

# Refurbishment Project with Environmental Improvement Marghera Levante Power Plant (VE)

## Dati generali

- ✓ Years: 2020 - 2023
- ✓ Customer: Ansaldo Energia
- ✓ Duration of Works: 24 months
- ✓ Value of Works: € 5.5 millions

Construction supervision of main metal carpentry works: recovery steam generator, chimney, 4 main pipe racks, air intake.

## Characteristics of the work

As part of the works for the complete renovation of the Marghera Levante power generation plant with a capacity of 800 MW, Eng. Andrea Poloni, Sidercad employee, was appointed as director of works for the main metal carpentry works consisting of the components described below.

### Air intake support structure:

metal structure, approx. 17x17m h 17m, with the task of supporting auxiliary equipment for the operation of the new gas turbine.

### Pipe rack gas turbine:

metal structure in elevation consisting of eleven frames, developed on two or three levels, embedded at the base in its own plane and hinged out of plane, with column height up to a maximum of about 15.5m and transverse span of 5.5m, placed at variable spacing of 8.0, 10.5, 9.5 m.

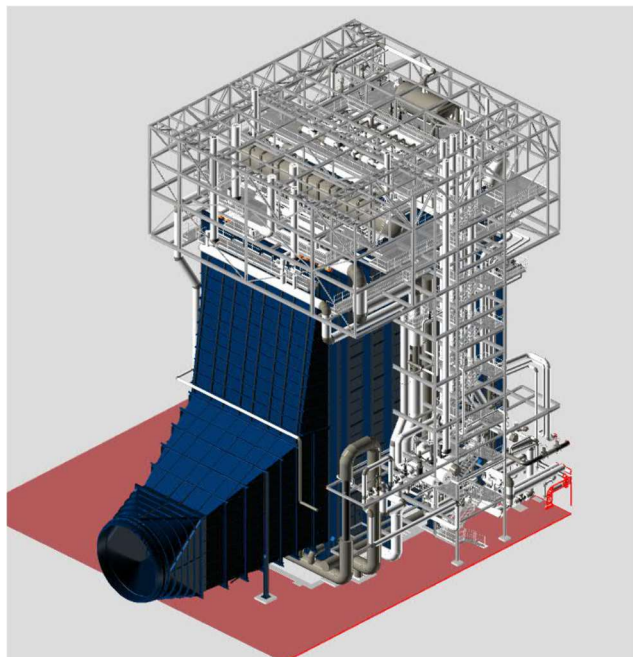
**Pipe rack HRSG (boiler):** metal structure composed of five two-span frames developed on four levels embedded at the base in its own plane, and hinged out-of-plane, with column height equal to 15.5m and transverse span of 4.0m placed at constant spacing of 7.0m.

**Pipe rack steam turbine:** metal structure in elevation consisting of seven frames developed on four levels embedded at the base in its own plane, and hinged out of plane, with column height of equal to 15.5m and span 7.0m, placed at variable spacing of 7.5, 9.0, 10.5, 11.0, 12.0, 3.0 m. These frames are connected to each other with longitudinal beams that, together with the bracing system, ensure lateral stability.

**Pipe rack Auxiliary:** a metal structure consisting of six frames developed on two levels embedded at the base in their own plane, and hinged out of plane, with column height of about 12m and transverse span of 4.0m placed at variable spacing of 8.5, 8.0, 7.0, 11.0, 9.5 m



Phases of implementation HRSG



Structures Model HRSG

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### Steam recovery generator (GVR or HRSG):

this component uses the high-temperature exhaust gases from the gas turbine (first stage of plant production) to generate steam that is used to feed the steam turbine that makes the second-stage contribution to power generation. GVR is essentially a large container made of steelwork in which there are tube bundles, and it is accompanied by complementary structures to support the process plant including a variety of piping, tanks, mechanical components, and power and control equipment.

The overall dimensions of the structure are about 41 m in length, 16.5 m in width on the main column axis and 42 m in height.

### Chimney:

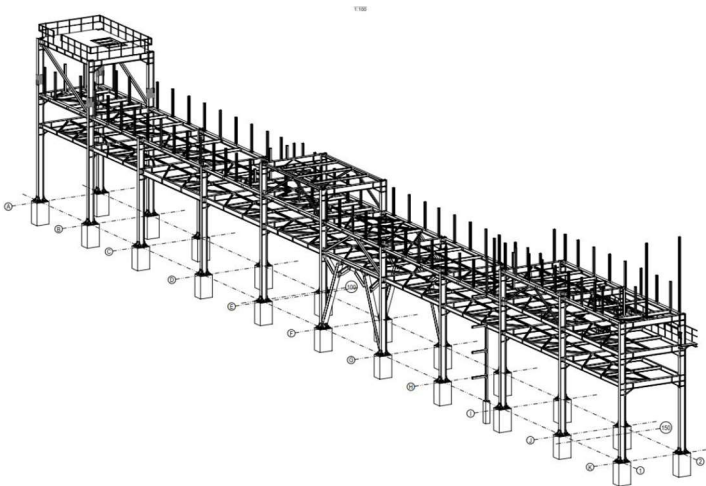
constitutes a connected and complementary part to GVR for smoke exhalation; the essential components that are part of it are:

- structural wall "shell" of the metal chimney, smoke inlet and truncated conical inlet hood;
- support structures of the service platforms;
- anchor pulls.

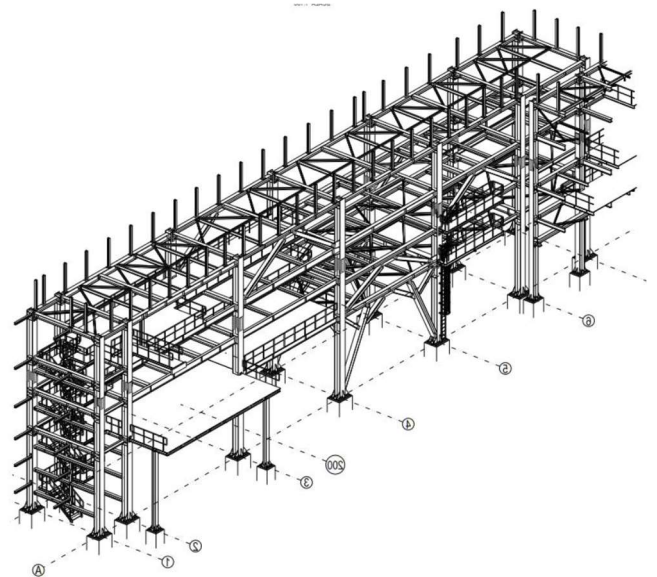
The chimney has an internal diameter of 8.10 m and a height of 70.0 m, and is composed of steel logs of varying thickness, welded in place with full penetration joints and reinforced with horizontal hoops.

### Main DL activities:

- taking charge of the projects with possible comments in relation to the executive problems
- preventive control, at the production workshops, of all metal carpentry items
- control of all structural materials as per regulations
- control of the assembly (welding, bolting, ...) of all structural steelwork
- execution of load tests and functional tests
- assistance to the activities of the tester
- coordination of procedural activities towards territorial bodies for the submission of files, and their proper completion
- control of the fulfillments in charge of the contractors including, in particular, those on the regularity of work and compliance with environmental regulations
- control and validation of the impressive documentary material.



Gas Pipe Rack Gas



Steam Pipe Rack