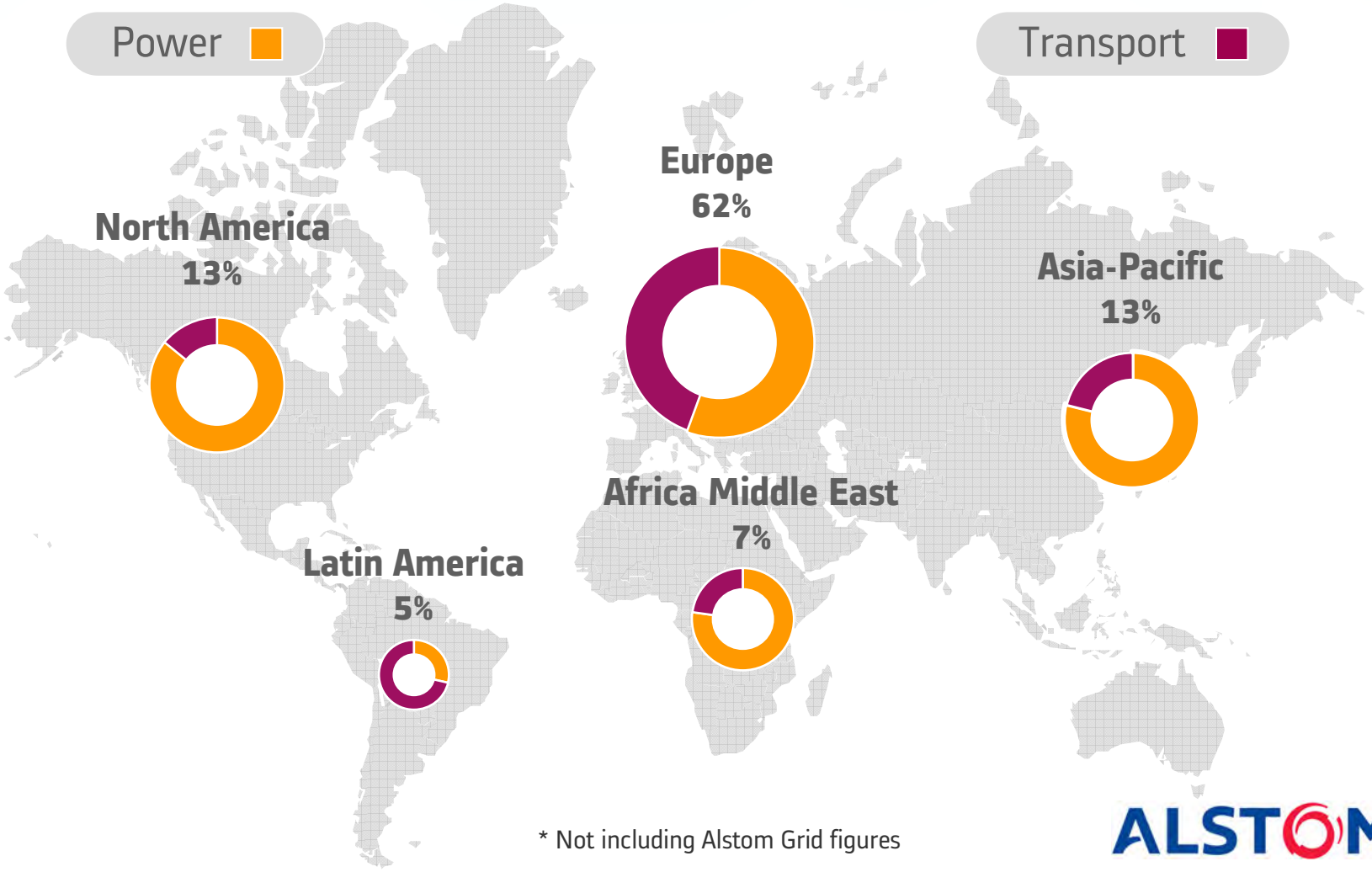
Power transmission infrastructure

Leadership in key markets and fast-growing technologies (disconnectors, GIS, HVDC …)

ALSTOM

A major international presence

Orders by region and activity in 2009/10*



* Not including Alstom Grid figures

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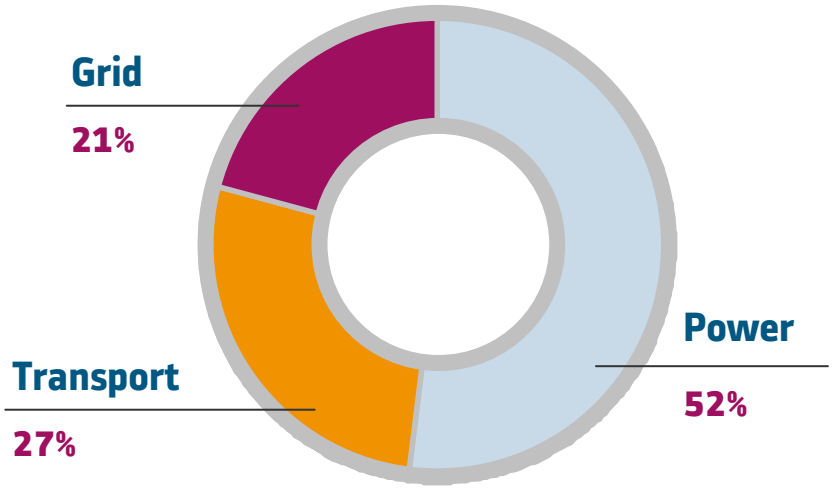
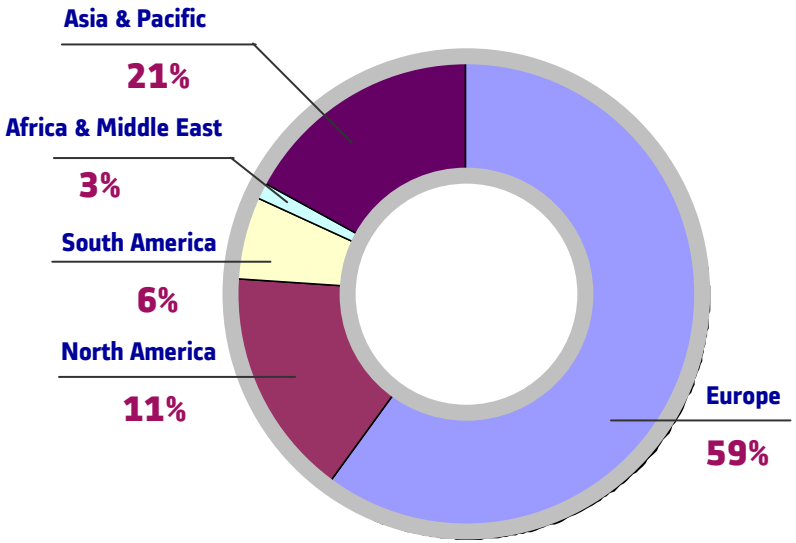
96,500 employees worldwide*

•By activity



•By region



*as of 7 June 2010

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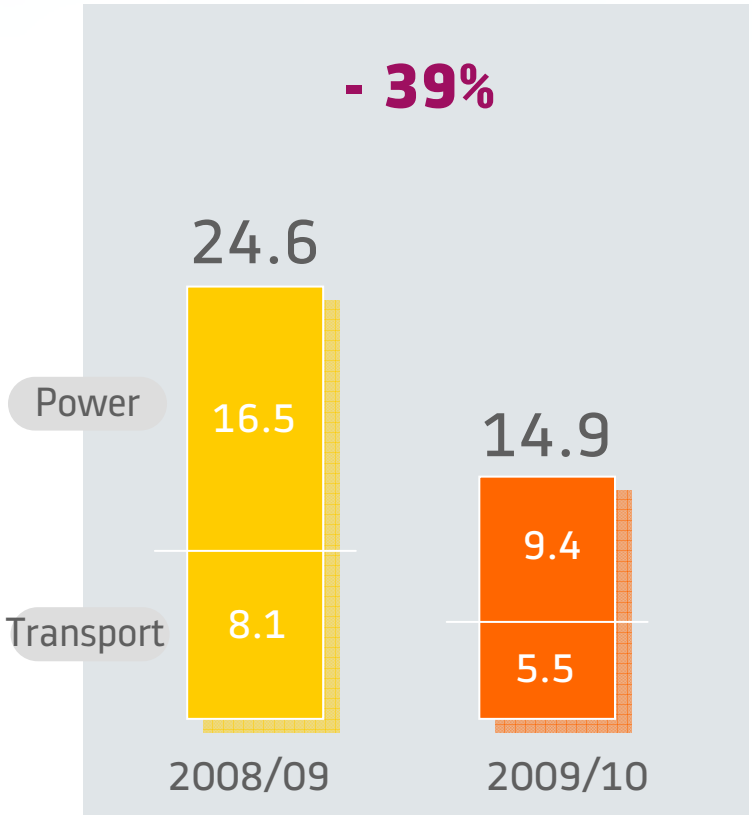
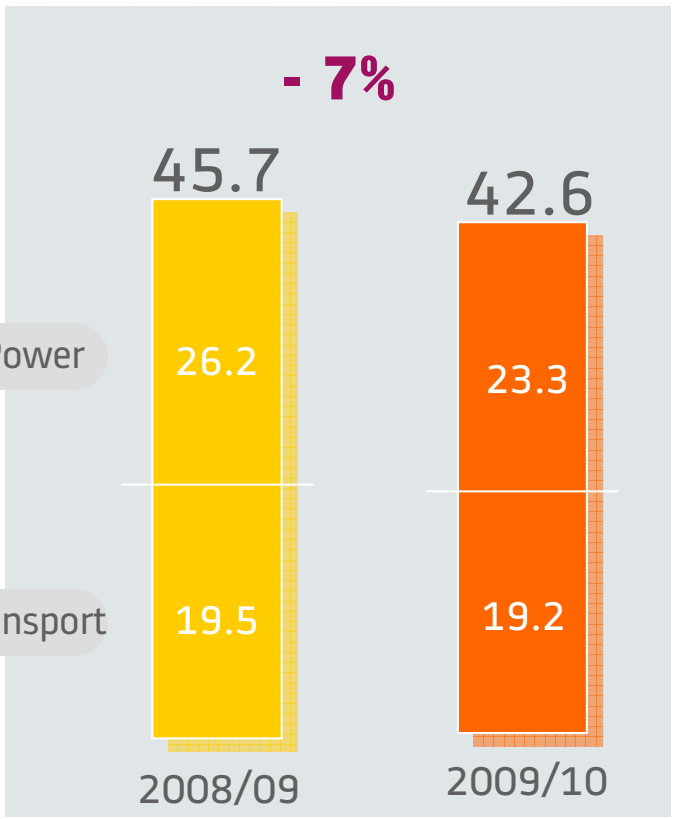
An important backlog despite the drop in orders*

Order intake



Order backlog



In billion euros

* Not including Alstom Grid figures

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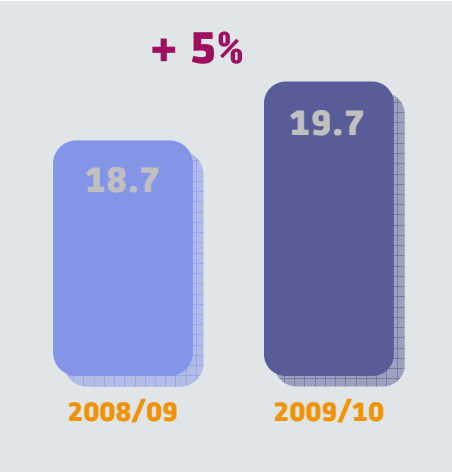
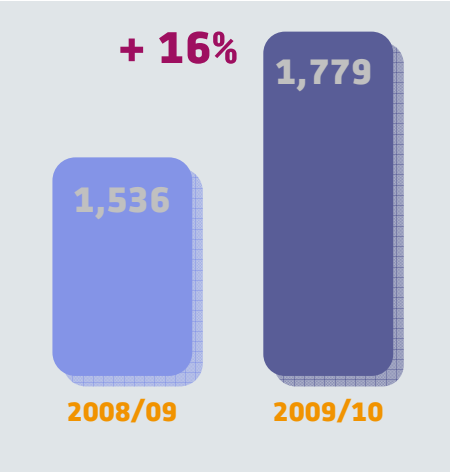
A healthy financial position*

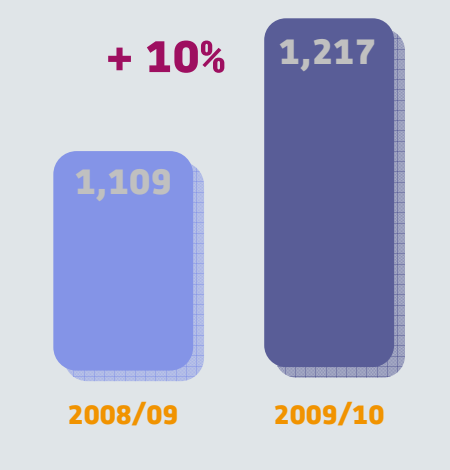
Sales (€bn)



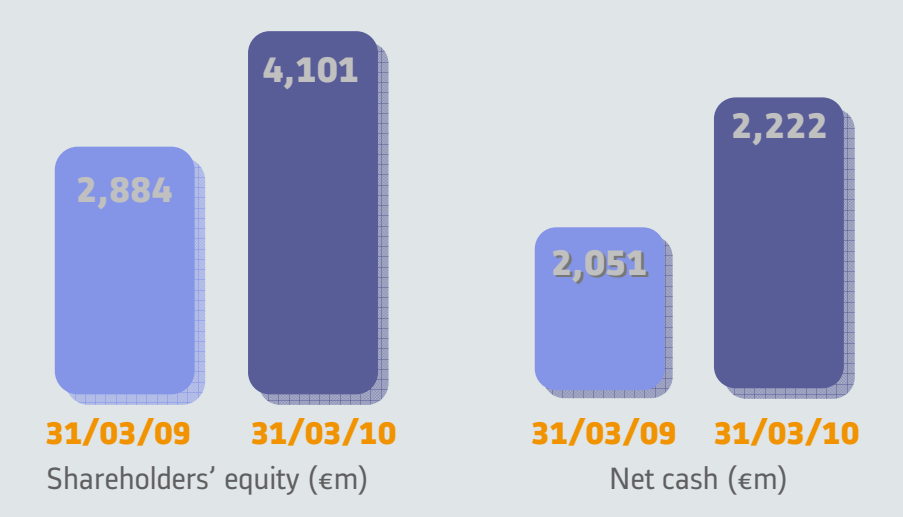
Income from operations (€m)



Net income (€m)



Shareholders' equity / Net cash (€m)



* Not including Alstom Grid figures

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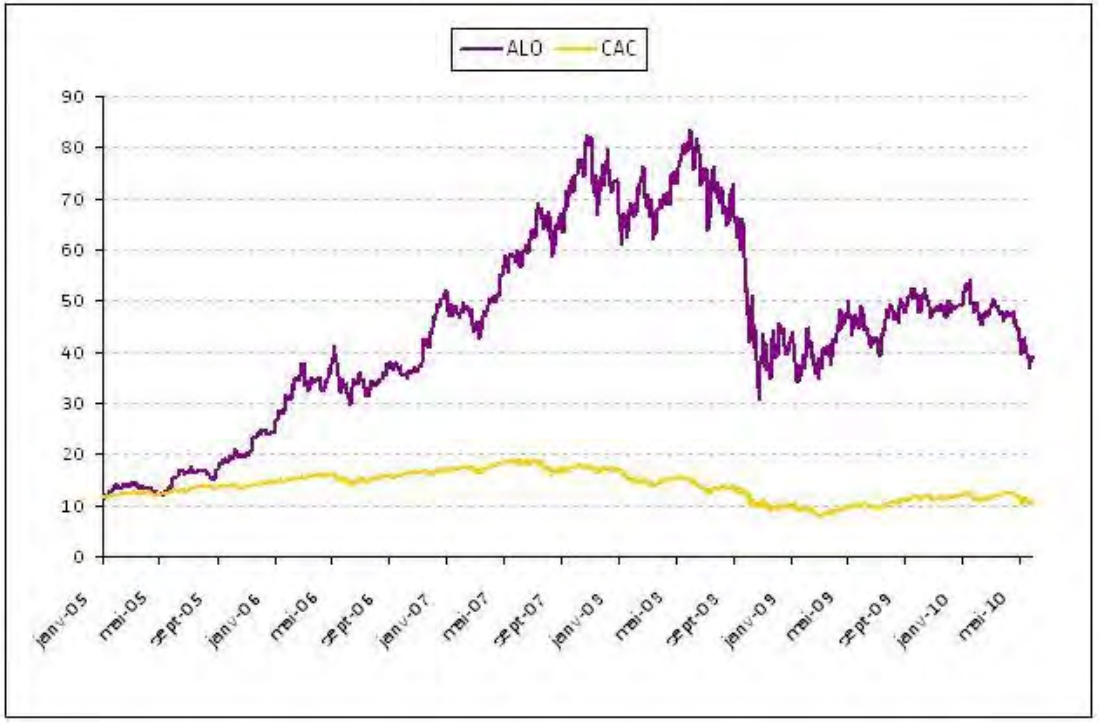
Share price activity

Performance of the stock price



- About 260,000 shareholders worldwide

Capital Structure

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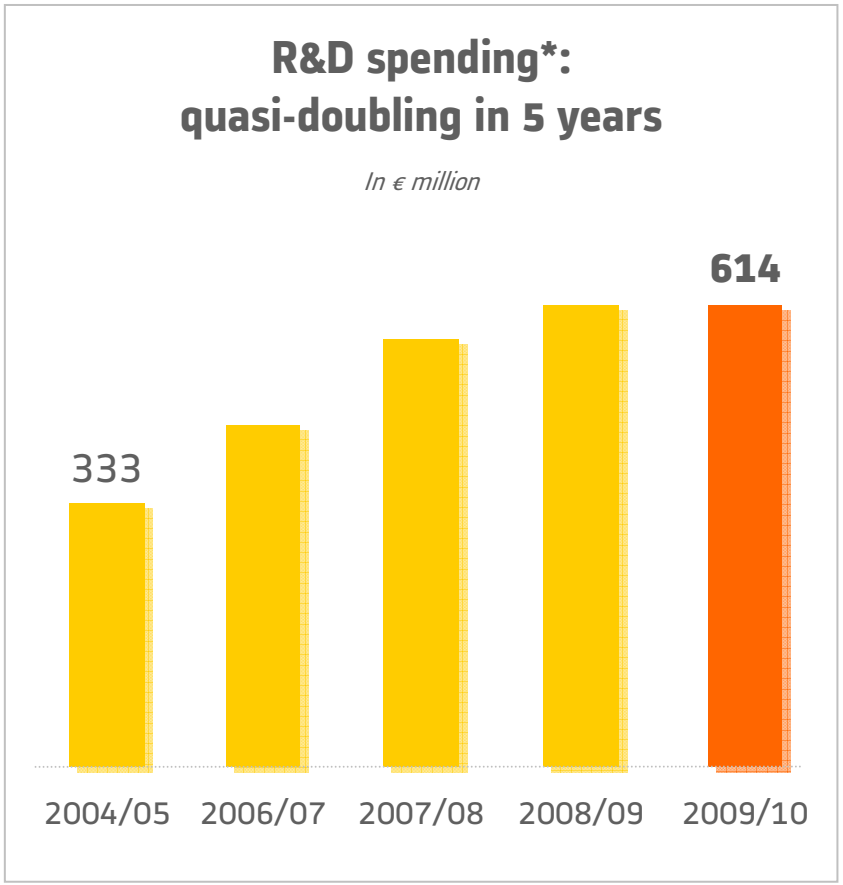
Main events 2009/10

Continued focus on technology and innovation



* Not including Alstom Grid figures

Power

- Improvement of power plant efficiency and flexibility
- Carbon Capture and Storage
- Renewables: extended range of onshore turbines; ocean energy, integration of renewables with pumped storage

Transport

- Validation of AGV and Prima II locomotive
- New tram train
- Signalling: development of ERTMS and CBTC

ALSTOM

Main events 2009/10

High level of capital expenditures with €470 million

- **Power: new manufacturing capabilities in key markets**
  - Opening of the new Wuhan Boiler factory in China (November 2009)
  - Inauguration of IMMA hydro plant in Brazil (April 2010)
  - Inauguration of the new turbine factory in Chattanooga, USA (June 2010)
  - Wind turbines facilities to be built in Brazil and USA (Texas)
- **Transport: strengthening competitiveness in Europe**

Wuhan Boiler factory (China)

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Main events 2009/10

Alstom creates a third Sector by acquiring Areva's Transmission business

- **New growth potential for the Group**
  - Among the Top 3 in Transmission business
  - 20,000 employees, over €3.5 bn in sales, over 50 locations worldwide
  - Number 1 in key markets and fast-growing technologies (disconnectors, GIS, HVDC…)

- **Strategic offering including Power Generation and Transmission**
  - Complementary international networks and customer base (utilities, electro-intensive industries)
  - Project management expertise
  - Strengthened financial capacity to ensure Transmission development

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Alstom China

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Strategy and Commitment

和实生物　同则不继

The interaction of different elements create the world

- **Harmonize the advantages of Chinese partner with Alstom expertises**
- **Establish best practice in China to explore global market**
- **Long-term investment with concrete actions**

3 Phases for Sustainable Growth in China

1 Export from Europe

2 JVs with Chinese Partners

3 Chinese Base for Local & Export Markets

ALSTOM's sustainable growth in China is based on:

- Formation of JVs with Chinese partners
- Major contracts (with Transfer of technology)
- Successful selective acquisitions (ALSTOM has acquired 3 major local companies since 2007: Strongwish, Sizhou and WBC)

ALSTOM

ALSTOM's Milestones in China

1958
Supplying China with electric and diesel electric locomotives

1979
First representative office in Beijing

1995
Tianjin ALSTOM Hydro Co. Ltd.

1998
Wai Gao Qiao Power Plant

1999
ALSTOM (China) Investment Co. Ltd.
Shanghai Metro Line 3

2002
Nanjing Metro Line 1

2003
Baima thermal power plant

2003-2004
Longshan Pingwei Dabieshan and Huizhou, Baoquan and Bailianhe
Shanghai Metro Line 1

2005
ALSTOM with its partner Dongfang Electric, won Lin Ao Phase-II

2006
World's most powerful electric freight locomotive
Beijing Metro Line 2

2007
Shi-Tai high speed line
Jinping II, Nuo Zhadu, Shatuo, Longjiang hydropower plants
Hongyanhe Nuclear Power Plant

2008
Beijing Airport Link
Taishan Nuclear
Xiang JiaBa Hydro

2009
Liyuan Hydro Power Plant
Hongkong Metro
Shenzhen Metro Line 2, 5

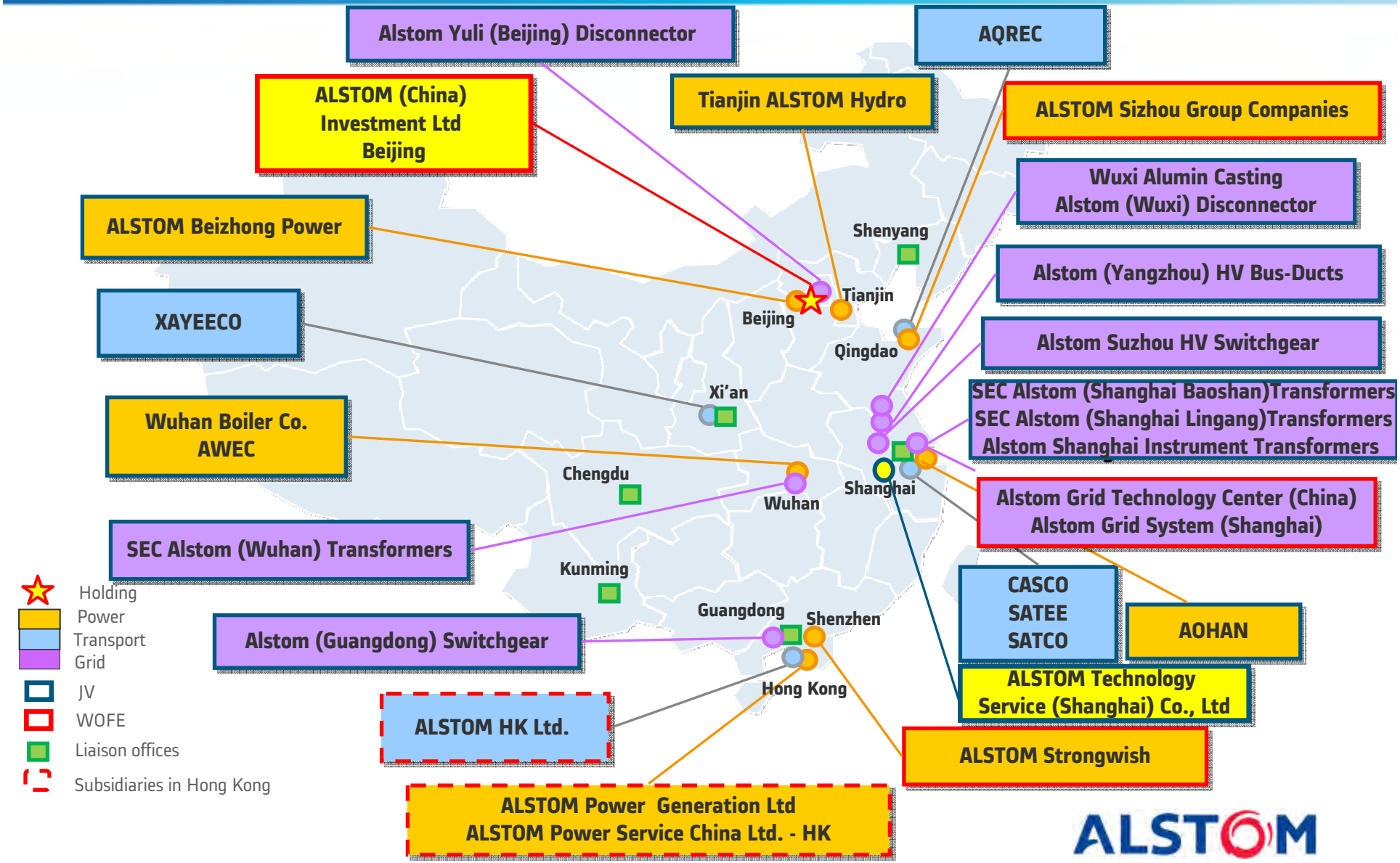
Chinese President Hu Jintao meets with Patrick Kron, Alstom Chairman and CEO

ALSTOM

ALSTOM in China

- Headquarters in Beijing
- ALSTOM has industrial bases in 11 cities, 9 regional offices and 2 permanent service centers
- Nearly 10,000 employees throughout China, present in 18 cities
  *as of June, 2010

Alstom footprint in China



ALSTOM has become a leading company in China

- **Hydro**
  - Three Gorges “Right Bank” (4 x 700 MW)and “Left Bank” (8 x 700 MW) and Three Gorges “Underground” (2 x 700 MW)
  - Pumped storage projects (4 x 250 MW + 28 x 300 MW)
  - Xiangjiaba
  - Liyuan

Nuclear (50 % market share for conventional parts)

- Taishan (2 x 1750 MW)
- Hongyanhe (4 x 1000 MW)
- Ling Ao and Ling Ao phase 2 (4 x 1000 MW)
- Daya Bay (2 x 1000 MW)

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ALSTOM has become a leading company in China (2)

- **Boilers and Environment Control Systems**
  - Clean coal technology, high efficiency, low emission
  - Knowhow and experiences in wide range of fuel supplies, both bituminous and lignite
  - Waigaoqiao II, 2x900 MW, first 1000MW grade supercritical tower boiler in China, successful operations
  - Waigaoqiao III, 2x1000MW, ultrasupercritical tower boilers in China, successful operations
  - Baima, 2x300MW CFB Boilers, by far the largest CFB Boiler in China
  - Other Boilers Auxiliaries, including coal mills, FGD, DeNox, airheater, Gas-Gas-Heater, etc


Waigaoqiao II


Rolling Stock

- **Rolling Stock**
  - Freight locos: 500 triple « CoCo » and 120 double “BoBo” with Datong
  - 60 EMUs (200 / 250 kph) with CRC
  - 1,222 metro cars for 7 Shanghai lines
  - 456 metro cars for 2 Nanjing lines

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The Group

Alstom China Overview

Power China Overview

ALSTOM POWER China

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Power
Present in all markets

Technologies adapted to all major energy sources

Gas

Coal

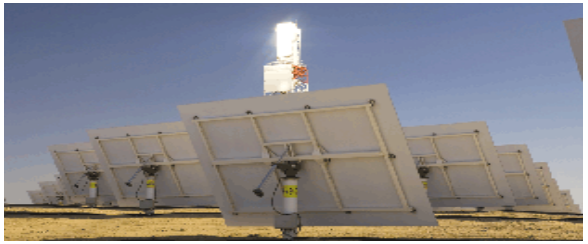
Oil

Hydro

Nuclear (Conventional island)

Wind

Solar



Geothermal

Biomass

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World leader in power generation infrastructure

Alstom supplies major equipment in 25% of the worldwide installed power generation capacity

Global leader
in integrated
power plants

Global leader
in air quality
control systems

Global leader
in services for
electricity utilities

Global leader
in hydro power

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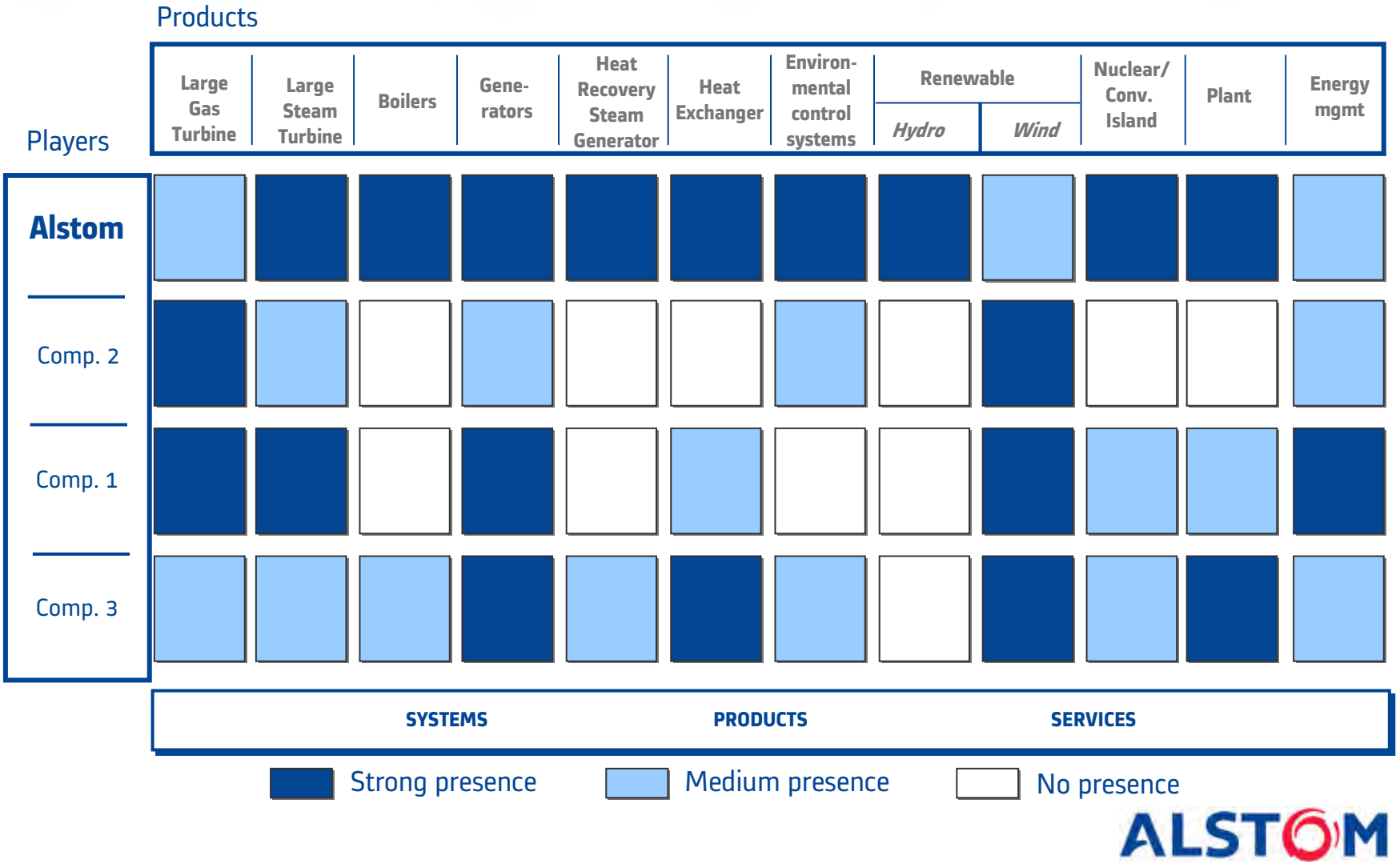
Alstom has the most extensive product offering

Product portfolio compared with competition

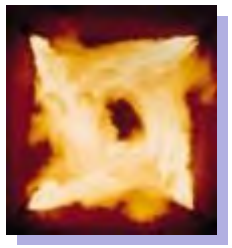


Power: The largest portfolio for integrated power solutions

Turbines (gas, steam, hydro)

Instrumentation and monitoring

Boilers



Generators

Air quality control systems

Hydro

Wind

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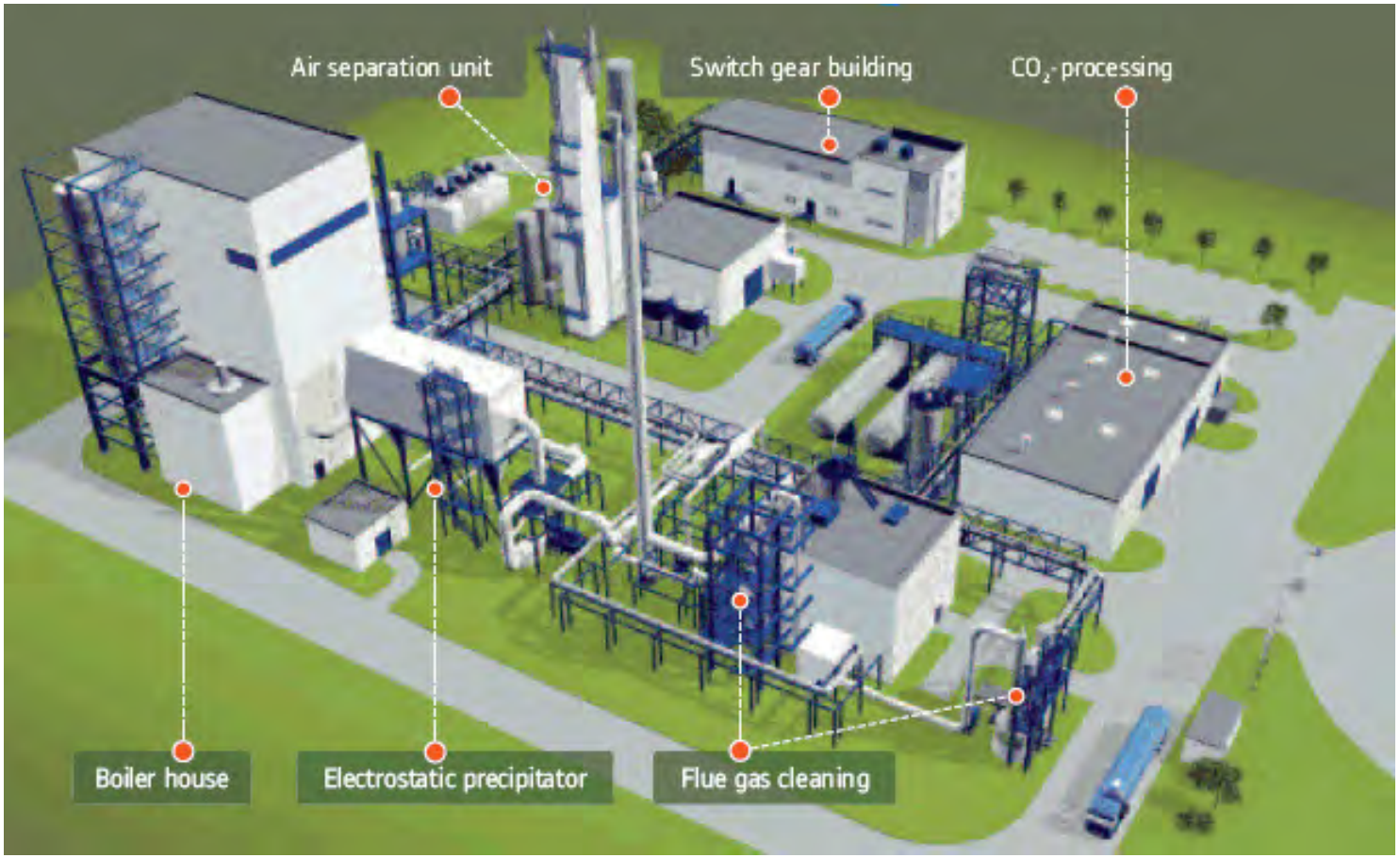
Power
Example of pilot unit of CO_2 capture



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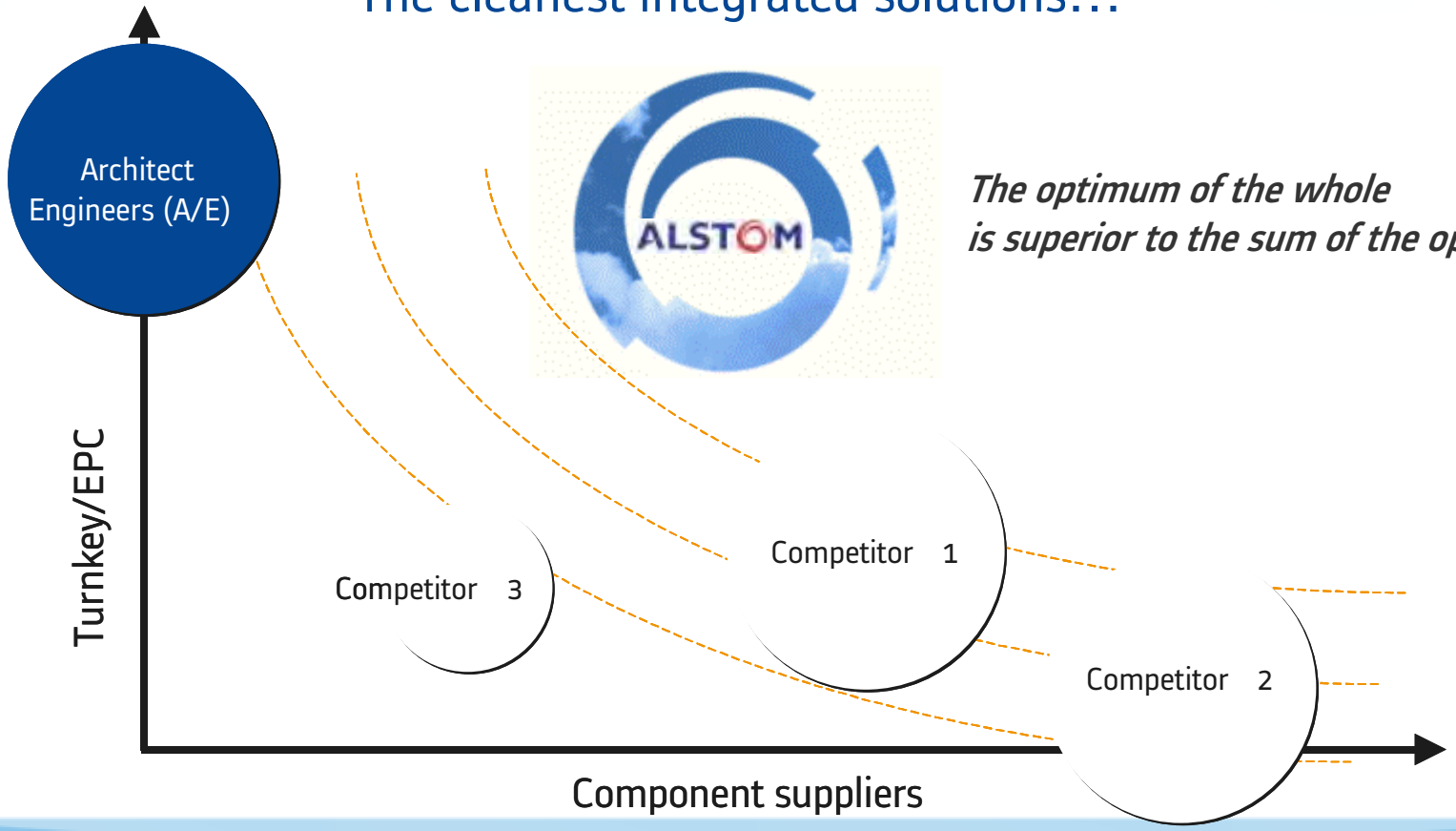
Power
Plant Integrator

The cleanest integrated solutions…



The optimum of the whole
is superior to the sum of the optima

…for new plants and the installed base

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Power
Technologically leading products

GT24/GT26 gas turbines

Arabelle turbines

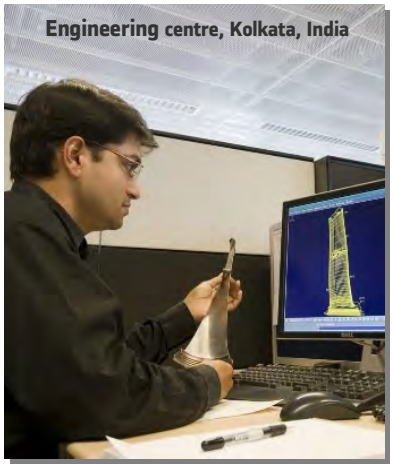
Air quality control systems

Wind Turbine Pure Torque Concept

ALSTOM

Power
Global locations

- **33** Manufacturing Units
- **52** Engineering centres
- **28** R&D centres
- **200** Local Service Centres
- **25** Technical Expertise Centres


Engineering centre, Kolkata, India


Foundry, Elblag, Poland


Hydro Factory, Grenoble, France


R&D centre, Vaxjo, Sweden

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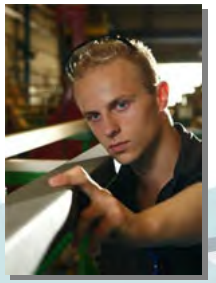
Power
50,000 employees in 70 countries

15% in North America



54% in Europe

24% in Asia & Pacific

5% in Latin America

2% Middle East & Africa

Source: Alstom Census 31 March 2010

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Power
Full plant service

- **Power Plant Management** (service packages, maintenance & service agreements)
- **Advice and support** (technical services, performance analysis)
- **Field services** (outage management, field repairs)
- **New spare parts and reconditioned components**

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Power
Main contracts

Thermal Systems & Products

- **Gas-fired power plant** in the UK, incl. 5 GT26 turbines
- **Steam**: contracts in Germany, India and Slovenia
- **Plant management systems** in South Africa

Thermal Services

- **Retrofit contracts** in the USA and Poland
- **Operation and maintenance contracts** in the UK and Singapore

Renewables

- **Hydro** projects in India, Spain and Switzerland
- **Wind** contracts in Europe and Morocco (April 2010)

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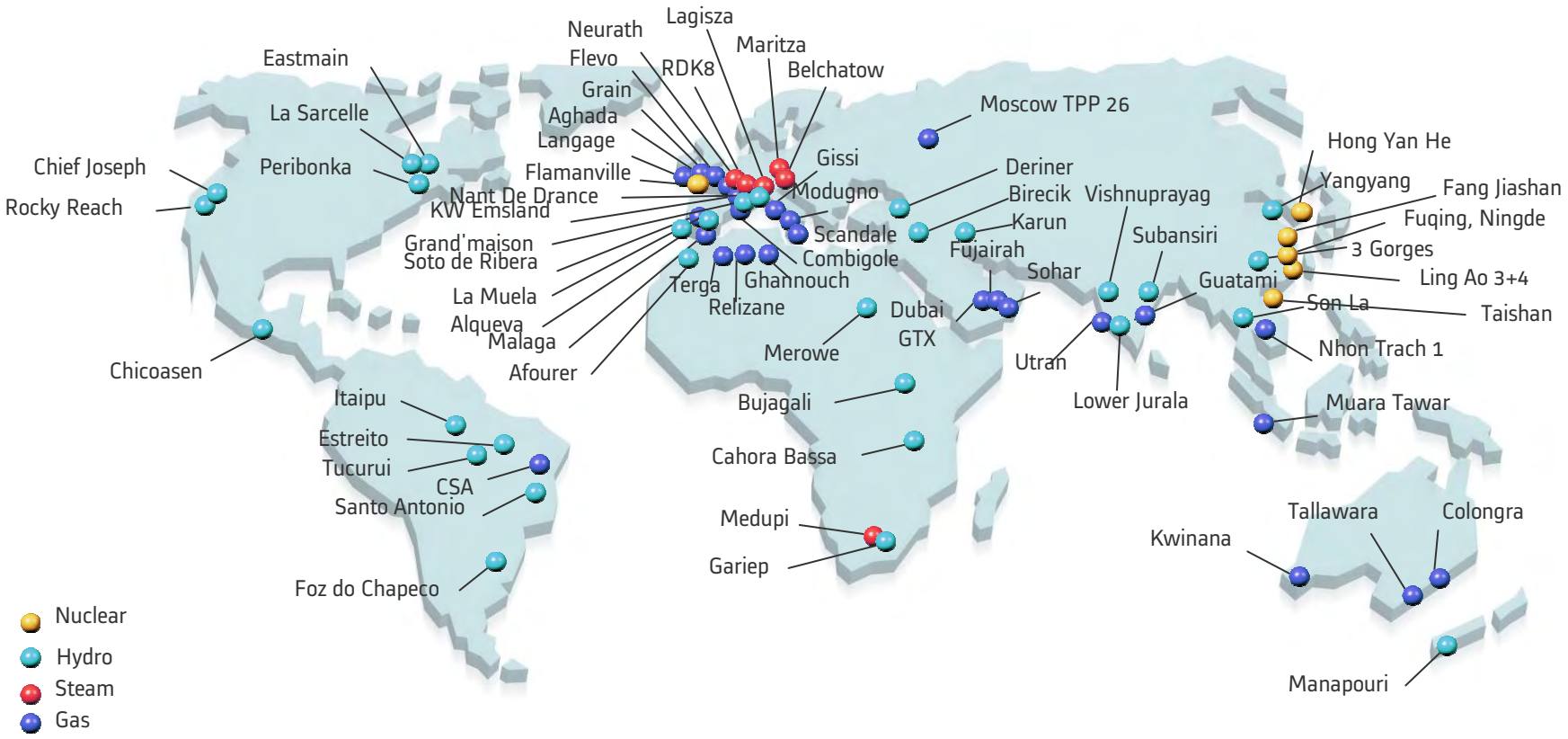
Power
Over 41 GW under execution



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Power China
Recent references

Hydro:

A complete range of world leading offerings dedicated to China, as well as an unparalleled strong base of references:

- Three Gorges Right Bank (4x700MW)
- Three Gorges Left Bank (8x700MW, all governing and computer control systems, Hubei)
- Xiaowan (6x780 MVA generators, Yunnan), Longtan (7x700 MVA generators, Guangxi)
- Guangzhou Pump Storage Phase I (4x300 MW, the complete electro-mechanical package, Guangdong).
- Baoquan/Huizhou/Balianhe Pumped Storage Projects (16x306MW.)
- Xiang Jiaba (4X800MW Turbine/Generator Units)
- Li Yuan (4X600MW Generator Units and auxiliary equipment)

All types of projects, machines and sizes of machines up to 900MW are available on locally or on an imported basis.

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Power China
Recent references

Hydro:

Effective technology transfer policy -
Three Gorges case study:

- Transferred advanced technology to the Left Bank
- Continued R&D and technology innovation
- Proposed new and improved technology to the Right Bank, and on PSP projects

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Power China
Recent references

Hydro:

Localization - Commercial team &
Tianjin ALSTOM Hydro Co. Ltd.:

- Designs, manufactures a complete range of hydro equipment
- Has acquired 25% market share in China's domestic hydro market

With its local presence, worldwide organization and proven advanced technologies, ALSTOM is the perfect partner for companies in and outside of China

ALSTOM

Power China
Recent references

Nuclear:

A long term partner of China's nuclear industry:

- The global leader in advanced, mature and optimised conventional island technology equipment and solutions
- Ready to serve China's 3rd generation nuclear projects in cooperation with Chinese partners
- Our technology transfer policy contributes to China's self-reliant development of its nuclear power industry
- Partnered with Dong Fang to supply 4x1000 MW-Class steam turbine-generator packages for the conventional island of a new nuclear power plant to be built at Hongyanhe, in Liaoning province, northern China

Arabelle, the world's largest and most efficient nuclear steam turbine (1000MW-1750MW) is compatible with any type of nuclear reactor. It is an ideal choice for the 3rd generation nuclear projects.

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Power China
Recent references

Nuclear:

Supplied over a half of China's total installed nuclear capacity

- Conventional Islands supplied to Daya Bay and Ling Ao nuclear power stations comprising totally 4 x1000MW steam turbine generators
- 2x1000 MW Arabelle steam turbine and generator package for phase II of Ling Ao nuclear power station
- Conventional Island DCS for Ling Ao and Emergency Diesel Generators for Qinshan phase II, phase III, Tianwan and DaYa Bay
- Two 1,750 MW Arabelle turbine-generator packages for Taishan Nuclear Power Plant

The world's No. 1 nuclear steam turbines & generators supplier: >170 units in 12 countries (30% of the world's total installed nuclear capacity)

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Power China
Recent references

Fossil-fired power:

- A wide range of products for all applications: **ALSTOM Beizhong Power (Beijing) Co.,Ltd (ABP) provides steam turbine & generators**
- A wide range of products for the 50 Hz and 60 Hz markets
- Major references in China
  - 10X600MW steam turbine and generation sets for Guodian(Longshan), CPI(Pingwei II, Dabieshan, Guixi) and Huaneng (Pingliang)
  - 300MW combined cycle projects in Shunde and Foshan in Guangdong
  - 235MW Meishi Combined Cycle in Shenzhen
  - 150MW gas turbine project for Baosteel's Power Plant in Shanghai

ABP - a world class industrial base that manufactures, commissions and sells 600MW subcritical, supercritcal and ultra supercritical steam turbine units with air cooled or wet cooled applications.

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Power China
Recent references

Large Utilities Boilers:

Boilers technology provider in China - 40% of total capacity for 1000MW grade boilers under license of ALSTOM.

- 2x1000MW Ultra-supercritical boilers for Shanghai Waigaoqiao phase III,
- 2x1000MW Ultra-supercritical boilers for Ninghai
- Baima Project in Sichuan, supplying China's largest 300MW CFB Boiler
- Similar CFB Boilers in Kaiyuan, Xiaolongtan of Yunnan and in Qinhuangdao of Hebei

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Power China
Recent references

Wuhan Boiler Company Ltd.:

- The WBC new factory has been put into operation from 2009. It is Alstom's largest utility boiler manufacturing site in the world

- With the capacity to produce 600 MW supercritical boilers, 1,000 MW ultra supercritical boilers and large circulating fluidized bed boilers , the factory will play a very important role in Alstom's global Clean Power strategy

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Power China
Recent references

Turnkey plants:

ALSTOM provides world leading turnkey power plant solutions for:

- Combined Cycle
- Conventional Power Plant
- Hydro
- Nuclear conventional island
- Steam Cycle Add-ons

Major conventional thermal power plant references in China:

- 2 x 350MW Hefei power plant in Anhui.
- 4 x 360MW Luohuang Power Plant in Chongqing.
- 3 x 660 MW Shajiao “C” in Guangdong.
- 2 x 600 MW (supercritical units) Shidongkou No.2 Power Plant in Shanghai

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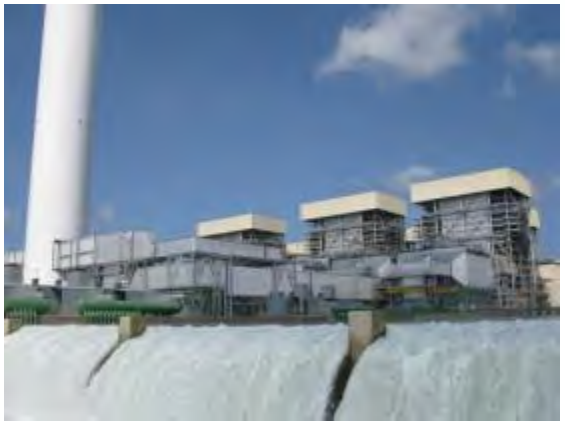
Power China
Recent references

Environmental solutions:

A complete range of proven air pollution control solutions for all market niches:

- DeSOx, DeNOx and particulate control in power market
- Industry solutions in Aluminum, Cement,Glass,Iron & Steel, Non-Ferrous, Petrochemical, Pulp & Paper and Waste to Energy



Largest world-wide installed base and global leadership in air pollution control. The leading supplier of Sea Water FGD in China:

- Successfully built the first SWFGD plant in Shenzhen
- Recent projects including: Qingdao P/P (4x300MW), Huangdao P/P(2x660 MW), and Rizhao P/P (2x350 MW)
- No.1 in market share in China

Our licensees have supplied more than 13GW FGD plants in China based on our WFGD/DFGD technologies

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Power China
Recent references

Thermal Service China World-class experience:

- Total Technical Service Agreement (TTSA) of Daya Bay, Lingao conventional islands
- Long Term Service Agreement (LTSA) of Bao Steel (150MW gas turbines) and Foshan (300MW combined cycle gas turbines)
- Long term Service Agreement (LTSA) with EDF Guangxi Laibin
- Nantian (235MW combined cycle gas turbines) LNG conversion
- CASTLE PEAK generator stator and rotor rewinding
- Maintenance Service Agreement with CLP at Castle Peak Power Station in Hong Kong
- Beilunggang generator(600MW) stator rewinding
- HEC Lamma low Nox retrofit for MHI Boiler
- Guohua Suizhong Unit #1 Electrosilla Generator Stator Rewinding

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Technology Transfer-Success Stories in China

- **Wuhan Boiler Company (WBC),** Alstom recently acquired a significant stake in Wuhan Boiler through Shenzhen Stock Exchange. In addtion to providing Wuhan Boiler with access to market abroad, Alstom supplies advanced technology, including supercritical and ultra-supercritical pulverized coal technology, CFB boilers and low-NOx burners, as well as international management expertise and know-how. The transaction results in major technology transfer, and the training and capacity building of hundreds of local workers and engineers. We are confident that IP will be properly protected and be safely shared.

- **Three Gorges Project,** technology transfer to Dongfang and Haerbin

- **Tianjin Alstom Hydro,** JV, Alstom's largest hydro installation base in the world, is capabile of manufacturing and supplying the largest hydro turbine (up to 1000MW) in the industry. Fully knowledge and technology transfer. 16 PSP turbine in 3 projects, technology transfer to Dongfang and Haerbin. 20 percent China market share.

- **Nuclear,** Technology Transfer Agreement (TTA) with Dongfang, 50 percent of China market share on nuclear conventional islands.

- **Alstom Beizhong Power (ABP),** a JV with Beijing Heavy Electric Machinery Works – Designs and builds Alstom steam turbines and turbo-generators for the Chinese market, as well as the rest of the world. Technology transfer of 300MW CFB boiler to Shanghai, Haerbin and Dongfang. 1000MW ultrasupercritical boiler tech transfer.

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Technology Transfer-Success Stories in other Developing Countries

- **Partnership with Bharat Heavy Electricals Ltd (BHEL), India**
  – The partnership is based on a license and business co-operation agreement to provide BHEL with super-critical boiler technology, engineering expertise and components. This will lower the capital cost of this equipment, helping India achieve a cleaner and higher-efficiency portfolio of power generation. Technology transfer happens through the license agreement that makes BHEL our licensee in India for super-critical boilers.

- **Joint Venture with Bharat Forge Ltd (BFL), India - The JV involves setting up two companies to design, engineer, manufacture and deliver turbine and generator islands and their auxiliary equipment. As with the BHEL licence agreement, this will help to lower the capital cost of this equipment to enable India to upgrade its power generation technology whilst also developing its manufacturing capabilities. On 7 December 2009, Alstom and Bharat Forge announced a JV to build an advanced power equipment manufacturing plant at Mundra in Gujarat, with estimated investment from the 2 companies of INR24bn ($515m). Construction is due to start in January 2010 and the plant is expected to be operational by 2013. The plant will manufacture 300-800MW subcritical and super-critical power equipment. In future the JV will also explore the possibilities of manufacturing turbines and generators for gasbased plant and nuclear applications.**

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Technology Transfer-Success Stories in other Developing Countries

- **Alstom Global Technology Center for Hydroelectricity, Vadodara, India (Joint R&D)** —Established in 2008 at an existing Alstom manufacturing site, this center will develop highly innovative hydro products and technologies, focused on the Indian market1. Alstom has already installed nearly 6GW of India's total 37GW hydro capacity and is currently building turbines and generators that will provide 1 Hydro resources in the Himalayan region tend to suffer from high silt content and this center will offer a silt-abrasion test rig to develop better products for this market for additional capacity up to 3GW.

- **Alstom wind turbine assembly factory in Bahia, Brazil** – on 21st December 2009, Alstom signed a memorandum of intent with the State Government of Bahia, Brazil to install its first wind turbine assembly facility, to enter into operation in early 2011. The size of the investment is estimated at around €20 million (R$50m).

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Technology Transfer-Success Stories in other Developing Countries

- **Membership of the South African Centre for Carbon Capture and Storage (SACCCS)** – a Public-Private Partnership between the governments of South Africa, UK and Norway and a range of private sector organizations, including prominent African companies like Eskom and Sasol. The Centre will facilitate the development of CCS in South Africa, from mapping potential storage sites to launching a demonstration project towards the end of the decade. It will also support research and training in the areas of capture, transport and geological storage technologies, monitoring and verification, risk assessment, regulatory and policy research and public outreach and awareness.

- **Investment in skills and supply chains in South Africa** - In 2007 we established a Project Execution Centre in Johannesburg to co-ordinate our activity across our major projects and to manage our relationships with customers and the development of our local supply chain. This has resulted in our investment in human and material resources, with support for training, education and the development of industrial capacity in the country. By 2013 Alstom's investments will have trained over 700 South Africans as artisans, engineers and managers in a range of disciplines (manufacturing, project management, sourcing, quality assurance, sales, engineering, construction, contracts etc).

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Technology Transfer-Funding and IP Protection

- **Multilateral financing mechanisms should be designed specifically to leverage private as well as public capital into the development and deployment of clean technologies, in particular by linking existing UNFCCC and other multilateral and bilateral financing mechanisms to market-based carbon reduction schemes. Market creation is fundamental to growth.**
- **Private sector will be the main source of investment in new technologies and must be given the right regulatory framework to incentivise that investment, to ensure that intellectual property rights are protected. Effective IP protection is a key enabler and weakening it will actively discourage technology transfer.**
- **The risk of IPR infringement, and lack of redress when it happens, in certain countries where IPR protection is not trusted, act as a serious inhibitor of technology transfer. If a government-backed scheme existed to insure against the risks of IPR infringement and lack of redress, many companies might thereby be encouraged to undertake many more projects.**

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