

Alstom in Nuclear Power Plants and Vietnam

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ALSTOM
Shaping the future

Agenda

- **Alstom Group**
- Alstom in Vietnam
- Alstom-Atomenergomash – Ninh Thuan 1 NPP project

Three main activities in four sectors

Equipment & services for power generation
Alstom Thermal Power



Alstom Renewable Power



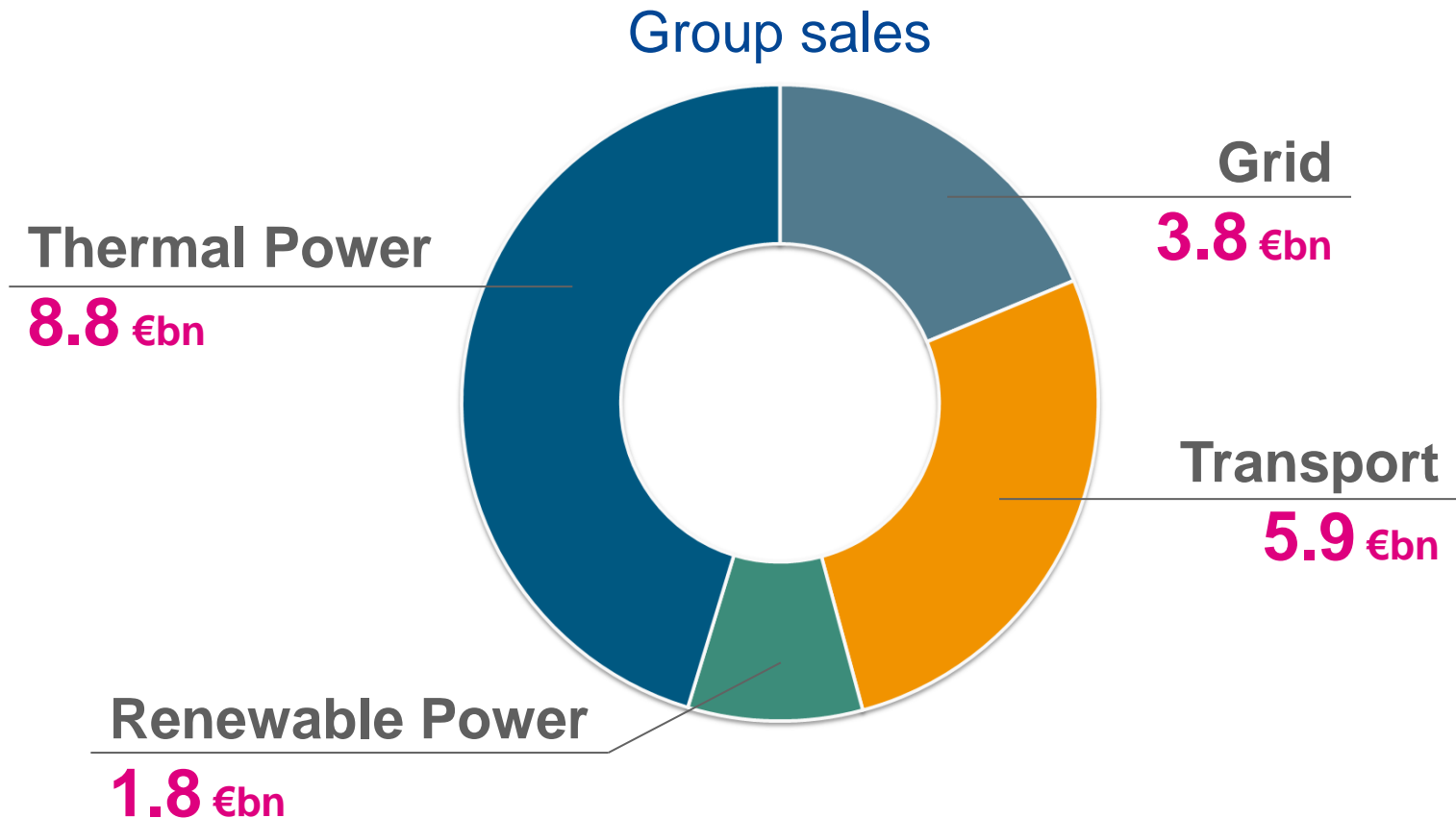
Equipment & services for power transmission
Alstom Grid



Equipment & services for rail transport
Alstom Transport



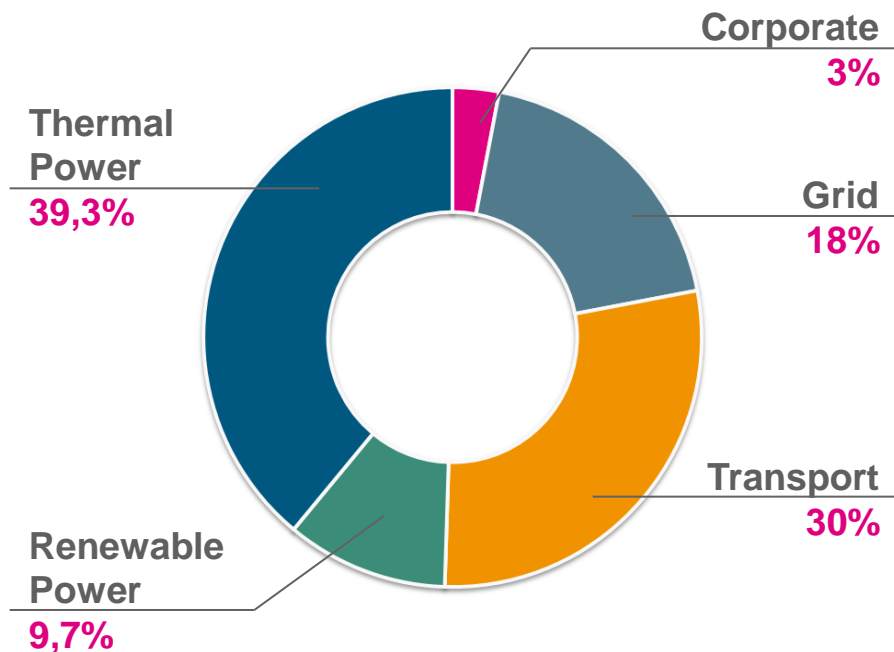
Three main activities in four Sectors



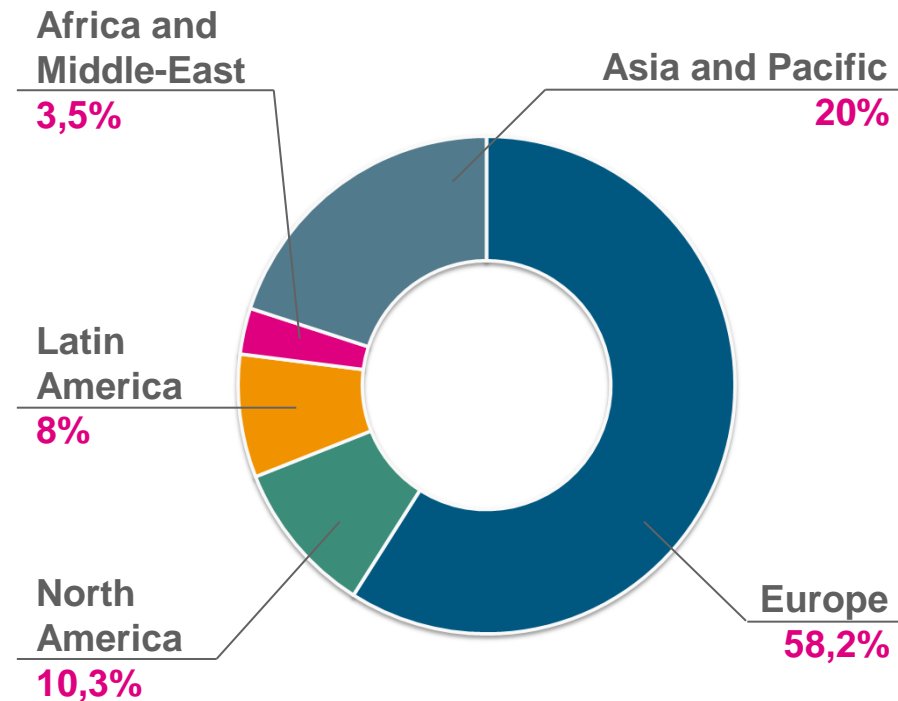
- **Total sales 2013/14: 20.3 billion EUR**
- **Total orders 2013/14: 21.5 billion EUR**

93,000 employees worldwide in 100 countries

By activity



By region



At end of March 2014

Alstom Power: world leader in power generation infrastructure

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



Global leader
in integrated
power plants



Global leader
in air quality
control systems



Global leader
in hydro power



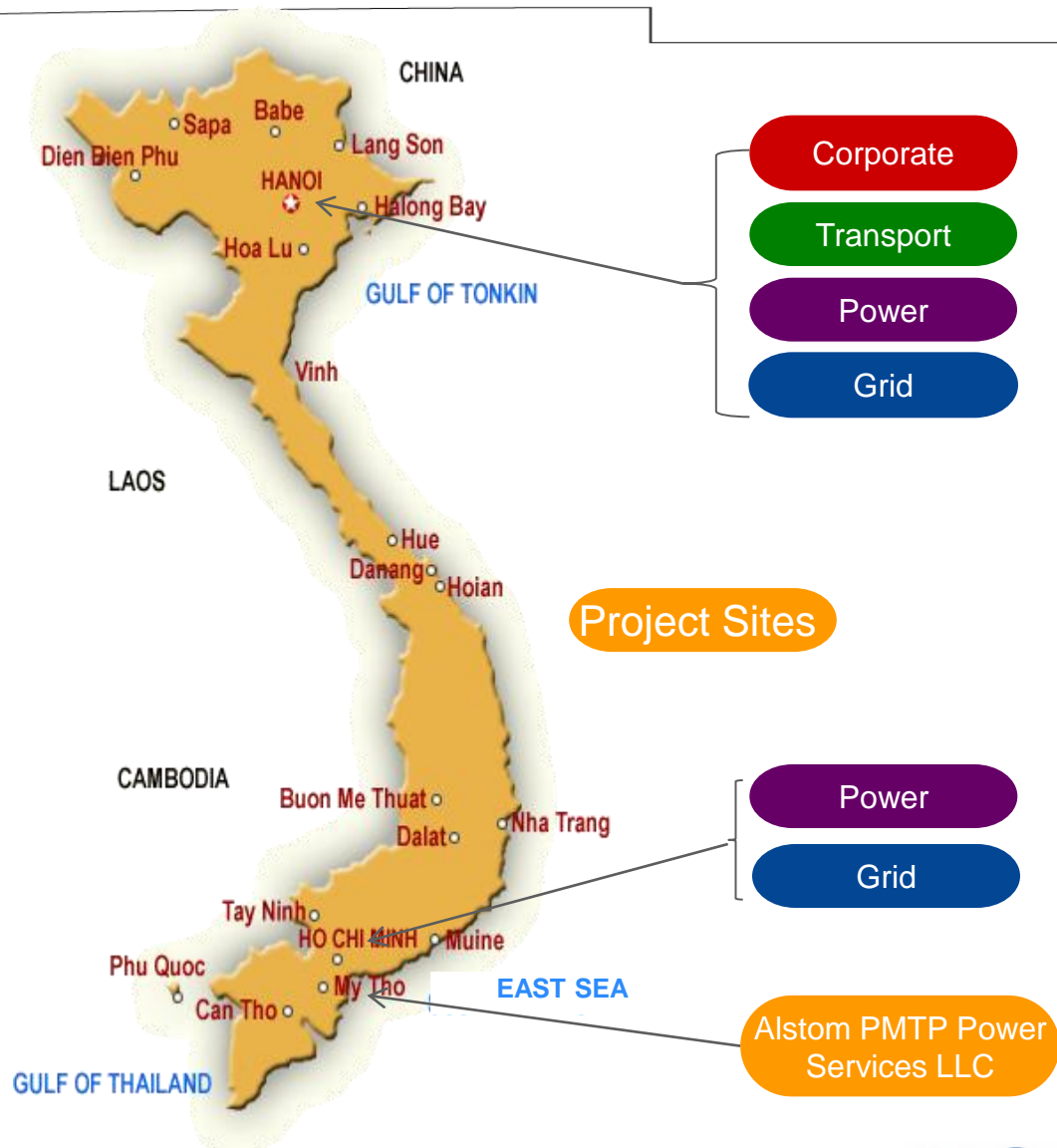
Global leader
in services for
electricity utilities

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Alstom Footprint in Vietnam

130 employees



ALSTOM Power in Vietnam

Total capacity for main equipment: 7.2GW
(installed & construction)

Lai Chau HPP, 1200 MW

Son La HPP, 2400MW

Hua Na HPP, 2x90 MW

Song Bung 4 HPP, 2x78 MW

Song tranh 2 HPP, 190 MW

Sesan 4 HPP, 2006, 360 MW

Projects in operation
Projects under construction

2 Offices in Hanoi & HCM
JV for GT reconditioning

133 permanent staffs



Huoi quang HPP, 520 MW

Cao Ngan STPP, 2003, 100 MW

Srepok 4A HPP, 2x32MW

Vinh Son HPP, 1993, 66 MW

Song Hinh HPP, 1995, 70 MW

Dai Ninh HPP, 300 MW, 2003

Vinh Tan 2 TPP, 2x600 MW SWFGD

Phumy 2-1. 1995, 288 MW

Phumy 2-1 addon, 2001, 160 MW

Phumy 4, 2002, 460 MW

Phumy 2-1 ext addon, 160 MW

Dong Nai 5 HPP, 2x77MW

Nhon Trach 1 CCPP, 2006, 462 MW

Thac Mo Ext. HPP, 1x75MW

Duyen hai 1 and 3 TPP, 4x600 MW, SWFGD

Presentation title - 20/11/2014 - P 9

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Alstom Thermal Power Services : main agreements

- Phu My CCPP Long Term Service Agreement (2011-Renewed for 8 Years)
- Nhon Trach CCPP Long Term Service Agreement (2010- 10 Years)
- Alstom PMTP Power Services :
GT Reconditioning Workshop
- JV agreement between Alstom & EVN / Phu My TP
 - Signed in May 2012
 - Operations started in May 2014



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Introductory video
3 minutes
“Alstom in Nuclear”

Alstom in Nuclear

World N°1 supplier of nuclear steam turbine generators

55 years of experience : 136 nuclear units in operation = 114 GW



30% of the world nuclear installed base is equipped with Alstom turbine technology

World total nuclear installed capacity is 385 GW (as of Oct. 2013)

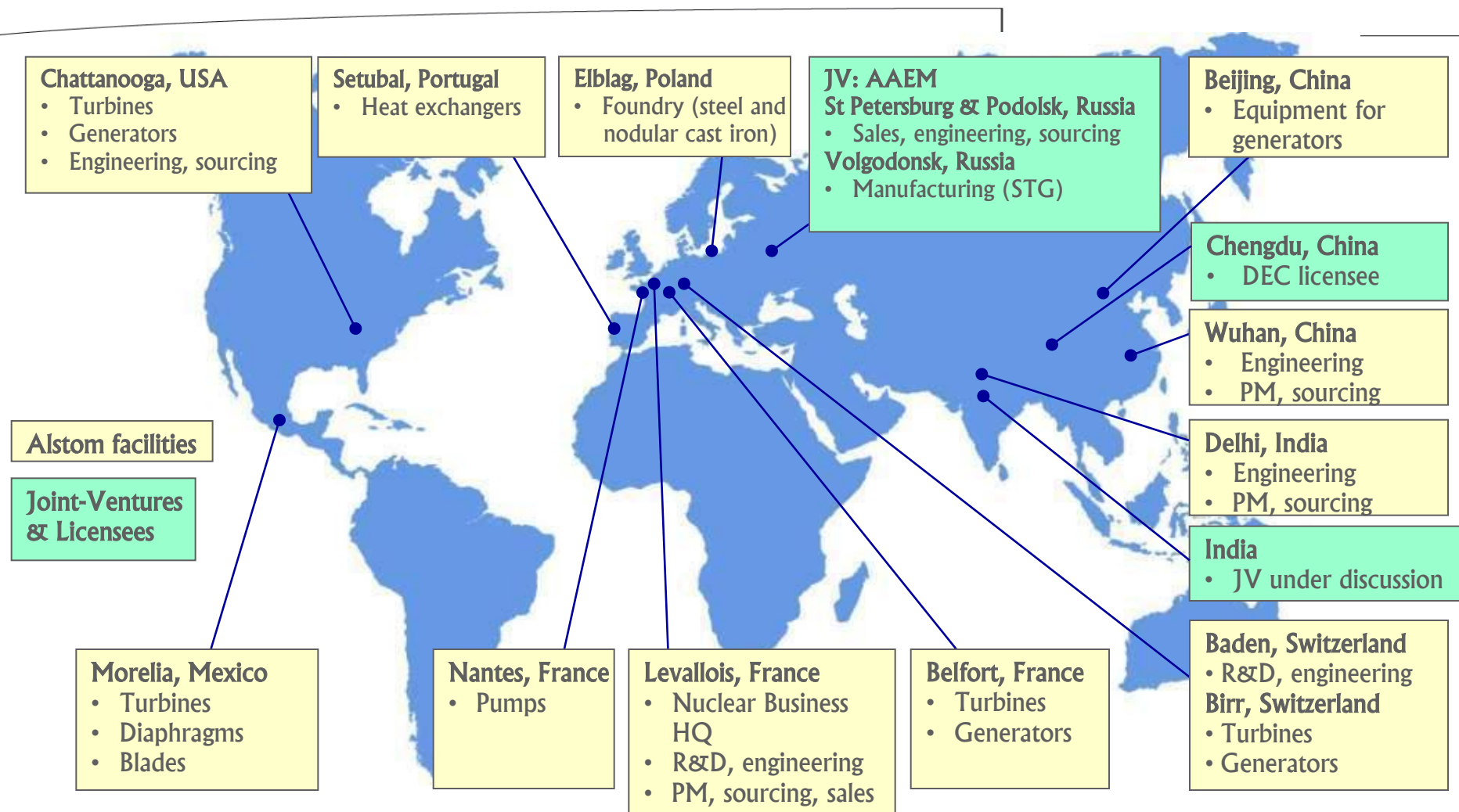
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Alstom in Nuclear

Footprint of Alstom nuclear activities



A global footprint & the possibility to partner locally

Alstom-Atomenergomash



ROSATOM



Nuclear
Power
Complex



Nuclear
Weapons
Complex



Applied
and Basic
Science



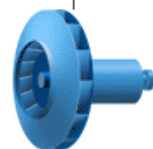
Nuclear and
Radiation
Safety



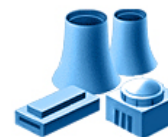
Nuclear
Icebreakers



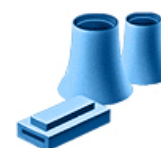
Atomenergoprom
Civil nuclear



Machine
Engineering



Design, Engineering
and Construction
of N-plants



Power Generation
at N-plants

ALSTOM



ATOMENEROMASH

49%

51%

AAEM
ALSTOM ATOMENERGOMASH

Atomstroyexport
Atomenergoprojekt(s)

Rosenergoatom

OJSC «Atomenergomash»



OJSC «Atomenergomash» - one of major supplier for nuclear power sector in Russia and abroad

- ▶ **15%** of Russian machine building industry
- ▶ More then **40** companies in manufacturing, engineering and R&D in Russia, Ukraine, Czech Republic, Hungary, Kazakhstan, Bulgaria and Morocco
- ▶ near **17 500** people including all daughter companies
- ▶ More then **1 BEUR** in orders

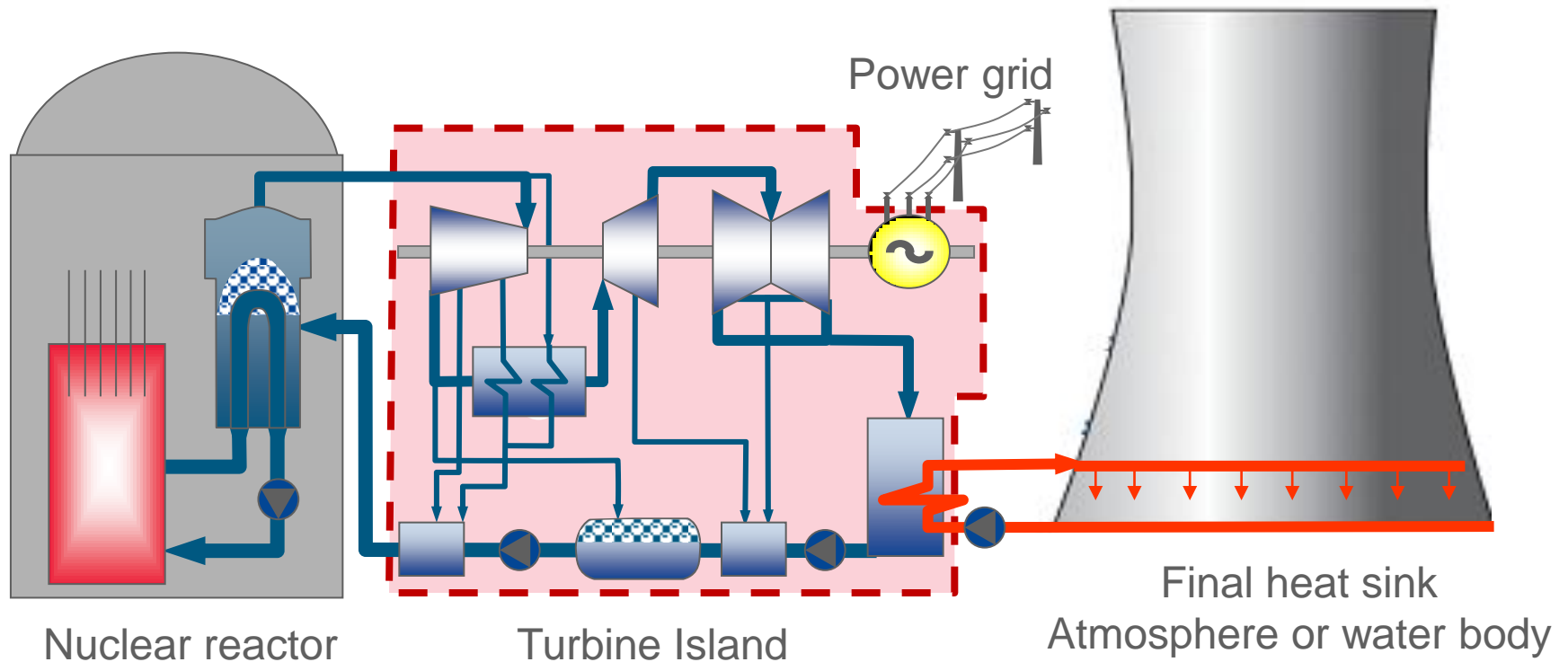
Atomenergomash equipment is installed at more than **13%** of NPPs



AAEM Commercial success record

- 2008 – Seversk, Justification of investment
- 2010 – Leningrad II-1, Emergency Diesel Generators - supply
- 2011 – VVER TOI design, Technical Project
- 2012 – Baltic, Equipment supply + tech. field assistance
- 2012 – Baltic, Technical Project
- 2013 – Akkuyu , Technical Project

AAEM offer for a NPP



AAEM offers set of main process equipment for a NPP Turbine Hall

Manufacturing site: Volgodonsk

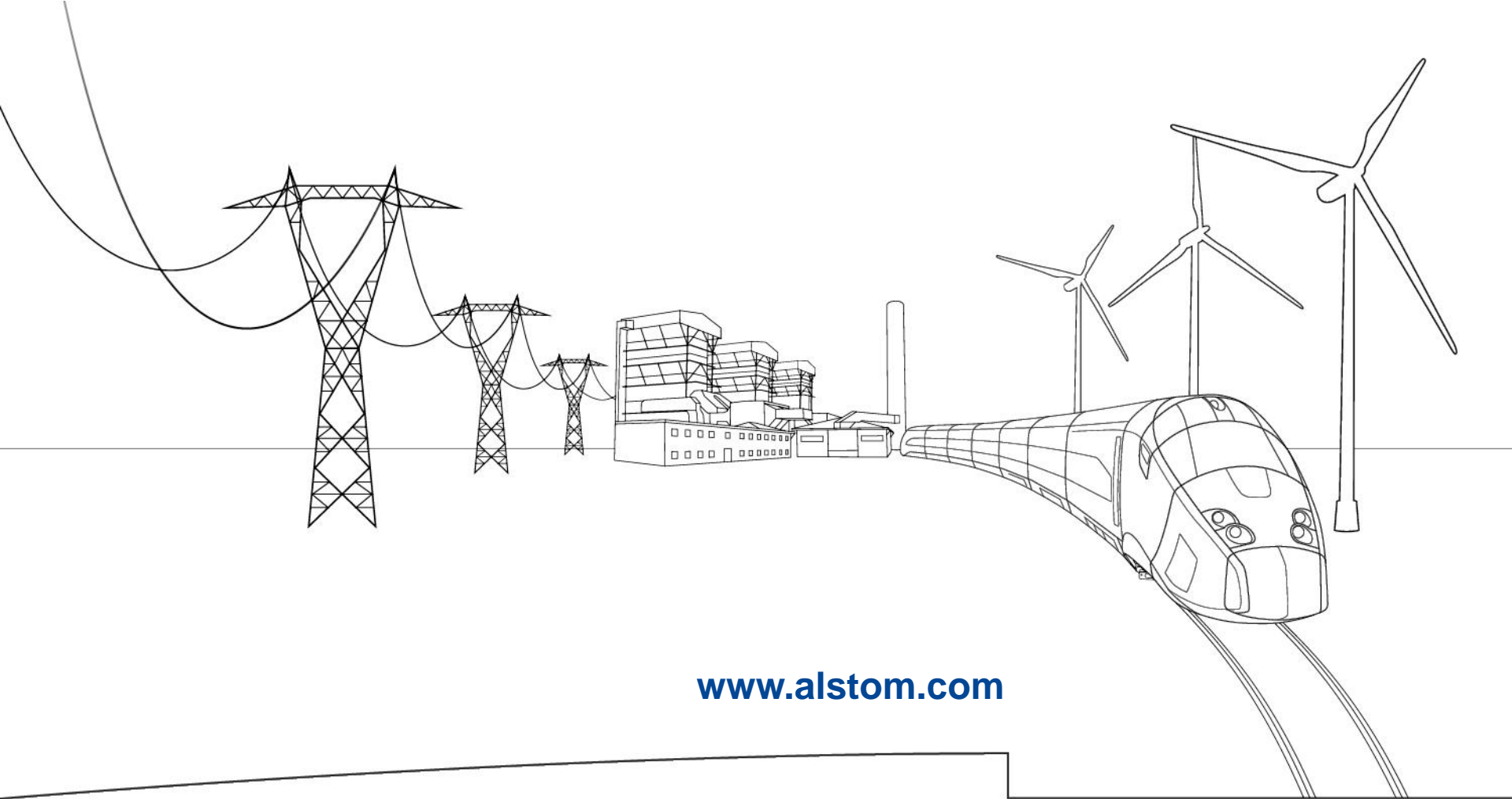
Advantages:

- Ready to install machines workshop
- 100% suitable for AAEM manufacturing (size, cranes, ...)
- Excellent logistics
- Short time to market



Volgodonsk site – excellent logistics opportunities





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