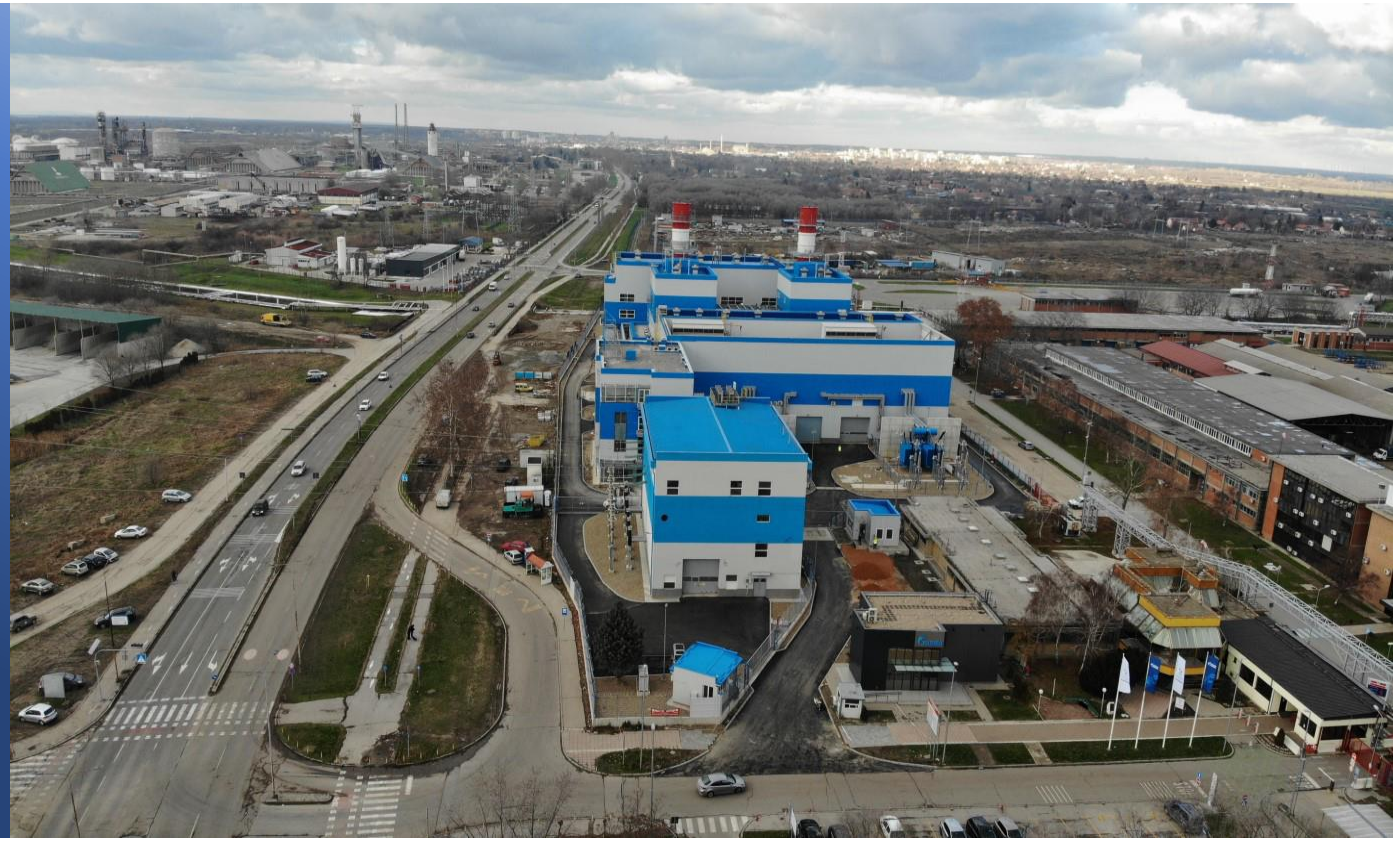
Project of the construction of Combined Cycle Power Plant, TE-TO Pancevo



04. November 2022.
Ivan Kuznecov
Energy Block

BRIEF DESCRIPTION OF TE-TO PANCEVO PROJECT

The shareholders of "Gazprom Energo Holding Serbia LLC" that owns 100% of the Combine Cycle Plant Pancevo are the following:

51% of the shares belongs to the company "Centro Energoholding" LLC

49% of the shares belongs to the company NIS j.s.c. Novi Sad.

30 October 2017 - The EPC Contract for the construction of combined cycle power plant Pancevo was concluded between:

TE-TO Pancevo LLC and Shanghai Electric Group Co. Ltd.

The Contract value - € 158.9 mln excluding VAT

MAIN PROJECT PARAMETERS

Parameter	Unit of measurement	Value
Nominal power plant capacity	MWt	up to 200
Annual electricity production	GWh	1 400
The production of engineering steam	t/h	120-200
Annual gas consumption	mil. m^3	352
Efficiency coefficient	%	51
Total estimated investments	mln. €	up to 180

- **Project director - Aleksandar Vernavski**

PROJECT OBJECTIVE

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- Increasing the reliability of thermal energy supply to the Pancevo oil refinery.
- Increasing the reliability of electricity supply in the region by placing all produced electricity into the energy system of the Republic of Serbia.

ADVANTAGES

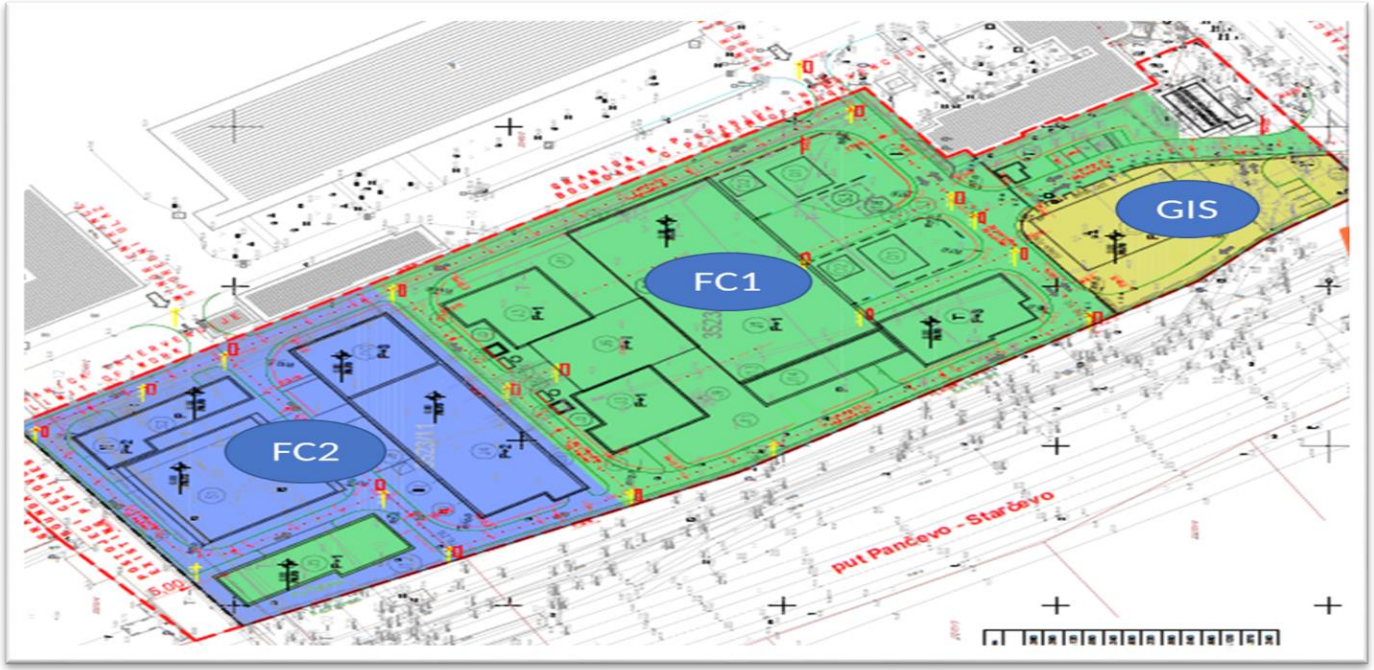
- Supplying Pancevo Oil Refinery with engineering steam from two sources (TE-TO Pancevo and Power Plant) ensures additional reliability in supplying POR with technological steam and increases the safety of its operation.

CONSTRUCTION AND ASSEMBLY WORKS

STAGES OF MAIN CONSTRUCTION

In order to optimize the deadlines, the construction and assembly works are divided into 5 stages

1. **FC1 - Gas turbine plant**
2. **FC2 - Steam turbine plant**
3. **FC3 - GIS, 220 kV**

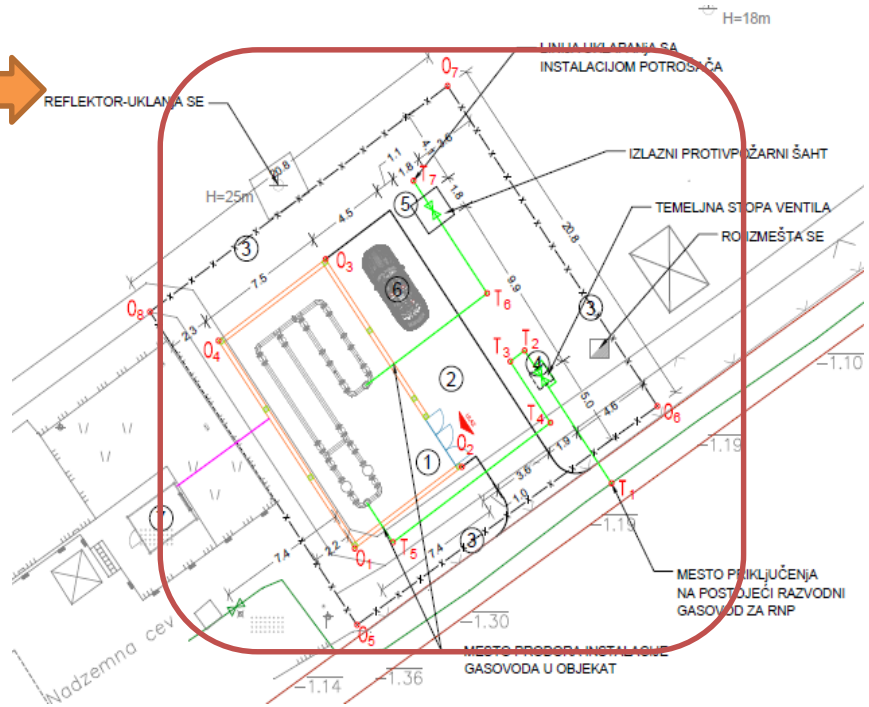


CONSTRUCTION AND ASSEMBLY WORKS

STAGES OF MAIN CONSTRUCTION

4. NIS - POR - TE-TO Connecting installations

5. Gas metering station



- The project of Combined Cycle Power Plant Pancevo construction

PROJECT IMPLEMENTATION

- The first gas power plant of this type (combined cycle gas turbine plant) built in the Republic of Serbia.
- The most compact power plant of this type in the world - built on only 2 hectares of land surface.
- Special attention during the execution of works is devoted to occupational safety and health, where not a single work injury was recorded during the entire construction period.
- The following buildings, built in accordance with legal regulations, have been handed over for use:
  - To the Serbian power grid - Connection switchgear OF 220 Kv.
  - To the Public Enterprise Srbijagas - Gas metering station

PROJECT IMPLEMENTATION

2017	2018	2019	2020	2021	2022
EPC Contract signed	Creation of project documentation	Obtaining the building approval Construction	Construction	Construction Trial operation	Trial operation Commercial operation

The corona virus pandemic had a significant impact on the implementation of the project in the following respects:

- **Extended terms of delivery of equipment and materials.**
- **Prolonged duration of project documentation creation due to lockdown in the People's Republic of China**
- **State of emergency in the Republic of Serbia and restriction of movement.**
- **Closure of the construction site due to the pandemic among the employees of the EPC contractor.**

GAS TURBINES

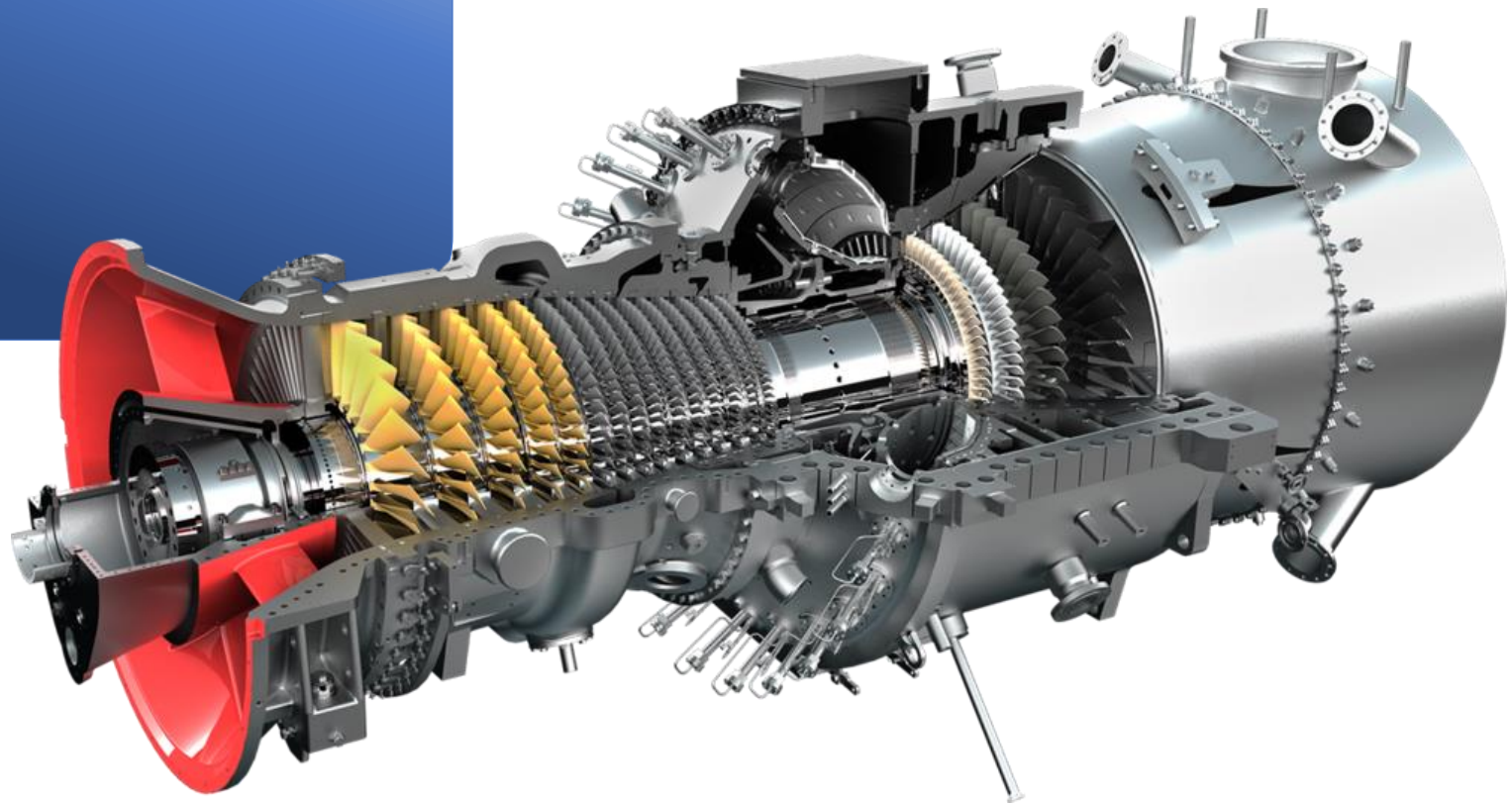
Manufacturer: Ansaldo Energia SpA , Genoa, Italy

Type: AE64.3A

Gross power 68 MW

Gross electrical efficiency: 34.6 %

Flue gas exit temperature: 550 °C



ECOLOGY AND ENVIRONMENTAL PROTECTION

- **TE-TO Pančevo uses natural gas, which is the cleanest fossil fuel.**
- **The use of natural gas eliminates the emission of sulphur oxides and particles, and considerably reduces the emission of hydrocarbon, whereby reducing the impact of the power plant to greenhouse effect. Compared to similar energy facilities that use coal as the main fuel, carbon dioxide emissions are reduced by 50 to 60%.**
- **For this type of facility, the legal limit for the emission of nitrogen oxides is less than or equal to 50 mg/Nm3, and for the emission of carbon monoxide it is less than or equal to 100 mg/Nm3.**
- **During the testing of the performance of TE-TO Pancevo, excellent results were achieved from the environmental aspect, where the confirmed emissions of nitrogen oxides were in the range of 28 to 35 mg/Nm3, and for carbon monoxide concentrations were below 2 mg/Nm^3**

PROJECT STATUS

KEY ACTIVITIES COMPLETED IN THE PERIOD 2020 - 2022 :

- Construction works completed
- Equipment delivered, assembled and connected
- Functional tests carried out
- Attestations and technical documentation completed
- Permits for trial operation of the plant obtained
- Guaranteed parameters proving carried out
- Project and technical documentation completed
- Technical inspection of the facility by the Minister of Interior carried out
- Technical inspection of the facility by the Commission for technical examination carried out
- Facility in trial operation - commercial exploitation

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PHOTOGRAPHS FROM THE CONSTRUCTION SITE

TE-TO Pancevo

- The project of Combined Cycle Power Plant Pancevo construction

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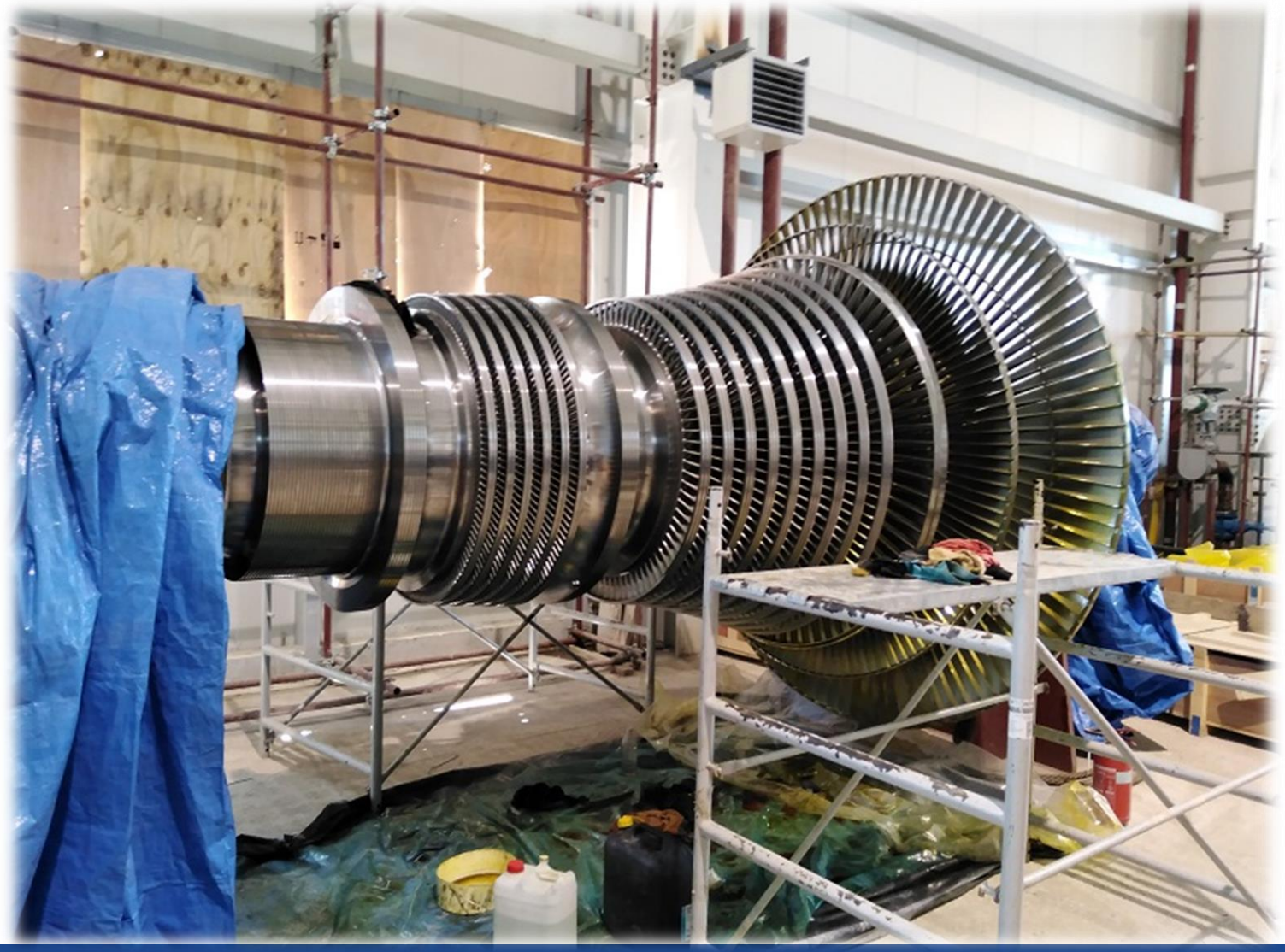
TE-TO Pancevo



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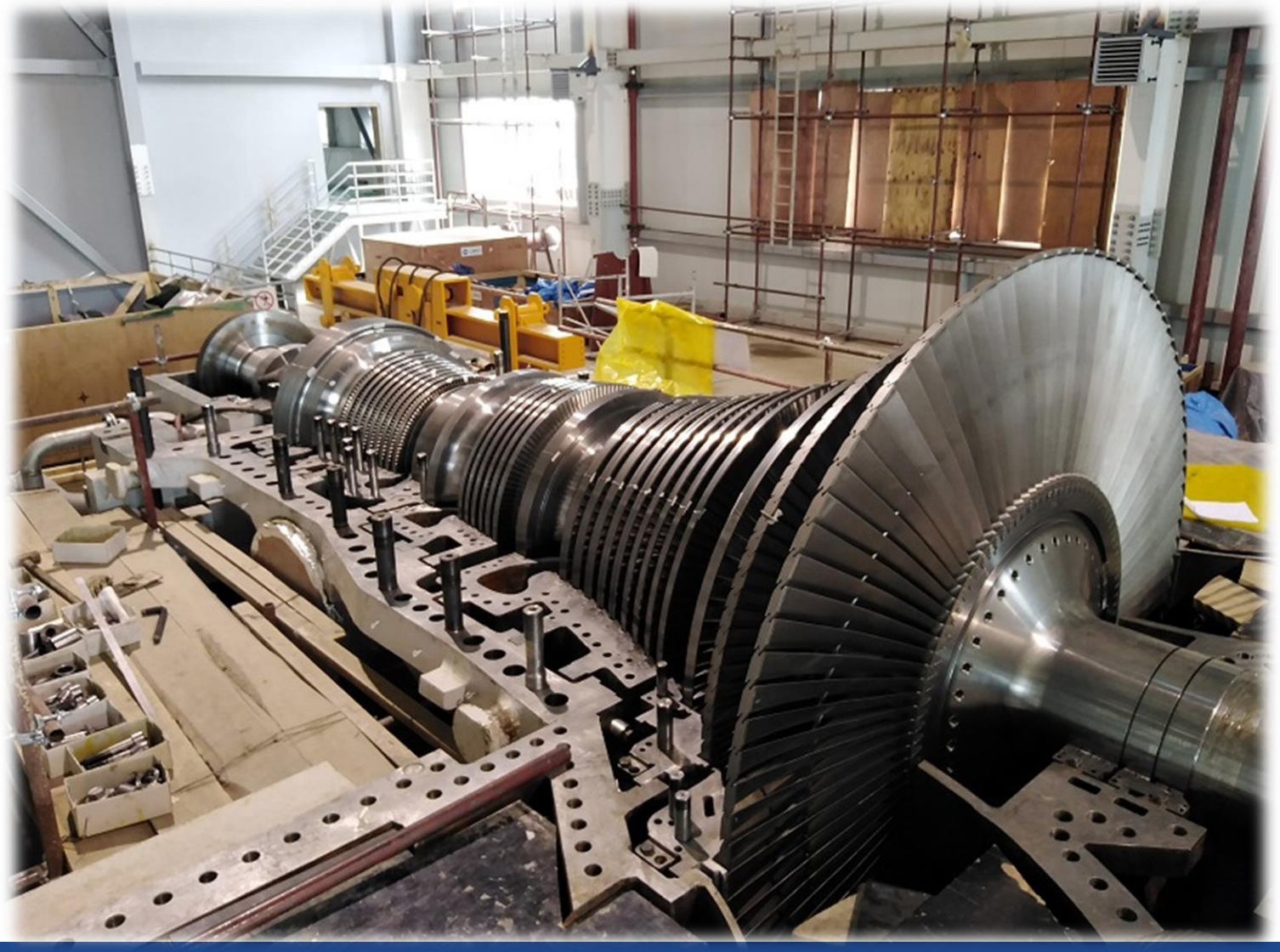
TE-TO Pancevo



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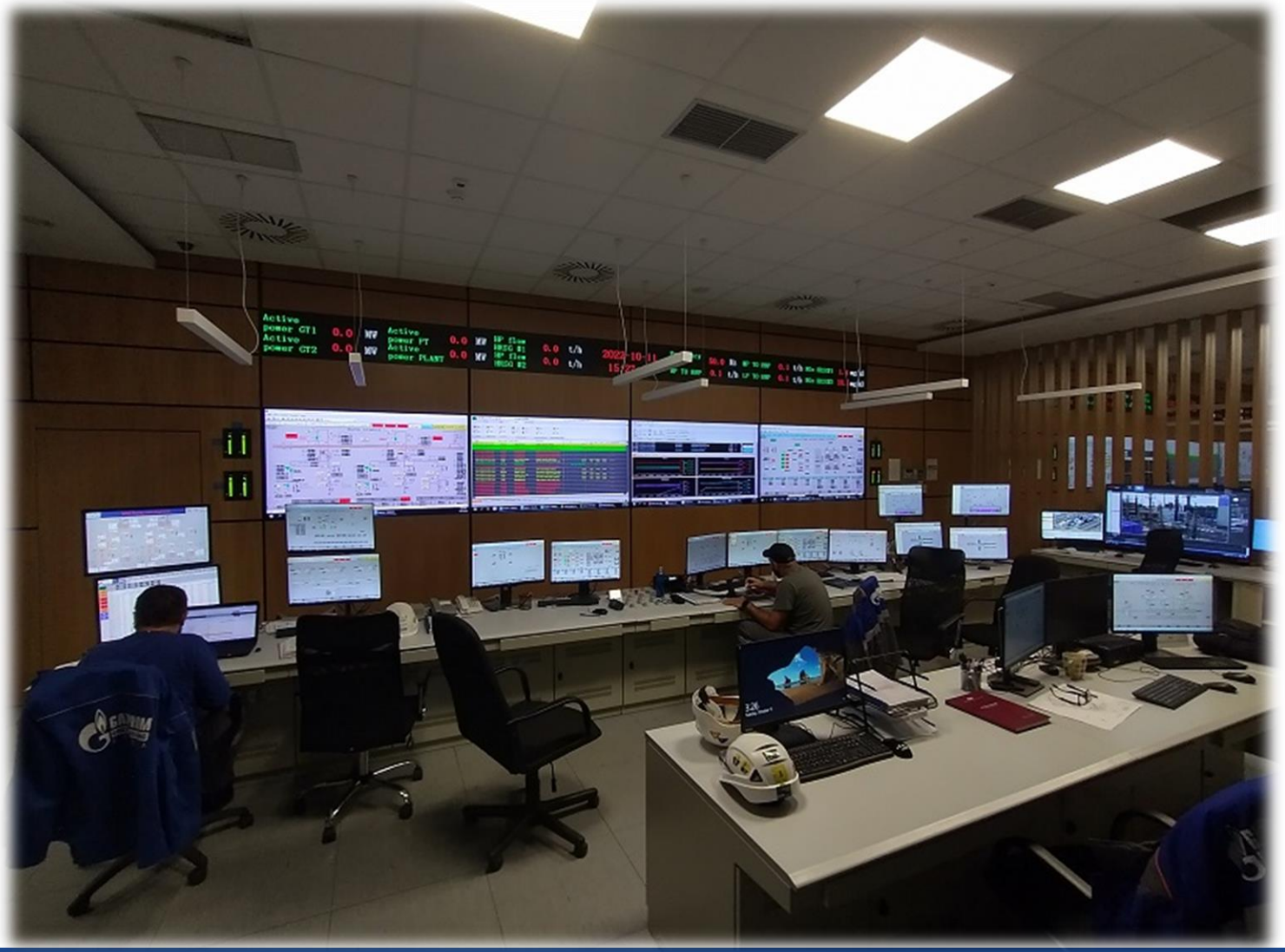
TE-TO Pancevo



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THANK YOU FOR YOUR ATTENTION!