

ATOMEX Europe 2011

SIGMA GROUP a.s.
Presentation of a supplier



SIGMA[®]

Prague 25. - 26. October 2011

1. Introduction

- SIGMA GROUP a.s. follows up the pump manufacturing tradition in Lutin by Ludvik SIGMUND (1868)
- Since 1930' s deliveries of industrial pumps
- Since 1970' s deliveries of pumps for nuclear power plants

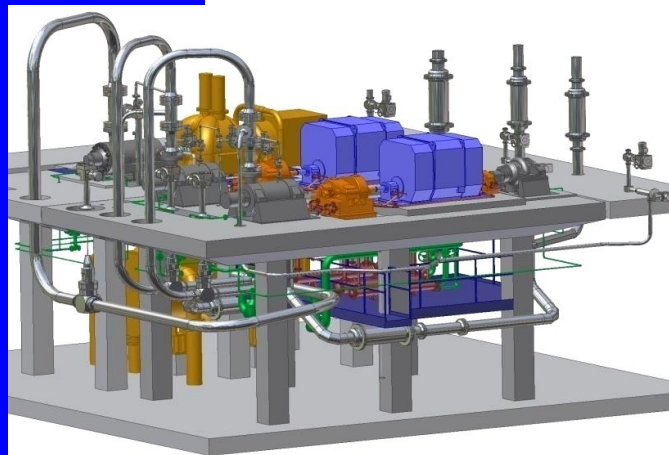
SIGMA GROUP a.s.

- **R&D:** SIGMA Research and Development Institute, s r.o.
- **Production:** SIGMA GROUP a.s., Industrial Pumps Division
- **Engineering:** SIGMA DIZ, s r.o.
- **Installation/maintenance:** SIGMA-ENERGO, s r.o.

SIGMA GROUP WEBSITE: www.sigma.cz

2. Application

- power plants – nuclear
- fossil fuel
- water management
- petrochemical industry
- oil extraction
- mine, iron and steel works
- irrigation
- flooding



Since 1970 's "turn-key" deliveries of pumping stations and single pump deliveries for nuclear power plants in Slovakia, Czech, Russia, Ukraine and India

References

Nuclear power plants - Czech and Slovakia

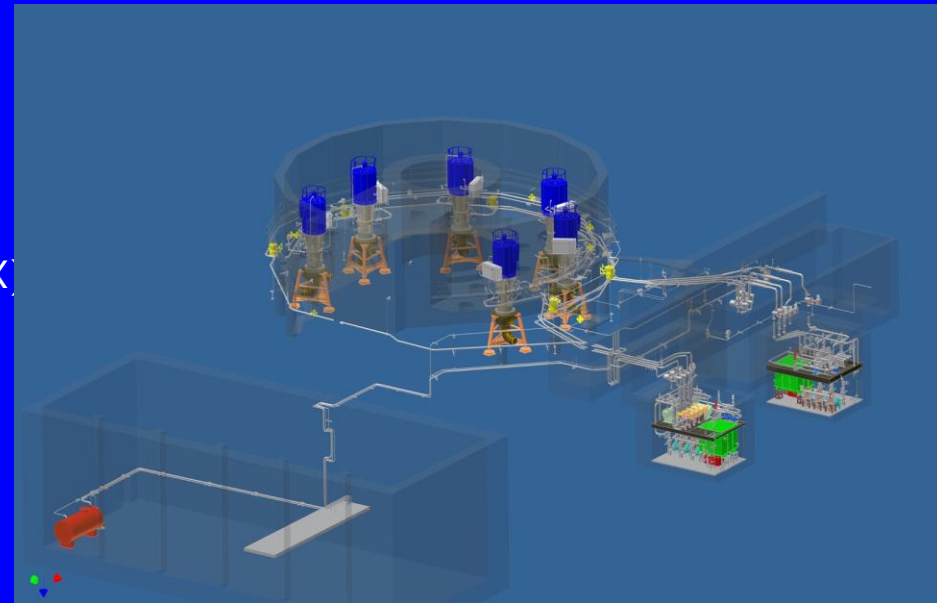
- **1979-1985 NPP Jaslovské Bohunice 4x440 MW (Slovakia)**
- **1984-1987 NPP Dukovany 4x440 MW (Czech Republic)**
- **2002 NPP Mochovce 2x 440 MW (Slovakia)**
- **2011-2 NPP Mochovce 2x 440 MW (Slovakia)**
- **2002-2003 NPP Temelín 2x1000 MW (Czech Republic)**

Nuclear Island:

- Main circulation pumps including oil economy (engineering , installation ..., pumps CKBM)
- Pump for emergency replenishment of boric acid into the primary (coolant) circuit (Pump KCX)
- Shower pump of steam-gas mixture after failure of the primary pipeline
- Return leaks pump

Conventional Island:

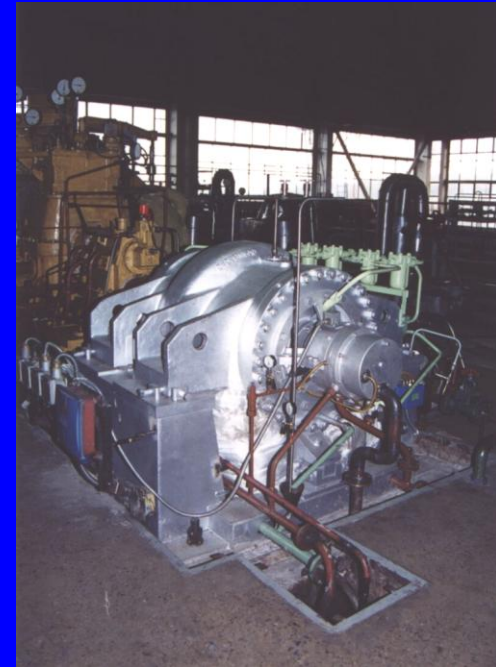
- Feed water pumping station
- Cooling water pumping station
- Essential water pumping station
- Raw water pumping station
- Condensate pumps
- Single lots of other pumps deliveries



References - Abroad

• Nuclear power plants - Russia

- Novovoronezhskaya 1000 MW (1977, 2000, 2001)
- Novovoronezhskaya 440 MW (2001)
- Novovoronezhskaya VVER (MIR) 1200 MW (2010-1)
- Kalininskaya 1000 MW (1997, 2000, 2009)
- Balakovskaya 1000 MW (2002, 2009)
- Rostovskaya 1000 MW (2003, 2008)
- Beloyarskaya 800 MW (2011)
- Leningradskaya VVER (MIR) 1200 MW (2011)

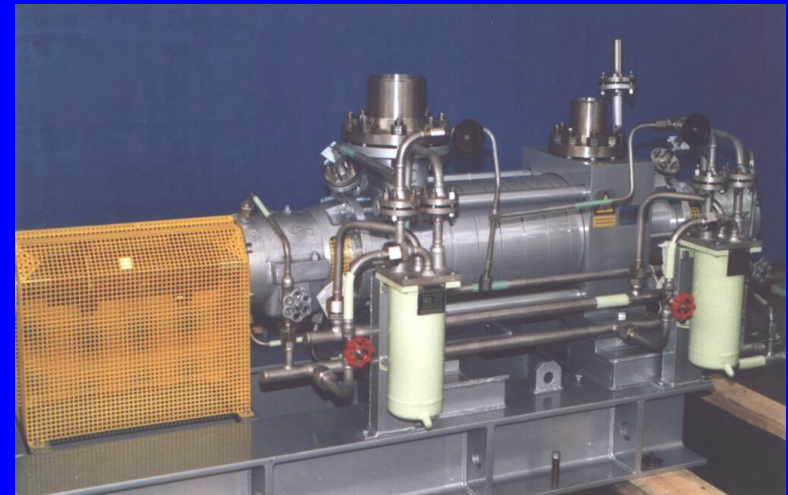


• Nuclear power plants – Ukraine

- Juznoukrajinskaya 1000 MW (1996, 1998)
- Chmelnickaya 1000 MW (1997, 2001)

• Nuclear power plants - India

- NPP Kudan Kulam 1000 MW (2007)



Current Russia Deliveries

• Novovoronezhskaya VVER (MIR) 1200 MW (2010-1)

Scope of delivery:

- Raw water pumps (4 pcs.)
- Cooling water pumps (12 pcs.)
- Essential water pumps (14 pcs.)
- Emergency feed water pumps (8 pcs.)
- Boratic acid pumps (8 pcs.)
- Back wash pumps (6 pcs.)
- Demineralized water pump (1 pcs.)



• Leningradskaya VVER (MIR) 1200 MW (2011)

Scope of delivery:

- Cooling water pumps (4 pcs.)
- Heat water circulating pumps (4 pcs.)