

Complete offer of Machine-Building Plant “ZIO-Podolsk” for reconstruction, modernization and construction of thermal power plants in Vietnam





ROSATOM

**ROSATOM** is the Russian Federation national nuclear corporation bringing together over 350 companies and R&D institutions that operate in energy sector as well as in the civilian and defense sectors.

**ROSATOM** takes a responsible approach towards the environment by introducing environmental management into operational practices. Environmental safety remains its top priority.

## MAIN POWER EQUIPMENT

**TURBINE EQUIPMENT**

**BOILER EQUIPMENT,  
STEAM GENERATORS**

**TANKS AND  
VESSELS,  
METALLURGY**



## AUXILIARY POWER EQUIPMENT

**VALVES AND  
PIPING**

**WATER  
TREATMENT AND  
COOLING  
SYSTEMS**



**PUMP EQUIPMENT**

**VENTILATION  
EQUIPMENT**

**ELECTRICAL  
EQUIPMENT**

## ENGINEERING



## EPC/M CONSTRUCTION AND INSTALLATION





## MACHINE-BUILDING DIVISION OF THE STATE CORPORATION "ROSATOM"

**50**

**ENTERPRISES IN RUSSIA  
AND ABROAD**

Equipment produced by Atomenergomash enterprises operates at power plants located in 20 countries

**27000**

**EMPLOYEES**

over **700**

**MANUFACTURED  
BOILER UNITS**

**66 GW**

**TOTAL INSTALLED CAPACITY  
OF POWER UNITS**



### ATOMENERGOMASH OJSC

was founded in 2006 within the State Atomic Energy Corporation Rosatom. The Group of Companies is the core of the machine building unit within the State Corporation.



ATOMENERGOMASH Group of companies incorporates scientific and research, engineering, manufacturing, service, and construction and erection enterprises that are located on the territory of Russia, Czech Republic, Hungary, Kazakhstan, Bulgaria, Morocco. ATOMENERGOMASH Companies have many years of experience in supply of thermal power equipment – the first steam boiler was constructed in 1946.



Center of responsibility for the development of thermal power engineering projects in the machine-building division of the State Corporation ROSATOM



Leading engineering entity of the machine-building division of the State Corporation ROSATOM



Leading machine-building entity of the machine-building division of the State Corporation ROSATOM with 95 years of experience



## Power boilers

for power units with the capacity of 50 – 800 MW designed for firing various types of fuels with due regard to advanced engineering solutions

## Heat-recovery steam generators

for advanced combined cycle plants with the capacity of 2.5 – 420 MW

## Equipment for WtE plants

steam boilers, parts under pressure

## Heat exchange and auxiliary equipment

capability to manufacture a wide range of heat exchange and auxiliary equipment

## Cooling systems

construction of chimney-type cooling towers and equipment for cooling systems

## Equipment for gas and petrochemical industry

A wide range of equipment, including heat exchangers, bulk-capacity tanks, columns, process coils, dust scrubbers, etc.

Main and auxiliary equipment, produced by ATOMENERGOMASH enterprises for thermal power plants:



## 1 Boiler equipment

- HRSGs
- Utility boilers
- Gas and air ducts
- Large-size welded structures

## 2 Heat-exchange equipment

- Low pressure heaters
- High pressure heaters
- Delivery water heaters
- Vessels and tanks
- Water-to-water heaters
- Steam-water heaters

## 3 Power plant pipelines

- Pipelines

## 4 Water treatment

- Distilling and desalination plants
- Deaerators

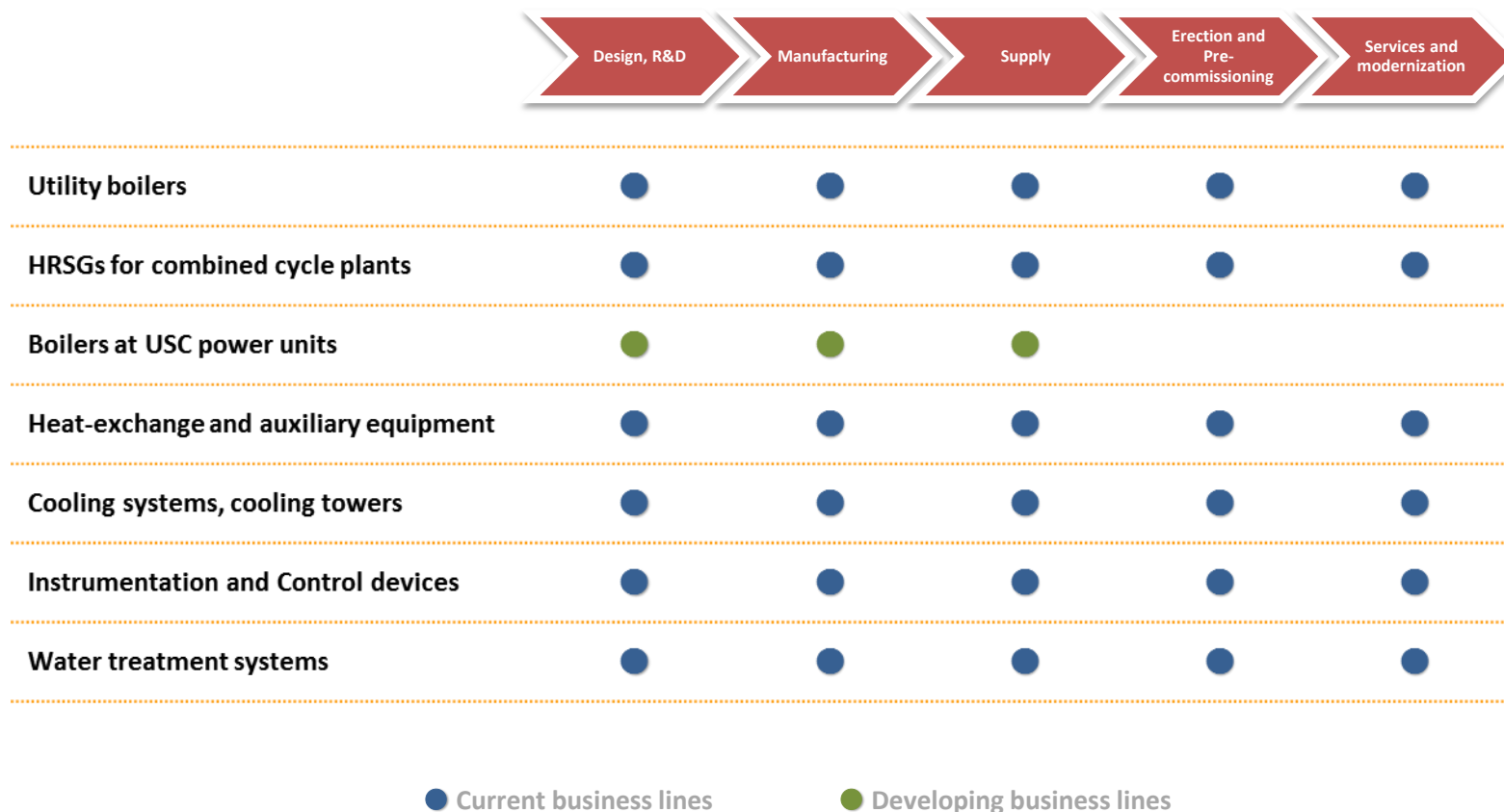
## 5 Cooling systems

- Cooling systems, cooling towers

## 6 Auxiliary equipment

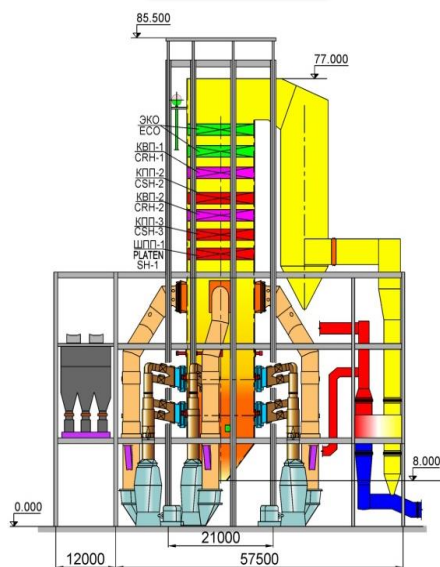
- Piping
- Fans
- Filters
- Power accessories
- Pumps

## Manufacturing and Supply of Equipment for TPPs

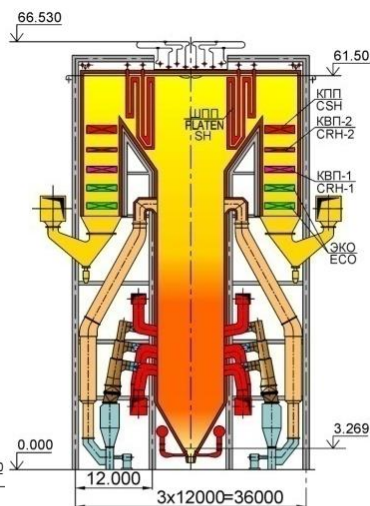


## Steam boilers

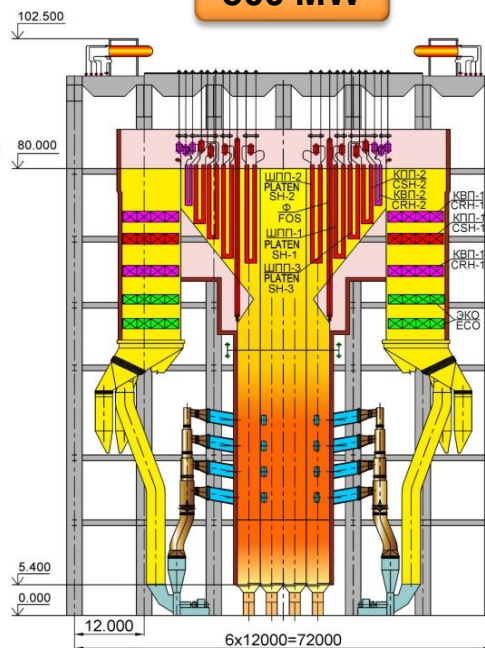
210 MW



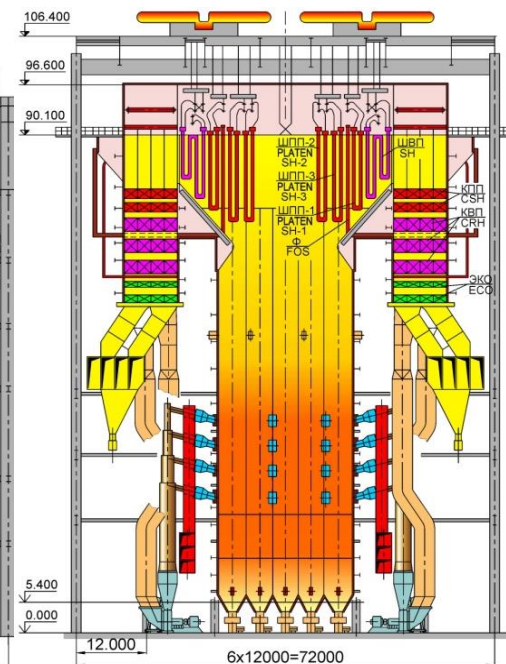
300 MW



500 MW



800 MW



Пн-1650-25-545/545 (П-78) Boiler  
Imin TPP 2x500 MW (China)

Пн-2650-25-545/545 (П-67) Boiler  
Beryozovsk GRES 3x800 MW (Russia)

## HRSG



Manufacturing of heat recovery steam generators for combined cycle power plants with capacity ranging from 2.5 to 800 MW



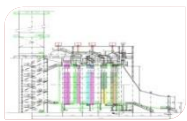
42 projects implemented since 1995; 82 HRSG manufactured, including 5 three pressure HRSGs with reheat



Recovery boilers labeled "ZIO-Podolsk" work on best power facilities of Russia



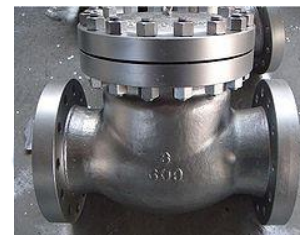
The licensing agreement with the largest provider of recovery boilers in Europe - NEM b.v. (The Netherlands) was signed in 2009



HRSGs based on NEM engineering and manufactured by ZIO-Podolsk are installed on Novomoskovskaya GRES (CCGTP-190), Yuzhnouralskaya GRES-2 (CCGT-420) and Nizhnevartovsk GRES (CCGTP-400).

The integrated offer includes the arrangement of both package supplies and assembly units supplies for new built TPPs

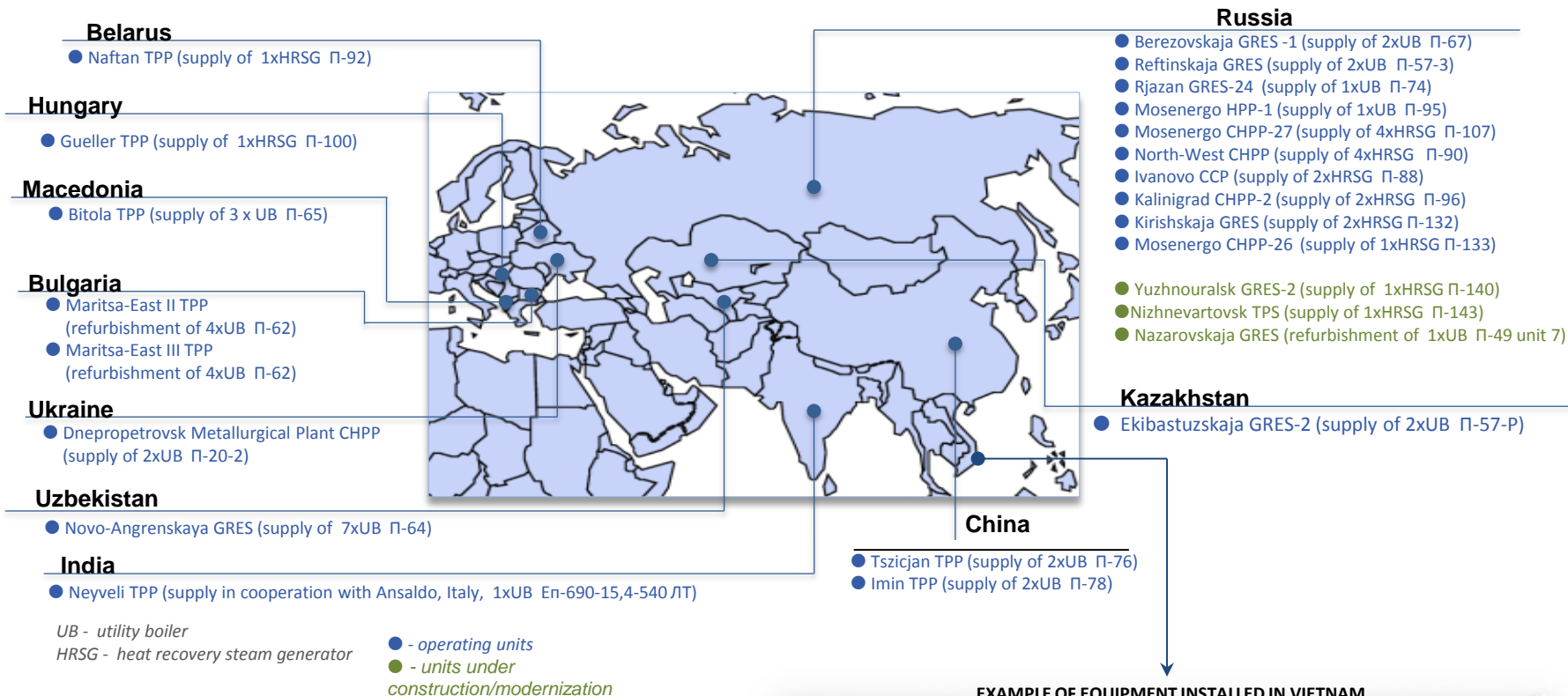
- Sootblower equipment;
- Fuel feeding, coal pulverizing and preparation equipment;
- Draft plants and turboblowers;
- Air pre-heaters with piping and valves;
- Ash removal systems including electrostatic precipitators;
- Steel structures of the boiler island and the stack;
- Gas, air and pulverized-coal ductwork completed with valves and expansion joints;
- Permanent piping;
- Single-turn actuators and their joints;
- Other power equipment of the boiler island, including cooling towers, pumps, etc.



- The quality of the equipment produced is upheld by a quality management system that has been certified by Lloyd's Register for compliance with ISO 9001:2008 since 1997 as well as by TUV, Shipping and Military Register
- The quality management system is documented in:
  - *Quality Assurance Manual*
  - *Company standards*
  - *Russian laws applicable to the activities in question*
  - *Russian and international regulations*
  - *Other equipment quality assurance documents (Quality Plans, Quality Assurance Plans, etc.)*



## Geography of success



EXAMPLE OF EQUIPMENT INSTALLED IN VIETNAM

Unit type	Quantity, pcs	Steam generating capacity of the 1st boiler unit, t/h	Year of the 1st boiler unit putting into operation	Year of the last boiler unit putting into operation	Location of Supply	Fuel
ПК-20-2	2	110	1965	1965	Yong-Bi TPP	coal
ПК-20-3	2	110	1974	1975	Yong-Bi TPP	coal

Increasing the regulated range of the unit load (lowering the threshold of constant work)

Transition to non-design fuel types

Organizing nonslagging operation of furnace boilers combustion chambers on slagging coals

Increasing the sustainability of fuel ignition and expansion of the range of work without lighting using fuel oil

Increasing technical and economic parameters as a result of optimization of construction and implementation of modern design solutions

Upgrading to improve environmental performance

Increasing steam production of steam boilers

Replacing boiler equipment, including boilers for power units up to 800 MW

## Prerequisites for cooperation

- ☐ Long history of cooperation which accounts a number of generating facilities with equipment produced by Russian manufacturers;
- ☐ Cooperation both in conventional power engineering and nuclear power engineering;
- ☐ Demand for modernization and reconstruction of existing power plants;
- ☐ Plans for construction of a number of new power generating facilities.

Joint participation in project implementation

EPC/BOO(T)

Co-financing programs

Manufacturing localization

License programs

Equipment manufactured by machine building division of Rosatom

Project consortiums

Cooperation agreements



**ЗИО-ПОДОЛЬСК**



**ЗИОМАР**



**АТОМЭНЕРГОМАШ**  
ГРУППА КОМПАНИЙ РОСАТОМ

## **ADVANTAGES OF COOPERATION WITH ZIO/ZIOMAR**

- **Center of responsibility for conventional power engineering in a machine building division of ROSATOM.**
- **Ability to use resources of ROSATOM on markets where the company is historically widely presented.**
- **Extensive experience in complete supplies and operation of equipment in nuclear and thermal power industry.**
- **JSC “Atomenergomash” enterprises have implemented successfully a wide range of foreign projects.**
- **Capability of localization of equipment manufacturing at JSC “Atomenergomash” production sites.**
- **Long term successful partnership with major international EPC contractors of Russia, including Technopromexport and Atomstroyexport.**

# THANK YOU FOR YOUR ATTENTION!

