



STEELWORKS

VEXA
A STEP AHEAD. ALWAYS.

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New construction, revamping and maintenance are the 3 main services that VEXA offers to STEELWORKS.

Our highly qualified workforce provide their decades-long experience to assure the efficiency of **structures and plant components**. VEXA works with great flexibility, employing its own labour force and means, in compliance with the timings agreed with the customer.

Certified Company



CQOP  **SOA**
COSTRUTTORI QUALIFICATI OPERE PUBBLICHE



Associated with



CONSTRUCTION AND SUPPLY



REVAMPING



MAINTENANCE AND ASSEMBLY





CONSTRUCTION AND SUPPLY

Overhaul
Replacement
Betterment
Testing
Non-Destructive Testing
Transport



LADLE BAILS

BAILS are those supports installed on casting **LADLES**. They allow the bridge crane to hook the ladle, carry and overturn it.

TECHNICAL INFORMATION

Bails play an important role in the correct functioning of the plant and they undergo huge amounts of stress. Because of the wear degree, they **need frequent remaking operations**.

Starting from the customer's design, VEXA prepares the working **drawings** and the material for the machining. Once the material has been externally roughed, our workforce take care of the pre-assembly, followed by the finishing operations and the completion of the **assembly**.

After completing the testing, the product undergoes a heat-resisting painting phase with RAL 9006. VEXA personnel take care of **applying an effective product to prevent oxidation**.





LADLE FURNACE HOOD

Made of **cooling circuits**, the LF HOOD is divided into three components: the frame, the upper and the lower part.

TECHNICAL INFORMATION

Once they have been bent, the pipes composing the cooling circuits of the structure are placed one on top of the other. They are linked together with elbows and cupels and **watertight welded**.

VEXA is also in charge of the hydrostatic **testing** of each circuit and then of a test on the complete product.

During the making, the piece is examined and, together with the customer, we consider possible betterments. For instance, it is possible to **intervene on the circuit of the frame and on the supports of the pistons**, to optimise the inspection operations on the LF HOOD.



CONSTRUCTION



WAGON AND COUNTERWEIGHT

The **CONNECTING-CAR WAGON**, the **COUNTERWEIGHT** and the engine that goes with them compose a system that stokes the casting furnace.

TECHNICAL INFORMATION

VEXA makes the two pieces – the **WAGON** and the **COUNTERWEIGHT** – also at different times. Our workshops are also available for the **assembly and testing operations**.

The making proceeds from the **beams** for the **WAGON** and from the **metal sheets** for the **COUNTERWEIGHT**. These plant components are of remarkable dimensions and need specific care.

Given the huge stress it endures during the making process, the **COUNTERWEIGHT** is treated with the **Post Welding Treatment**. This stress relieving treatment is very important to realign the metal fibres after the welding.





COOLING DUCT

The **DUCTS MADE OF COOLING PANELS** are used in the suction of those high-temperature fumes that are generated by the production processes.

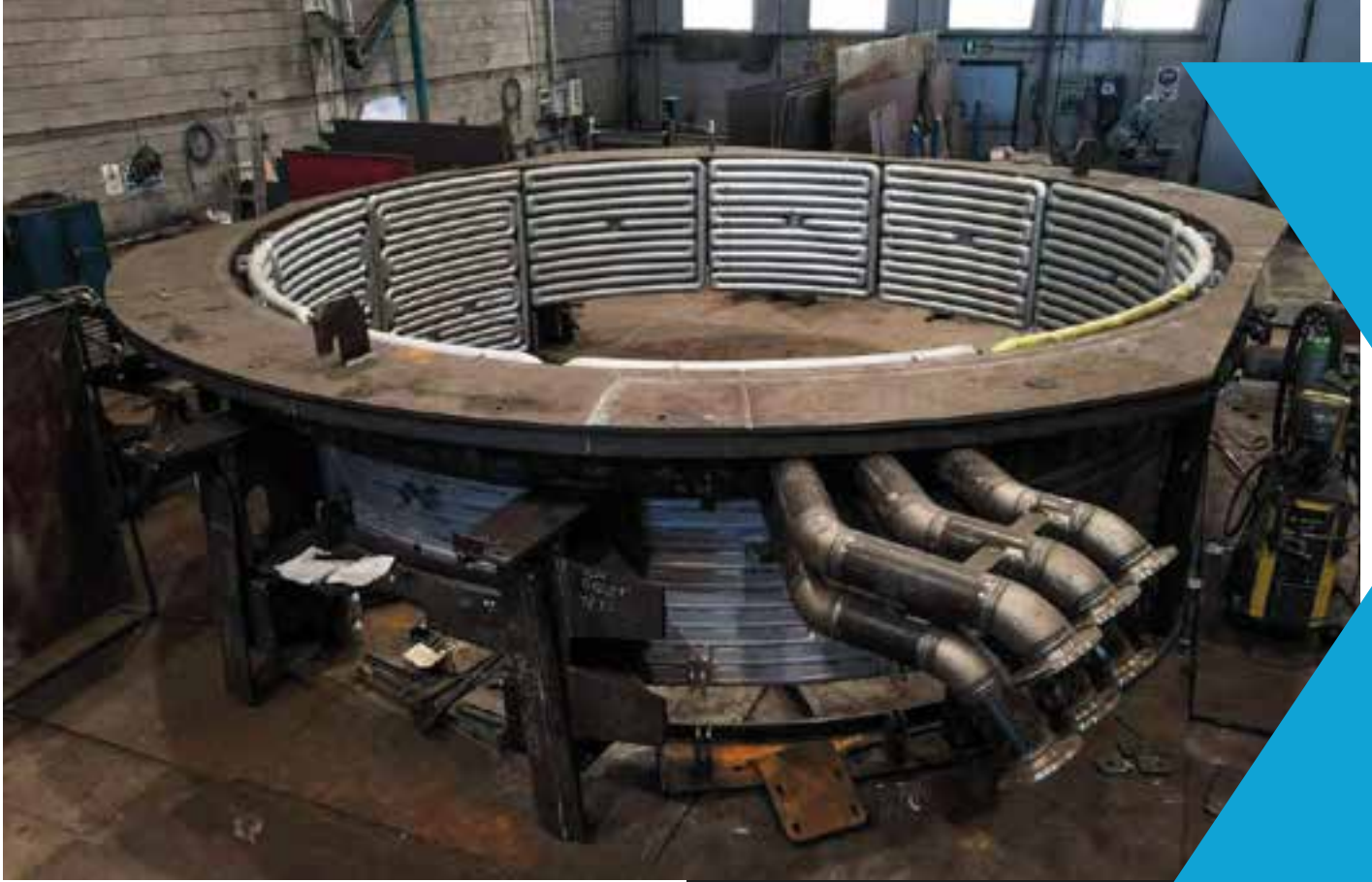
TECHNICAL INFORMATION

In order to make the COOLING DUCT in the picture, VEXA started from the design made by the customer. Our workshop personnel made the **four walls of the piece**, welding the plates at the corners.

Along them goes **the cooling circuit** (in UPN-profile, tight welded). Walls are interconnected with an inlet and an outlet manifold, both of round section. At the edges of the trunk there are flanges to get segments coupled together.

VEXA is always meticulous about respecting the parameters provided by the customer. We also take care of the dimensional check, of the hydraulic **testing** and of the surface treating.





COOLING CAGE

The **COOLING CAGE** is a metal structure made of a single water manifold for temperature-reduction.

TECHNICAL INFORMATION

VEXA makes COOLING CAGES by following these steps:

- **bending of the pipes** that make the cage (of the manifold and of the cooling panels),
- **assembly** of the parts,
- **tight** welding of the components,
- **testing** operations,
- **painting** of the piece.

The manifold itself is the skeleton of the cooling cage. It is composed of a circuit made of pipes and tubulars, where the cooling liquid flows. VEXA takes special care of every construction step. Our workshop personnel are extremely careful in defining the exact position of every piece that goes between the manifold and the panel.





IV HOLE BEND

The **IV HOLE BEND** is the first piece of the cooling duct that fumes meet while getting out of the steelwork plant.

TECHNICAL INFORMATION

The construction develops from the making of the cooling bend on one side and a cooling-circuit shield on the other. The two parts are fastened to each other with pivots that are welded onto the shield and with taper pins that are applied to the bend.

The making starts from the **bending** of the pipes and then moves to the **construction** of the walls of the circuit (made of pipes, elbows and cupels), shaped with **templates**. In order to avoid interspaces, we **weld together** the external walls.

The manifold links together the walls and the bend becomes complete after applying two well-stiffened plates, **to allow a correct laying of the whole product.**





COOLING HOODS

The **COOLING HOODS** are made of several cooling circuits that are welded together.

TECHNICAL INFORMATION

Once our Technical Department completed its work, our workshop personnel proceed with the **making of every circuit**. Each is made of pipes, elbows and cupels, watertight welded together with full penetration.

Afterwards, we assembly the circuits among them, creating the components. VEXA takes great care of the **connectors**. The circuits in every hood are intertwined with an inlet and an outlet manifold.

The product is complete with the construction of a **shield**. That is made of a single circuit and it links together the hoods to the plant.





COOLING TAKE OFF

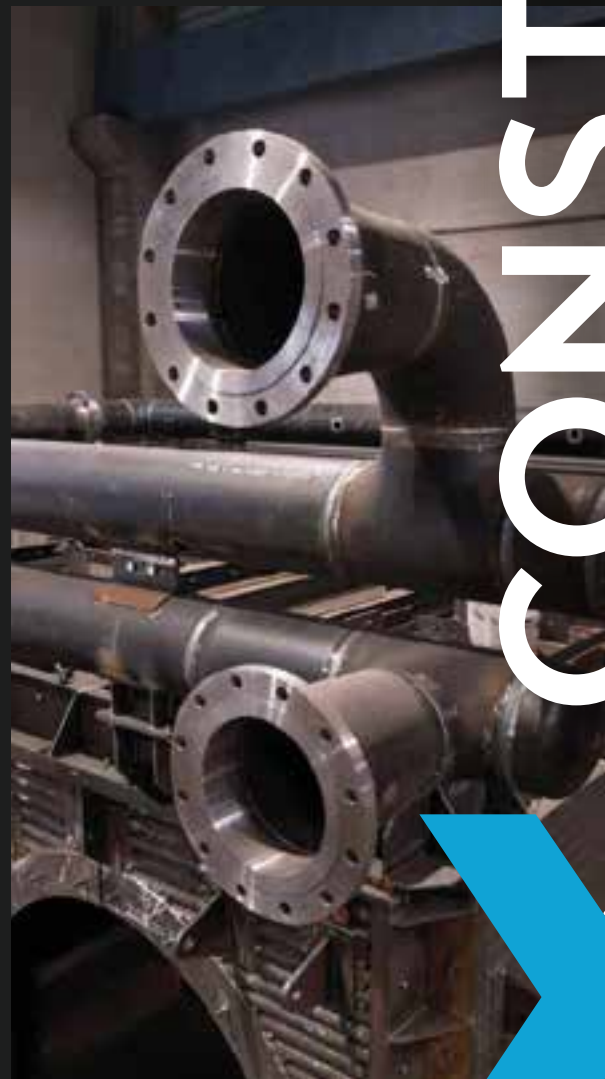
The **COOLING TAKE OFF** is placed near the EAF, the Electric Arc Furnace of steelwork plants.

TECHNICAL INFORMATION

This component for metallurgic works plays an important role in the functioning of the **fume suction system**.

The COOLING TAKE OFF is made of a metal structure that is composed of **cooling panels** and a **frame**. Every panel is made of a cooling part and a section of metal framing. The frame goes along the whole perimeter of the piece, making a sort of exoskeleton.

The first operation is the construction of the panels, which are made of pipes, elbows and cupels, meticulously welded together. All cooling circuits are linked with two – an inlet and an outlet – manifolds.





COOLING VAULTS

Made of cooling panels, the **COOLING VAULTS** compose the vaults of the casting furnaces.

TECHNICAL INFORMATION

The pipes composing the panels are bent with a **bending machine**. Every panel is made by connecting the circuits, linking together the pipes with elbows and cupels. After the building step, we complete the execution with a hydraulic test.

According to the wear degree, it is possible to save at least the part of the frame, which acts as the skeleton of the COOLING VAULT. In that case, VEXA personnel are, first of all, available to get to the plant to **disassemble the piece components**.

Once we have taken the old cooling panels, we can start from them to elaborate new working drawings, carrying out their construction. When the fabrication is completed, VEXA goes back to the customer's plant. Here, our personnel **assemble the newly built parts to the vault frame**.





WATER COOLER PANEL

Water-cooled tanks, the **WATER COOLER PANELS** allow the optimal passage of iron material, which is needed to stock the plant furnace.

TECHNICAL INFORMATION

To build WATER COOLER PANELS, VEXA carries out the operations of **study, design, materials preparation, cut, manufacturing and testing.**

Every tank is composed of a sliding plane (to transport scrap iron) and of two **side boards**. The structure of the tank is built starting from the anti-wear plane, to which we apply perpendicularly-welded plates. These plates are closed with an additional metal sheet.

As a whole, the metal structure that is created from the assembly of the different parts makes a cooling circuit. This is an actual **water cooling coil** which lowers the temperature of the whole tank.



REVAAMPING

Overhaul
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COOLING VAULT OVERHAUL

The **COOLING VAULT** represents the cover of the casting furnace structure.



TECHNICAL INFORMATION

The COOLING VAULT conveys all the fumes that come out of the furnace during the steel-production process. It happens quite often that, with time, it gets covered in **slags**, needing then a revamping intervention.

VEXA then intervenes by:

1. **disassembling** the product on site,
2. **operating** on the different parts in the workshop,
3. **re-assembling** the different components on site.

Once it arrives at our workshop, the product is dismantled and it undergoes a careful analysis. The revamping operations can concern:

- a new supply for the **panels**
- the overhaul and **renewing** of the main frame.



CONNECTING CAR SNUG

The **CONNECTING CAR SNUG** represents the arrival point of the iron metal that is needed to stoke the blast furnace of the plant.

TECHNICAL INFORMATION

The first step that is required in a revamping process is the **overhaul**. At VEXA workshops, the CAR CONNECTING SNUG undergoes an accurate analysis. Together with the customer, we define the specific points on which we need to intervene and the work ways to adopt.

Usually, the first operation is a deep **cleaning** of the piece. It in fact tends to have **slags melted down with the sliding plane**. It is often necessary to intervene on the coupling flange, in order to restore its flatness.

It is also very important to carry out **hardness** and **thickness** check tests on the plate. It is sometimes necessary to intervene by adding iron filling material. Before undertaking the heat-resistant repainting we proceed with the hydraulic testing.





CASING OF FAN WITH NOZZLE

La formula del revamping si può applicare anche ai ventilatori il cui funzionamento è alterato dall'usura.

TECHNICAL INFORMATION

The revamping formula can be applied also to those fans whose functioning is altered by wear. At their arrival at the workshop, we disassemble the inner coating metal sheets. At this point, the CASING and the NOZZLE of the FAN can be sent to the **sandblasting** treatment.

It allows to verify where it is necessary to intervene by restoring the components: replacing the iron parts and welding them with full penetration. When needed, we can proceed with taking measurements from the original piece and then accurately **reconstructing the damaged part**.

After a second sandblasting, it is possible to proceed with a coating in **graphitised ebonite**, applying a gasket, painting and fastening titanium plates with bolts.



REVAMPING



PORTAL OVERHAUL

VEXA carries out revamping operations also on those **PORTALS FOR CASTING FURNACE** that are considerably worn out.

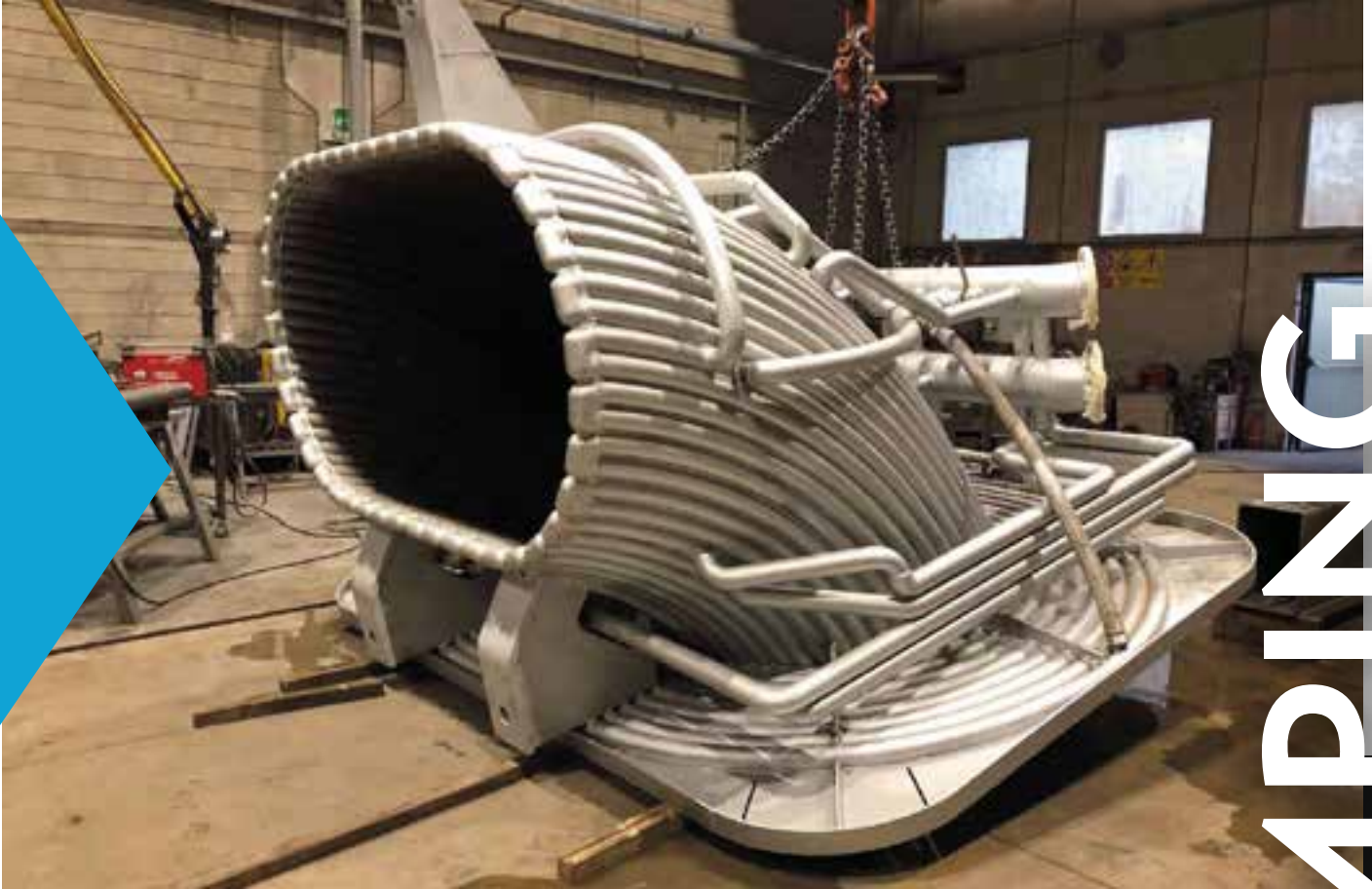
TECHNICAL INFORMATION

In order to effectively proceed with the reparations, our workshop personnel carry out a careful cleaning of the piece. After this, we undertake an accurate analysis to **identify the points that need intervention.**

The next phase includes the involvement of the customer to establish the ways of intervention. VEXA takes care of the **materials** procurement and of the revamping operations.

They often comprise the replacement of the damaged parts (**pipes, elbows, cupels**), the reconstruction of the **cooling circuit** and the making of new water inlet and outlet **manifolds.**





COOLING IV HOLE BEND

Located at the beginning of the fume suction plant, the **IV HOLE BEND** undergoes a lot of stress and it often needs reparations.

TECHNICAL INFORMATION

It represents the first key piece through which high temperature **fumes pass**. Once the **cleaning** operation is complete, VEXA takes care of the **brushing**.

The analysis tests on the product include employing a **feeler gauge** to accurately evaluate the thickness of pipes and cupels. Afterwards, we take care of a **hydraulic pre-testing** to understand with a higher degree of precision where we need to intervene.

Replacements and restorations can concern, for instance, the piping tubes, the iron plates on the cooling shield, the supporting welded points on flasks. Once the operations are over, we carry out a final testing with hydrostatic check and the **painting** in heat-resistant RaI9006.





ESP LINE MOVEABLE COVER

The **MOVEABLE COVER** is located in the middle part of the rolling process.

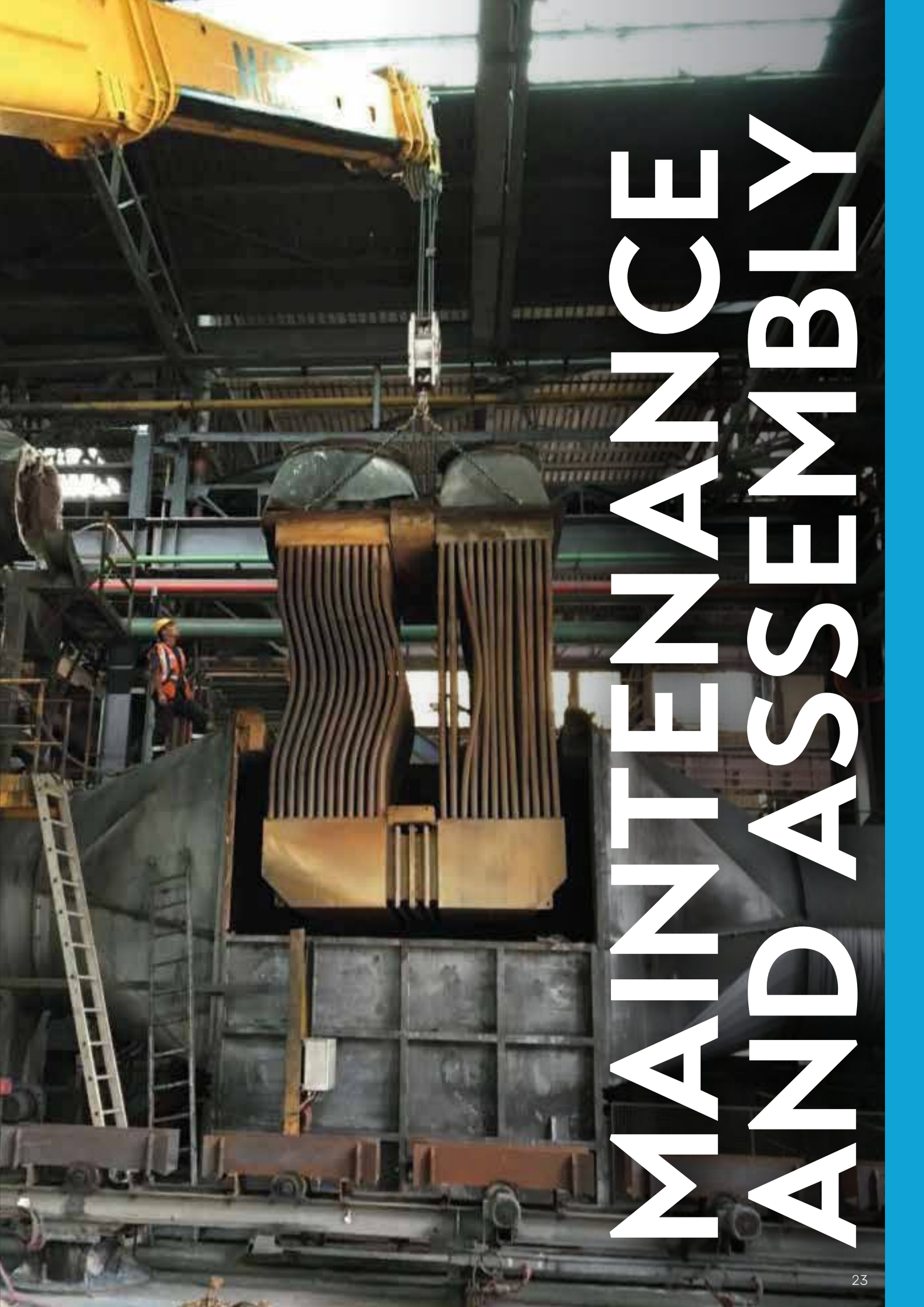
TECHNICAL INFORMATION

In this step of the steel manufacturing, **the plate runs through the COVER on sliding blocks.** VEXA intervenes on the revamping of the piece also during the so-called routine maintenance.

After an accurate analysis of the product, complete of a hydraulic testing and the measurement of the pipes thickness, we **establish how to proceed.** Among others, it is possible to carry out the replacement of pipes in the cooling circuit, of the bearings that allow the rotation and of the small plates for the sliding of metal sheets.

To face the recurrent heat exchanges, we adopt a **full penetration butt welding.**





MAINTENANCE AND ASSEMBLY



DISMANTLING AND RE-ASSEMBLY OF HEAT RECUPERATOR

Also known as “**exchanger**”, the HEAT RECUPERATOR allows to reduce the fumes temperature and it blows already hot, clean combustion air into the furnace.

TECHNICAL INFORMATION

On one side, the piece cools down the **exiting fumes**, while on the other side it contributes to the **energy saving**. The correct passage of air through ducts is then of main importance.

VEXA takes care of the **assembly operations of the new heat exchanger**, of the welding and – by employing a crane truck – of the **dismantling** of the fan-exchanger air duct. We then dismantle the exchanger-furnace duct, part of the containment chamber and the back stairs.

The old exchanger is slung and **replaced with a new piece**. Other parts like the wall of the containment chamber, the conveyors and the stairs are then restored.





REPLACEMENT OF COLUMN IN PLASTIC REINFORCED BY FIBRE GLASS

COLUMNS IN PLASTIC REINFORCED BY FIBRE GLASS are employed inside the acid regeneration plant, for the absorption of regenerated acid.

TECHNICAL INFORMATION

Also these components, often of considerable dimensions, endure the effects of wear. VEXA intervenes to implement their **removal and replacement**.

Our teams go to the **customer's plant** and remove its cover. We then dismantle the braces, cut and take down the bridge crane sliding beam. Before disassembling the worn-out column, we install temporary supports for the ducts in plastic reinforced by fibre glass.

We open the walking surfaces, sling the column and **remove it by crane truck**. **The replacement column is also slung and installed**. We release the temporary supports, reconnect the ducts and finally restore the walking surfaces, the beam and the roof cover.



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