Case Study

Exhaust Boiler repair

Refractory replacement

Site	Lisboa - Portugal	**Situation**
Activity area	Refractory repair	
Year	2024	Repair of the several internal steel damages and the old refractory needs to be refurbish on the upper section.

Challange

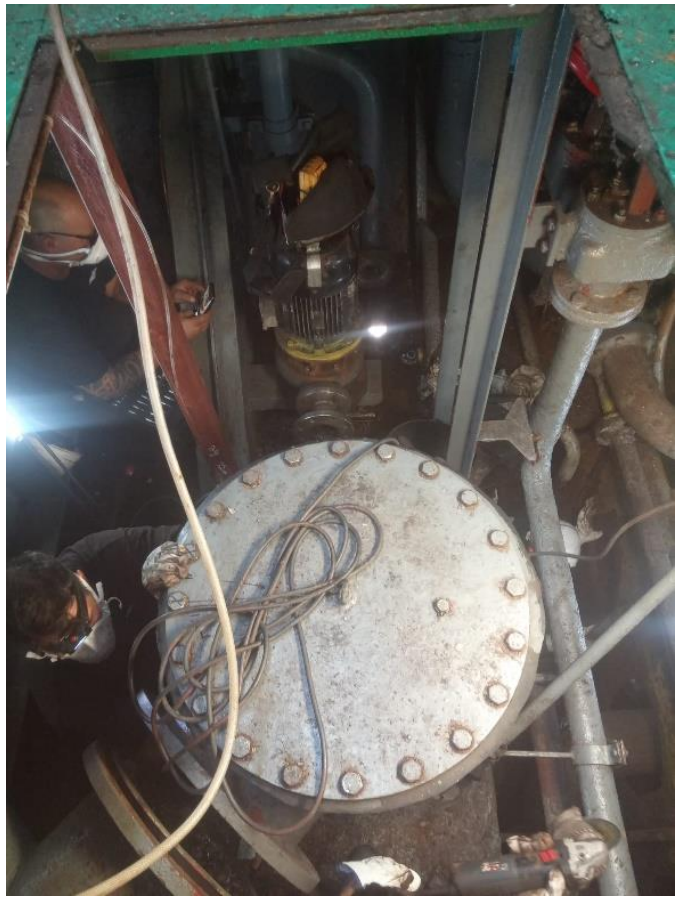
Open, clean, inspect and close it back after the necessary repairs.

Repair of the several internal steel damages. The old refractory needs to be refurbish on the upper section.

Dismantle the equipment, break the old refractory and replace it by a new cement according to original configuration.

Replace the existing steel ring in the seal box of the cover by a new steel profile 40x6 type Corten or equivalent steel.

The safety Valve to be tested and adjusted.



General view of Boiler on board vessel

Action

1. The boiler was opened and internally cleaned. The soot deposit and other debris were cleaned by manual / mechanical brushing;
2. The old cement on the upper section, found worn and broken, was removed and the surface prepared for further cement replacement;
3. Refractory area was repaired according to the Maker's instruction. The damaged area was cleaned for loose particles and then coated with an air setting mortar, fine grain coating with approximately 74% Al203 and a low iron content, temperature limit of approximately 1700°C.

   Refractory applied, CALDE PLAST SUPERAL X-AB.

4. The existing steel ring in the seal box of the cover was removed.
5. In workshop, from mild steel bar 40 mm x 6 mm, it was prepared a new ring that replaced the old one and ensured a secure fit for the sealing mechanism;
6. The steel parts were inspected and any areas showing cracks or fractures were repaired by welding, restoring the boiler structural integrity;
7. A new seal, on the cover and body, were supplied and installed.

Before repair

1. *General view of the boiler, bottom and upper refractory areas, found damaged*

2. *Steel parts to be repaired by welding*

After repair

3. *Boiler Cover repaired with new* steel ring in the seal box.

4. *Internals already repaired by welding*

5. *Refractory repaired. New seal applied on flange.*

Results

After work completion a final inspection was carried out. The work has been completed according to standards and everything functioned properly

> *"…good job. Thank you."*
>
> *Vessel Crew representative*