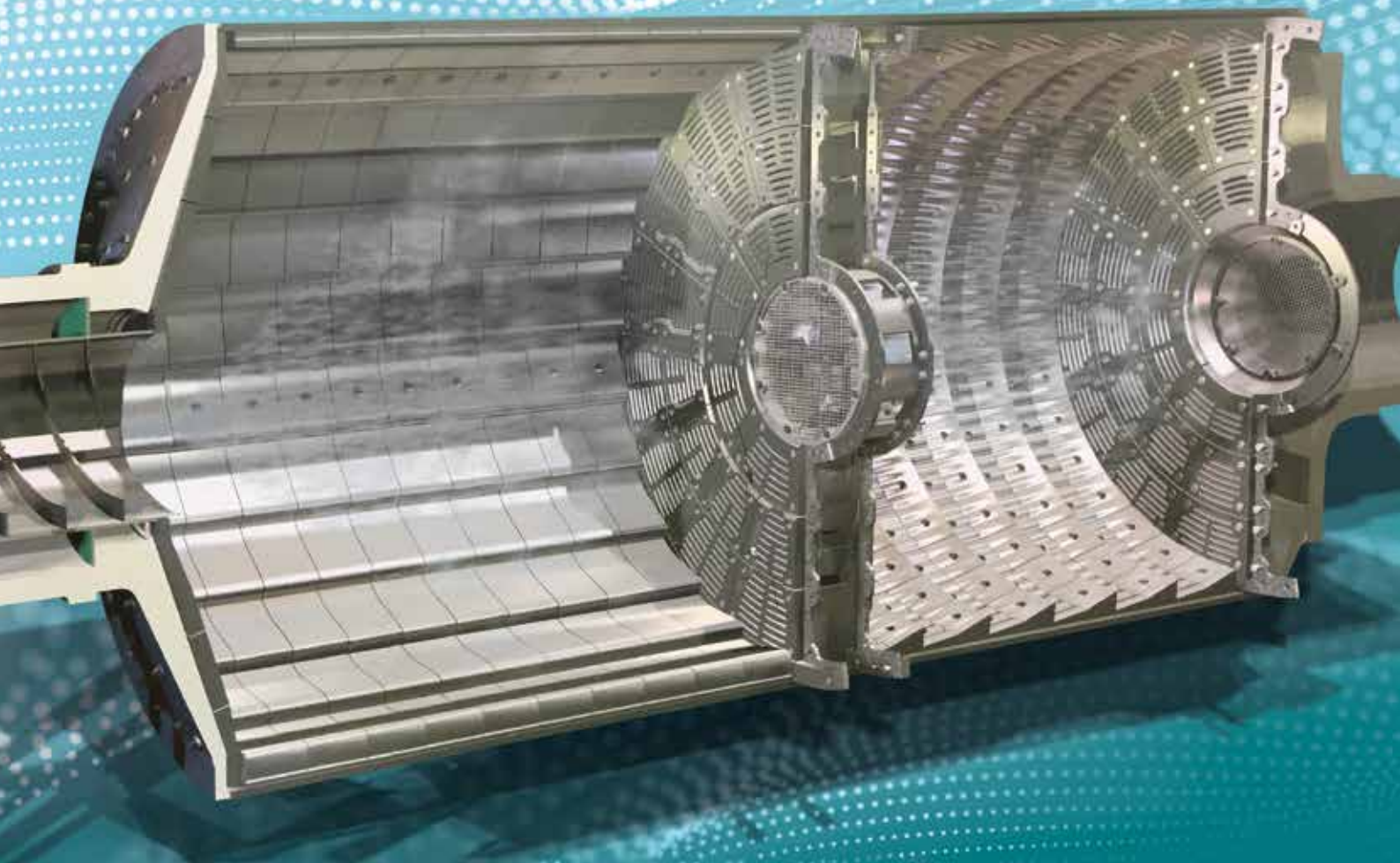
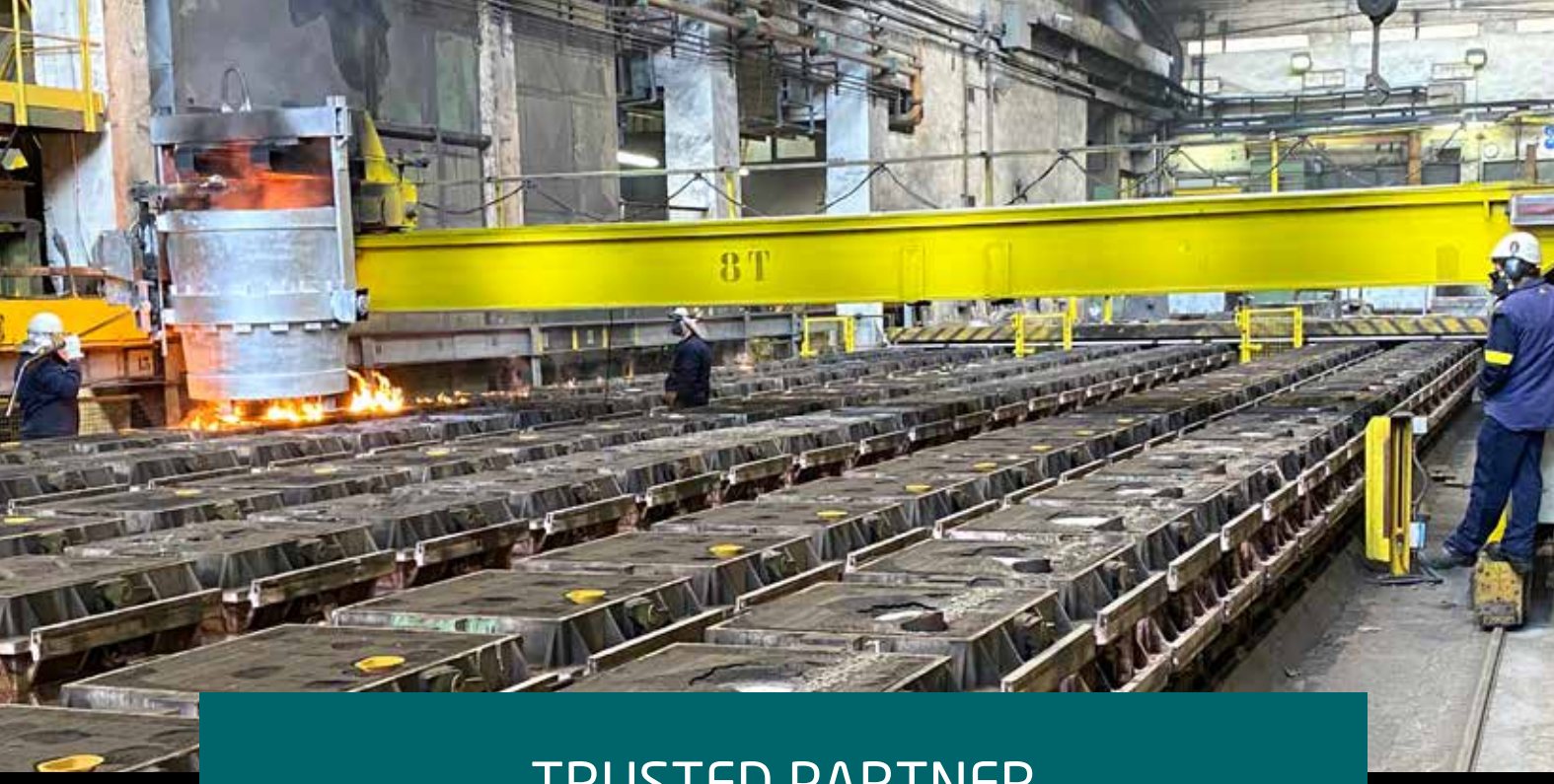

PRODUCT CATALOGUE

CEMENT

STEEL CASTINGS & ACCESSORIES





TRUSTED PARTNER



**AUTOMATIZED
MANUFACTURING**



**MADE IN
EUROPE**



**GREEN CASTING
(LOW CO₂ EMISSIONS)**



**FOUNDED IN
1953**



**WE EXPORT
>70 COUNTRIES**

The added value that sets ESTANDA apart is based in:

- Our team's technical know-how and extensive experience in the sector. This translates into thousand's of already available designs and toolings.
- We are manufacturers with fast delivery times. Inhouse foundry, heat treatment and machining workshops
- Quality assurance, following the highest technical specifications and quality controls.

This catalogue contains some specific examples of products and services for the cement industry. However, we are flexible to customer requirements and can custom-manufacture any steel part. Do not hesitate to contact us for any need you should have.



AENOR
OCCUPATIONAL
HEALTH&SAFETY
ISO 45001

AENOR
QUALITY
MANAGEMENT
ISO 9001

AENOR
ENVIRONMENTAL
MANAGEMENT
ISO 14001

AENOR
CARBON FOOTPRINT
CALCULATED CO₂
ISO 14064

01 DIAGNOSIS AND ADVICE



- Analysis of customer processes and equipment and material working conditions (wear resistance, temperature, corrosion, safety, etc.)
- Metallurgical advice: analysis of current materials and proposal of alternative proprietary materials to improve performance and service life.



02 PRODUCT DESIGN AND PROCESS OPTIMISATION



- Under customer design, or providing own designs to improve the product's performance.
- Process optimisation recommendations in terms of useful life, cost reduction or increased productivity.

03 PRODUCTION AND QUALITY CONTROL



- Own foundries and integrated heat treatment, machining and finishing. In-house laboratory.
- Total control of the process and product quality, under the strictest European and International standards. Certifications: ISO9001, ISO14001, ISO45001, OHSAS 18001.

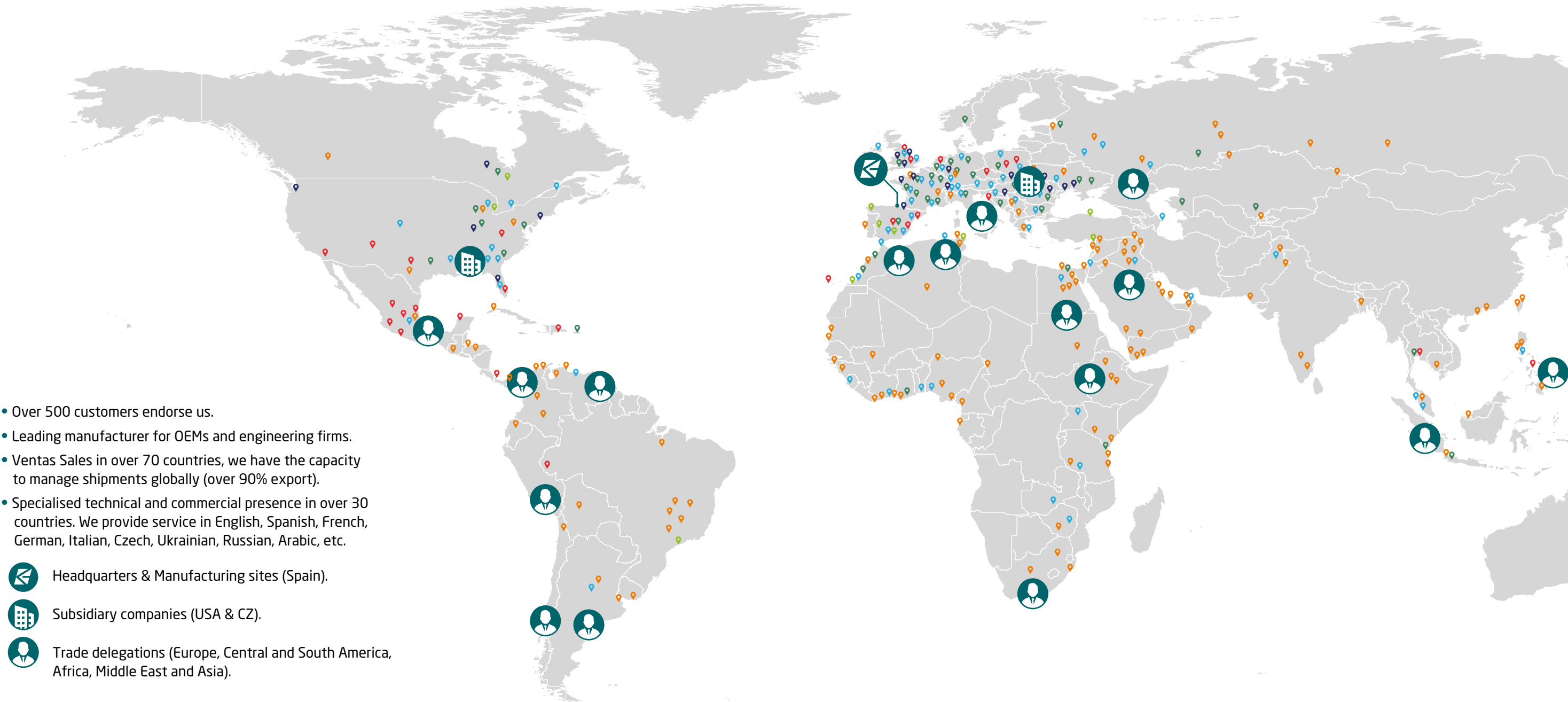


04 SHIPPING, ASSEMBLY AND AFTER-SALES SERVICE



- We handle shipments to anywhere in the world
- Supervision of the final assembly on site. Delivery of product and projects, and guarantees. Made-to-measure and turnkey projects.
- Personalised after-sales follow-up: performance monitoring of supplied products and spare parts service.

REFERENCES AND PRESENCE WORLDWIDE



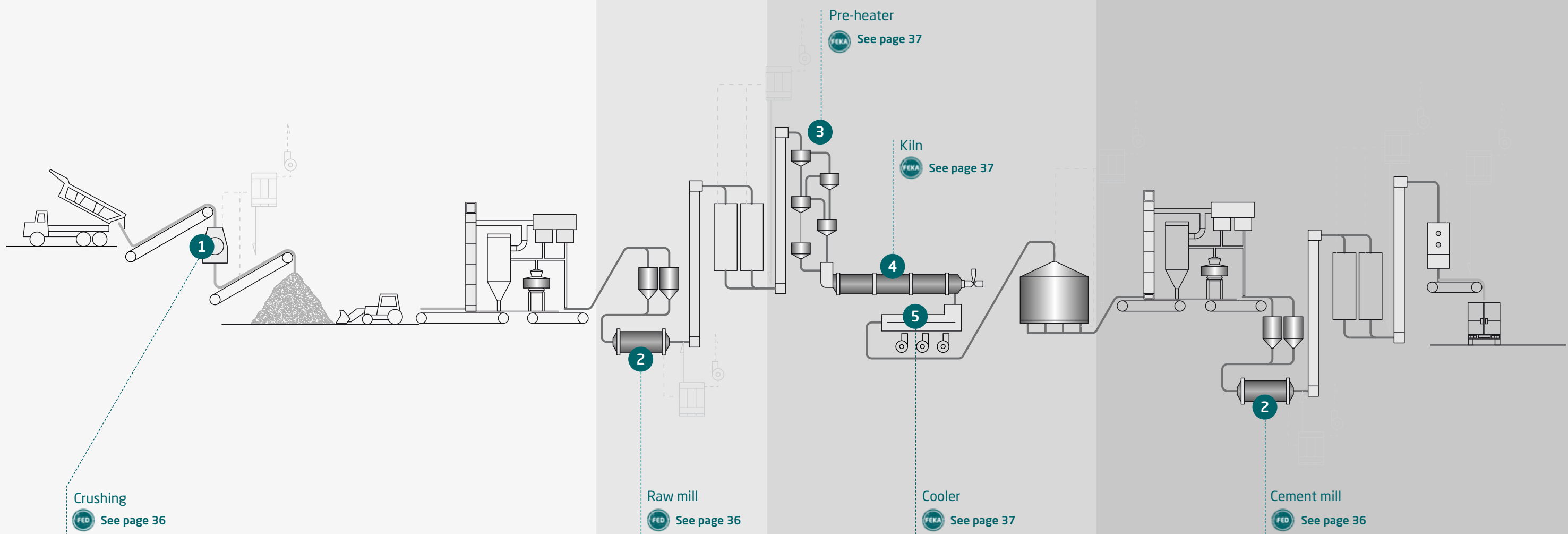
CLIENTS



ENGINEERING FIRMS AND OEMS



PRODUCTS INDEX



1

CRUSHING

Hammers, bars, and wear plates made of steel, used in the crushing stages of both raw materials and clinker.
Pages 8-9

2

RAW MILL AND CEMENT MILL

Wear-resistant steel parts for the internals of raw mills and cement mills: inlet headwall liners, shell liners, diaphragms of any kind, grinding balls, and also tables and rollers for vertical mills.
Pages 10-23

3

PRE-HEATER

Heat-resistant steel components for the pre-heater tower: dip tubes, flap valves and diverting gates.
Pages 26-27

4

KILN

Heat-resistant steel parts for rotary kilns used in the calcination of raw cement: kiln inlet sectors and kiln outlet sectors.
Pages 28-29

5

COOLER

Refractory steel parts for different types of clinker coolers: grate coolers and planetary coolers.
Pages 30-35



MATERIALS GLOSSARY

In each Product section, you will find a reference to the family of steel alloys recommended for its manufacture (materials under the Estanda name, i.e. FED, FEKA). And for further detail, a specific section at the end summarises the main materials and their characteristics (composition and life expectancy).
Pages 36-37

ESTANDA MeC METALLIC INSERTS



LOW WEAR CRUSHING SOLUTIONS

- Metallic inserts (Titanium carbide 'TiC', Tungsten 'WC', Niobium 'NbC') **extend the durability of the base material** (manganese steels, low and medium alloys) by **up to three times**.
- VentAdvantages: **higher economic and productive efficiency**, less maintenance, safer and more sustainable. Increased equipment uptime.
- Applications: hammers, impact blow bars, jaw plates, cone crusher wear parts, etc
- Tailored solutions, maximum versatility.

Properties:

Density: 6.0 to 6.3 kg/l.

Hardness: >65 HRC

Chemical composition:

These are cermets manufactured by powder metallurgy pressing.



1. CRUSHING

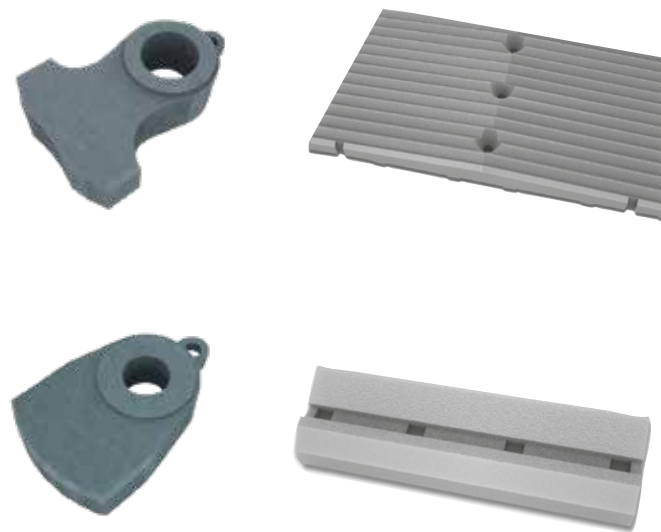


All types of spare parts for pounding and crushing.

Different materials (manganese steels, alloy steels, high chromium, etc.) for impact and/or wear-resistant applications. Options with dual hardness, and metal and ceramic inserts.

- Hammers (rotary crushers, impact crushers, etc.).
- Bars and rods.
- Liner and linings adaptable to different machines.

On request, we can manufacture all kinds of parts: chain links, urban and industrial waste crushing elements, etc.



Hammers

Bars and rods

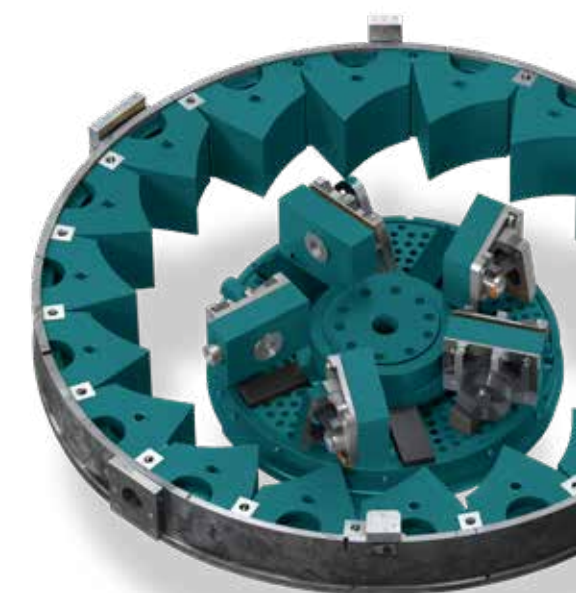
ESTANDA MiC CERAMIC INSERTS

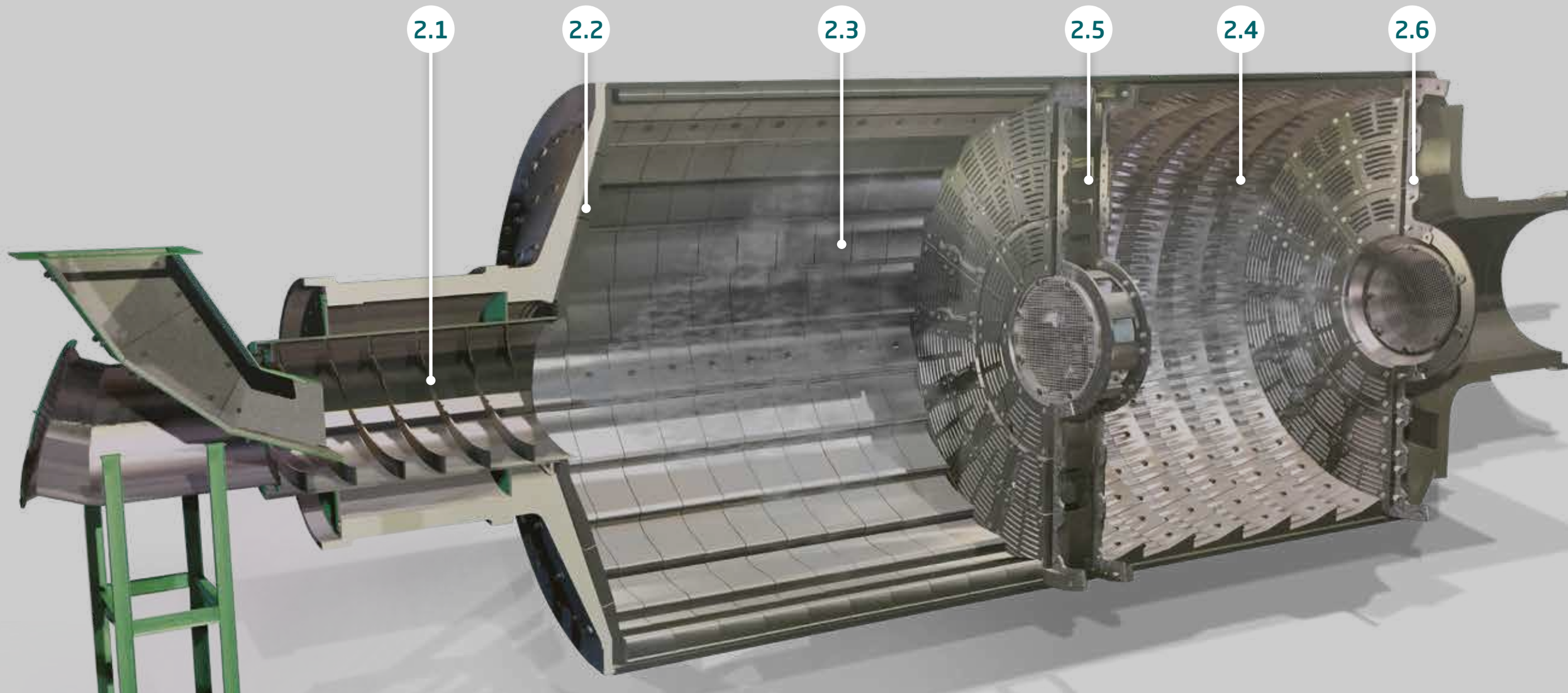
LOW WEAR GRINDING SOLUTIONS

- Depending on the application, ceramic inserts **extend the lifetime of the base material** (white iron, low and medium alloy steels) by **up to 50% more**.
- Advantages: **higher economic and productive efficiency**, less maintenance, safer and more sustainable. Increased equipment uptime.
- Applications: **shielding, ejectors, VSI Crushers** (Vertical Shaft Impact).
- Tailored solutions, maximum versatility.



VSI Crusher, with ceramic inserts





2.0 GRINDING



HORIZONTAL BALL MILLS FOR RAW MATERIALS AND CEMENT

Customised shell liners and diaphragms for all brands and sizes. Two-chamber and mono-chamber solutions, with or without drying chamber, designed for high performance and a long service life.

FASTENERS AND MISCELLANEOUS ACCESSORIES

Precision-manufactured fastening applications, available in all industry-standard shapes, sizes and materials. We also develop non-standard parts on request, based on drawings or samples.

MILL OPTIMISATION

Our grinding optimisation systems ensure improved mill performance, results and durability.

1

FEEDING SYSTEMS

They regulate the mill inlet flow rate, improving ventilation and ensuring optimal operation.

Page 12

2

INLET HEADWALL LINERS

Designed to reduce wear and improve the capacity and adjustment of the mill's load.

Page 13

3

1st CHAMBER LINERS

Designed with lifting profiles to optimise grinding efficiency. Adapted to the 3 possible mill fixing systems: bolted, semi-boltless and boltless.

Page 14

4

2nd CHAMBER LINERS

Designed to obtain a good classification of the grinding balls, optimal distribution of the material to be ground and prevent reprocessing.

Page 15

5

DIAPHRAGMS

Various types of diaphragm. Among them, the ESTANDA *improvest*[®] self-regulating diaphragm is our own patented design, with 30 years' application and recognition in the market.

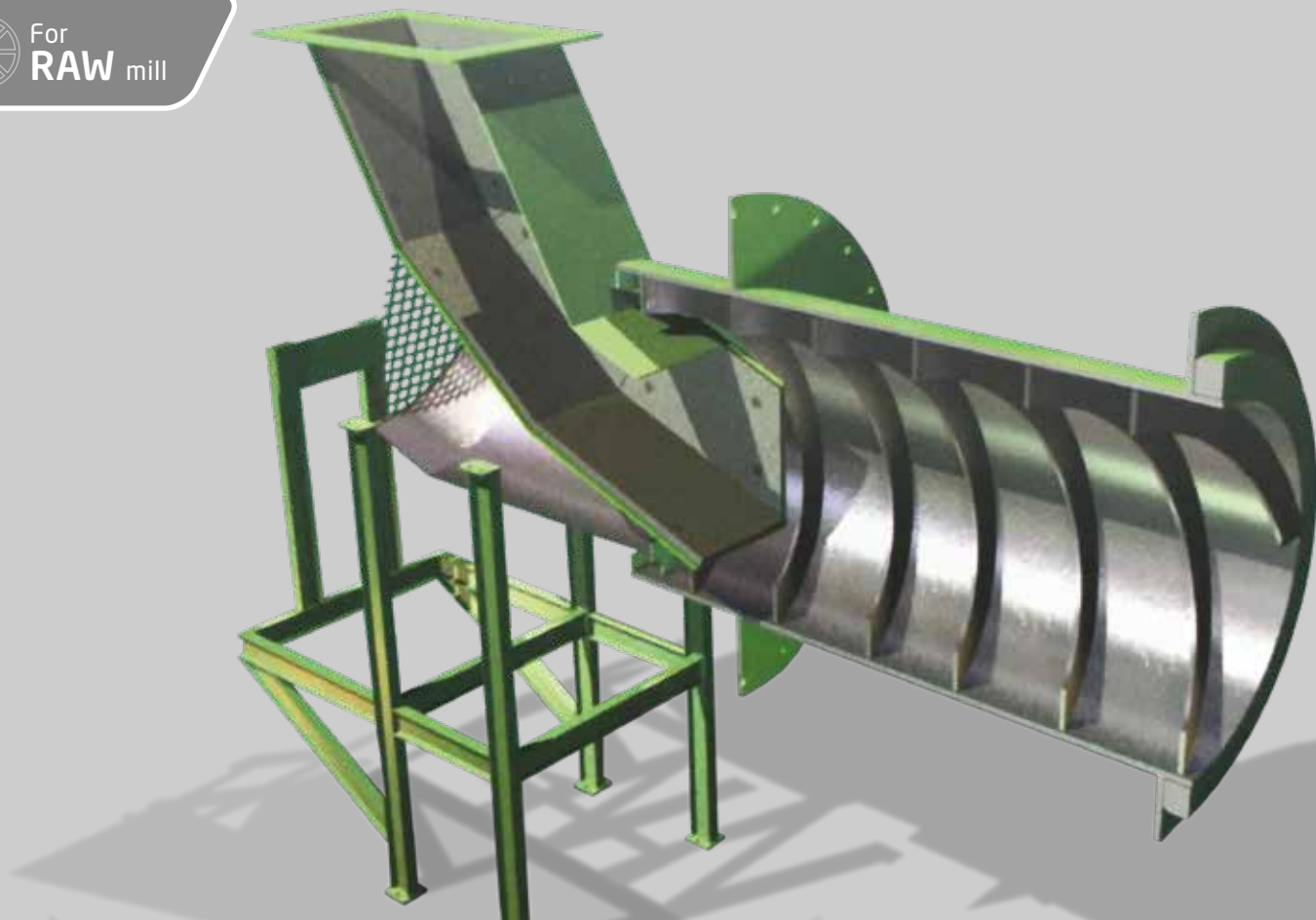
Page 16

6

OUTLET DIAPHRAGMS

Designed to retain the grinding elements (balls, cylpebs, etc.), ensuring the ideal level of material in the last chamber.

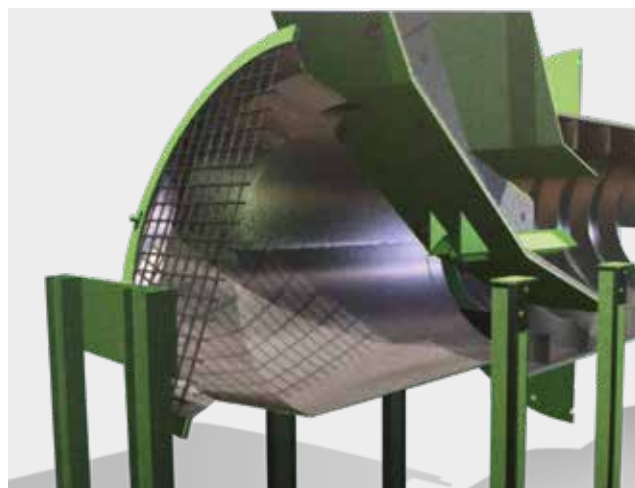
Page 21



2.1 FEEDING SYSTEMS



Estanda's mill Feeding Systems regulate the inlet flow, **improving ventilation** and ensuring that they always **operate at 100% capacity**. They are easy to install. And they adapt to any mill.



Mill feeding system

- Step design to optimise mill ventilation.
- Steps in wear-resistant materials.
- Removable steps for easy replacement and any inspections of the mill.
- Possible to mount it with rails to make it mobile.
- Minimisation of leaks and material losses.
- Optimisation of transport capacity (screw/cone design).
- 90° spirals with different paddle heights.
- Extension of the mill load capacity (% filling).



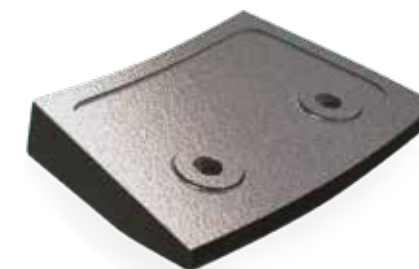
2.2 INLET HEADWALL LINERS



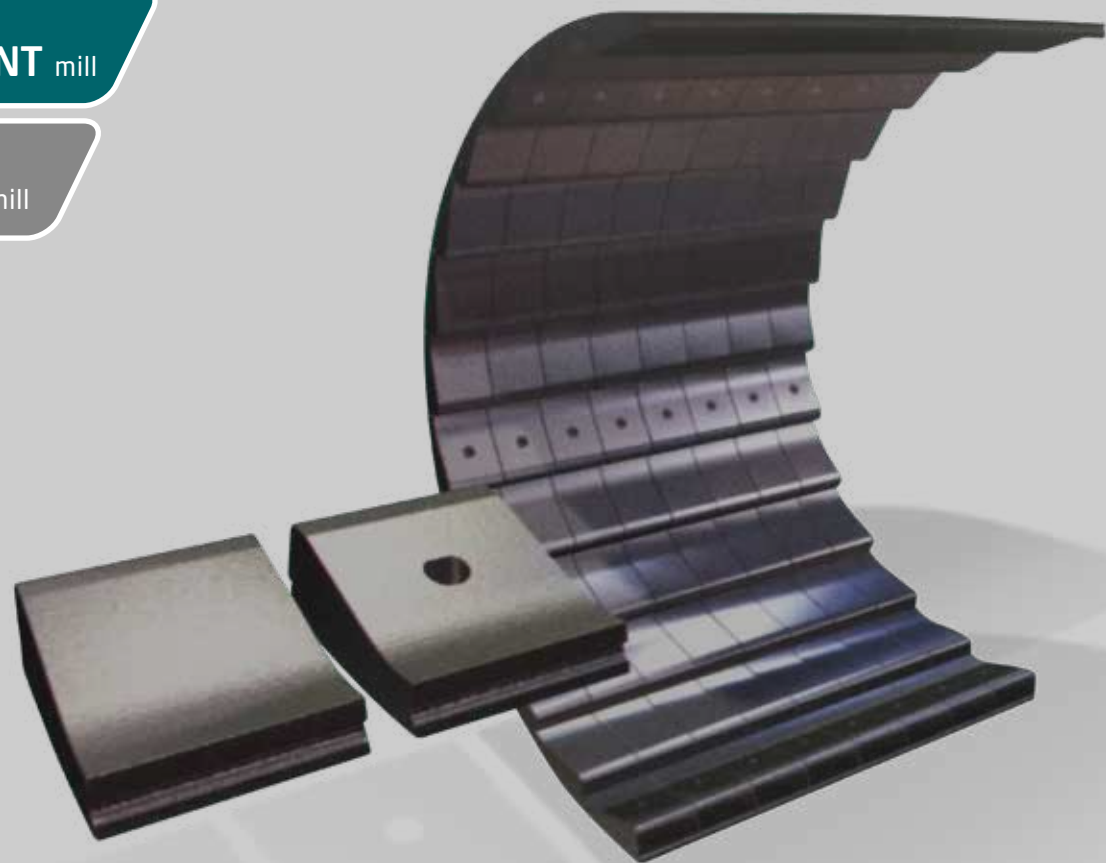
With our design of headwall liners you are able to reduce liner wear rates and improve the capacity utilisation of the ball charge of the mill.

Relevant characteristics:

- Increase in the plate thickness or usage of reinforced zones in the areas of maximum wear, depending on the resistance of the material used.
- If the mill headwall drilling permits, dividing up the boltholes so that they coincide with the area of maximum wear.
- Adapting the inlet wall liners and inlet trunnion design, allow for increasing the available filling volume, resulting in greater mill productivity.



Detail of inlet headwall liners



2.3 1st CHAMBER LINERS



Our shell liners are guaranteed to provide enhanced life time wear rates, complimented with shape designs which reduce energy consumption and maintenance requirements. We manufacture different types, each one designed for a mill with different characteristics.

LIFTING LINERS

We design circumferential reverse stepped lifting plates to achieve:

- Better grinding efficiency.
- Avoid direct contact of the grinding media with the mill liners.
- Fixing systems with either: bolted, boltless or semi-boltless solutions.

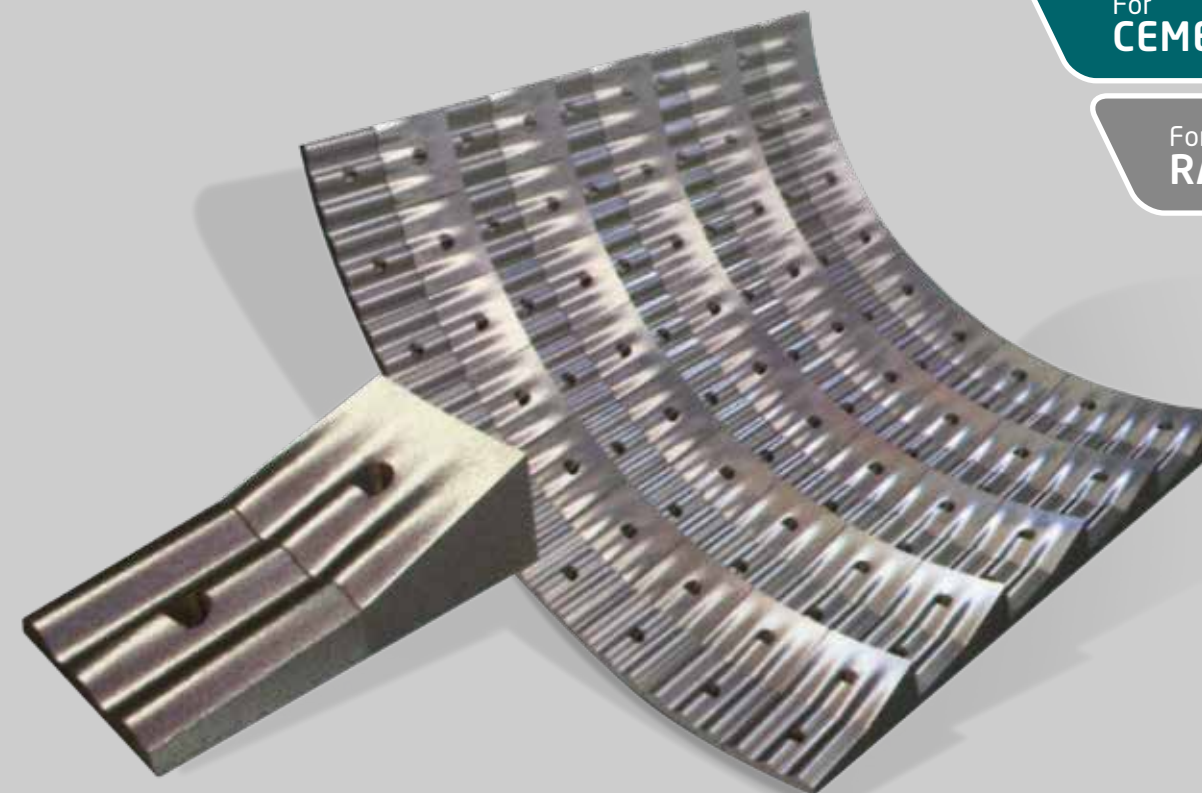
LIFTING-CLASSIFYING LINERS

For monochamber raw mills.

Up to 100% of the mill chamber can be fitted with this design depending on the working conditions.



Fastening detail of bolted liner



2.4 2nd CHAMBER LINERS



Wavy liner and its components

CLASSIFYING LINERS

With a classifying profile in the axial direction and slight lifting effect in the circumferential, an efficient grinding capacity performance is achieved.

Fixing systems with either: bolted, boltless or semi-boltless solutions

WAVY DESIGN

For mills with a requirement of high filling degrees combined with small grinding media and/or to increase the useful diameter of the mill.



For
CEMENT mill

For
RAW mill



For
CEMENT mill

For
RAW mill

2.5 SELF-REGULATING DIAPHRAGMS

improvest®



For many years now Estanda has been contributing to the cement industry by supplying its own technology. The *improvest*® regulating diaphragms, which reduces the specific consumption and optimises the performance of ball mills, has made a significant contribution.

CHARACTERISTICS

- Robust and minimum maintenance required.
- Flexible assembly of the diaphragm structure, unaffected by shell deformations.
- We carry out a pre-assembly verification at Estanda, guaranteeing a perfect assembly in the mill on site.
- Maximum slot surface area with minimal air pressure drop.
- Patented self-regulating system for material for the intermediate diaphragm, which guarantees a constant level, eliminating inefficient grinding areas and obtaining maximum efficiency and energy optimisation.



Optimising the grinding media charge of each chamber depends on the filling level of the material to be ground and its distribution in each chamber; the *improvest*® self-regulation system (patented under no. P9401205) facilitates the transfer of material according to the levels in each chamber.

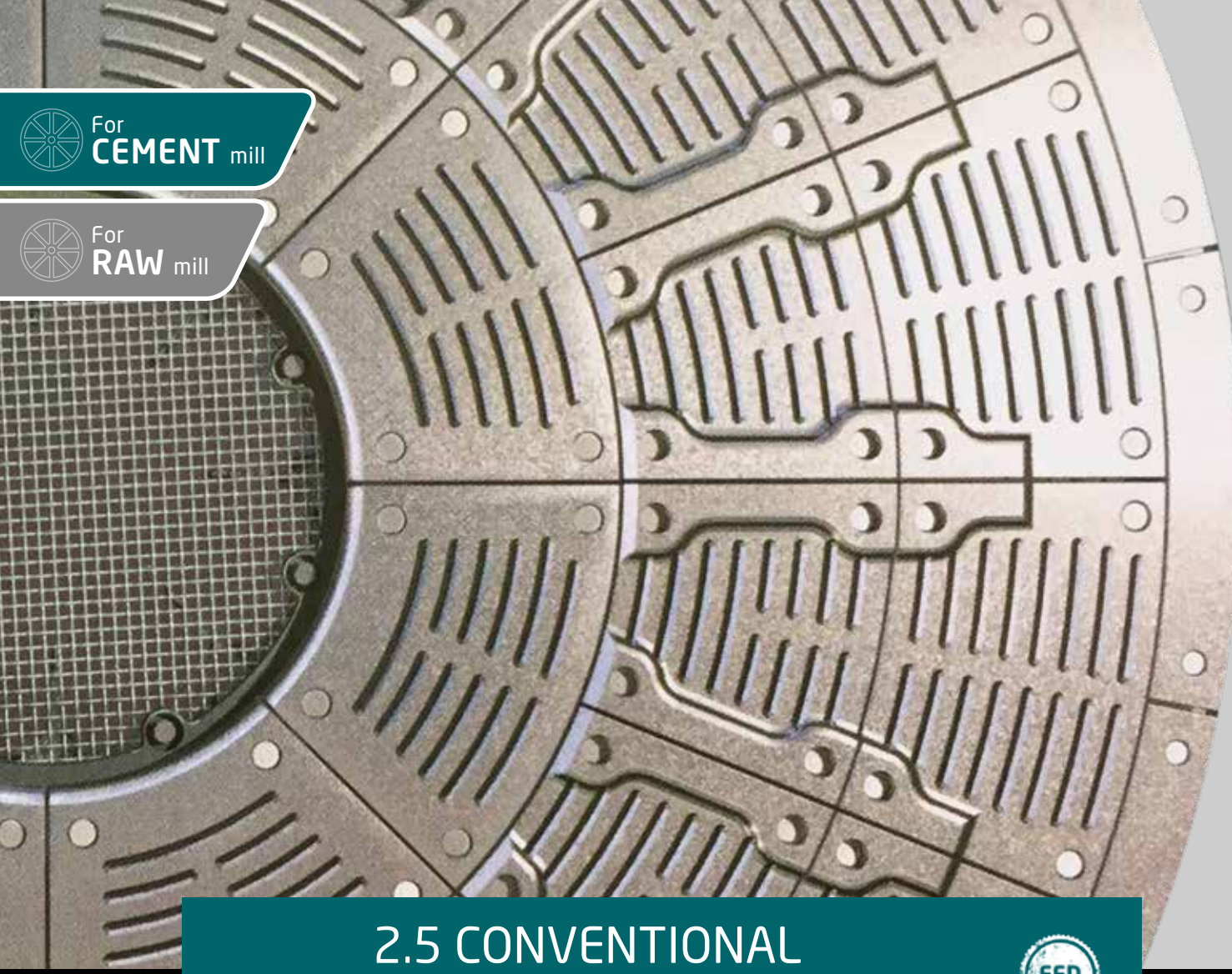
Up to 40% slotted plates in the diaphragm back wall ensures:

- Cement passing into the second chamber at a low air speed, working with a satisfactory material level above the grinding media charge right from the beginning of the grinding chamber.
- Minimum loss of material charge.
- Reduction of airflow through the central screen, facilitating the fall of the material onto the grinding media charge.

EASY REGULATION

- Movable opening devices **allow the adjustment of the level of material in each chamber**. The regulation parameters are set according to the working conditions of the mill, such as the material to be ground and the filling degree of the grinding media. Adjustments are normally carried out when the diaphragm is first installed, or when conditions change.
- The system allows material to be retained as long as necessary in each chamber.
- Regulation of the diaphragm is carried out by segments made up of material storage and releases deposits.
- The release deposit comes with slotted plates on the front and back plates, allowing the air pressure drop to be between 20% and 40% lower than other existing diaphragms on the market.
- The first chamber never works empty of material.

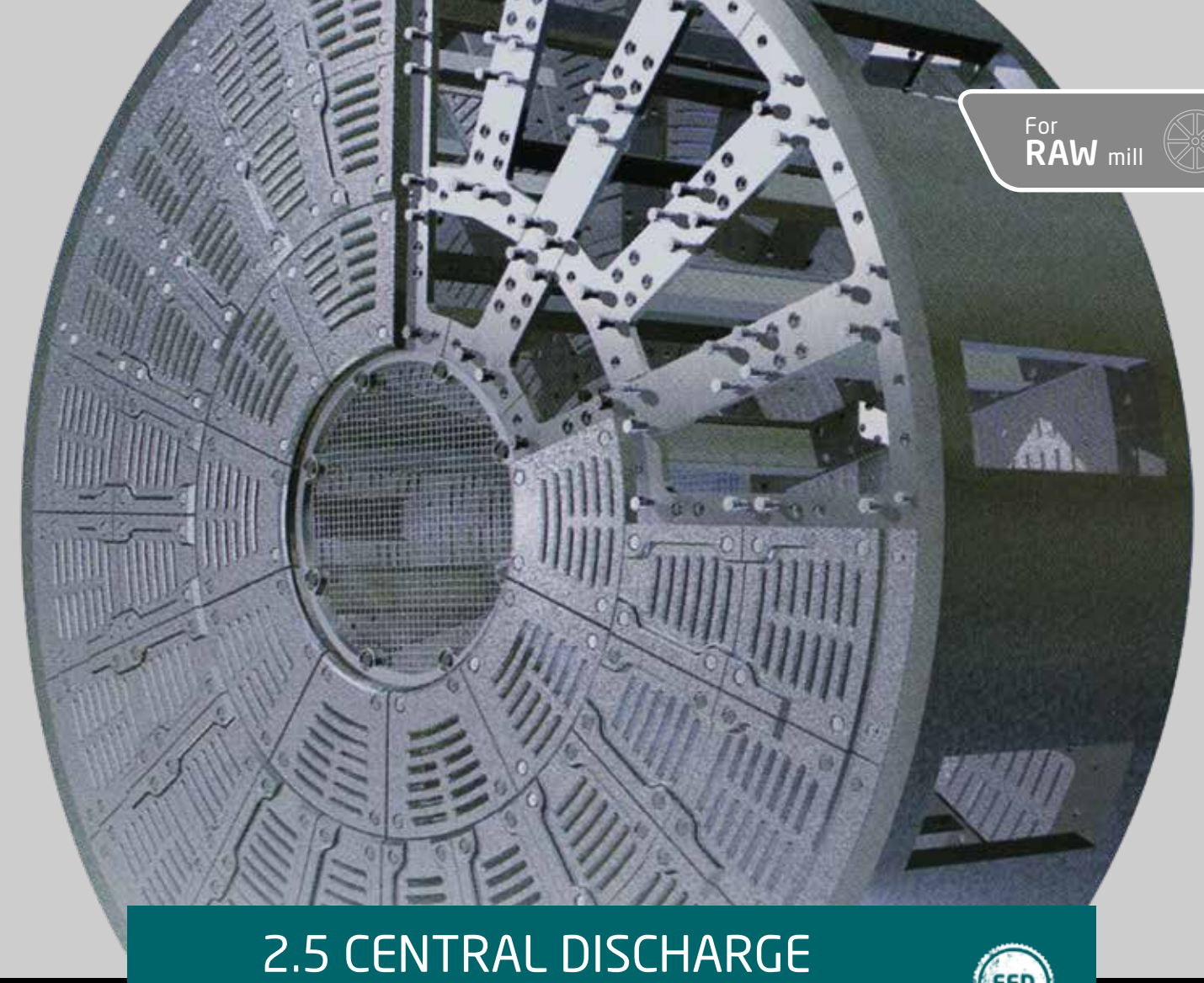




For
CEMENT mill

For
RAW mill

2.5 CONVENTIONAL INTERMEDIATE DIAPHRAGMS



For
RAW mill

2.5 CENTRAL DISCHARGE DIAPHRAGMS



INTEGRATED FLOW CONTROL MAXIMUM EFFICIENCY

- Individually adjustable gates in the centre of the diaphragm regulate the flow of material, maintaining a constant level in the first chamber.
- The slots in the interior back plates of the intermediate diaphragm optimise the transportation of the material, thereby using the grinding area in the second chamber more homogeneously.

As a result, we obtain greater mill efficiency and less wear on grinding media and diaphragm frame.

We increase the passage of surface air flow in the centre of the diaphragm, without compromising the stability of the construction. This way we automatically reduce the loss of material charge in the mill. As a result there is improved cooling of the material to be ground and better dust removal from the mill, together with simultaneous energy savings in the fan.



Intermediate diaphragm plates and gates

DOUBLE ROTATOR

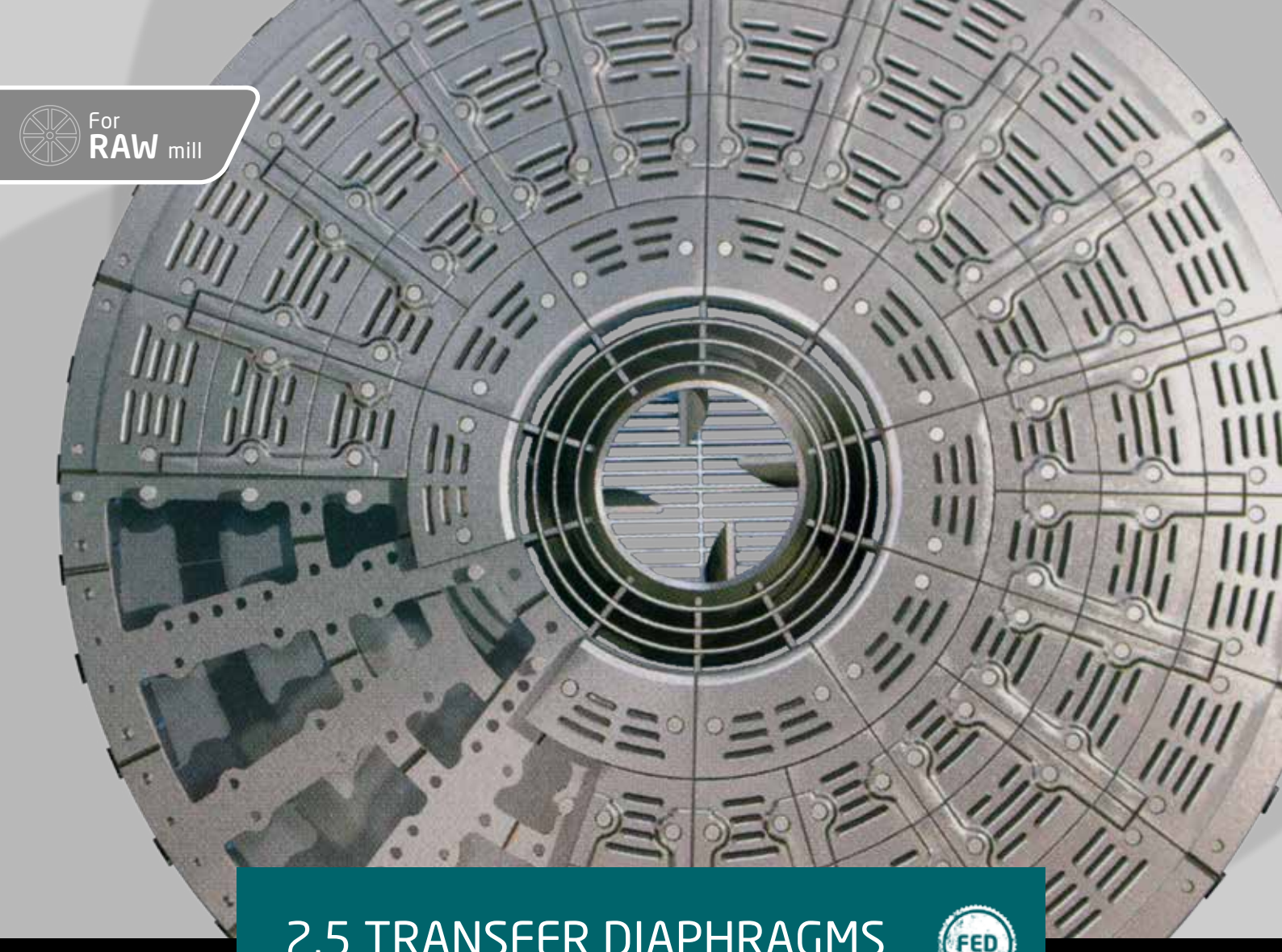
This diaphragm is designed to retain both grinding media and material larger than the width of the slots in the slotted plates.

A dam ring inside the diaphragm guarantees a correct level of material in the first chamber. Wear-resistant materials are selected and employed to ensure the minimum maintenance and repair costs.

The slotted plates are cast with a maximum slot area, striking a balance between lifetime and safety, with a minimum pressure drop of dry gases and swept air.



Double rotator diaphragm plates



For
RAW mill

2.5 TRANSFER DIAPHRAGMS



Moist material enters the mill together with hot gases. **The ESTANDA drying Chamber optimises heat transfer between the material and the gases**, allowing the discharge of dry material through the central ring into the first chamber, thanks to the wear resistant lifters, situated in the interior of the mill.

The slotted plates in the first chamber are designed to allow material and **hot gases to pass through with a minimum loss of material charge**. The central screen is designed to avoid grinding media passing into the drying chamber.

DRYING CHAMBER

We also manufacture drying chamber lifting plates. The choice of steel casting materials depends on the working conditions (resistance to oxidation, thermal shock, abrasion, etc).



Drying chamber lifting plates



For
CEMENT mill

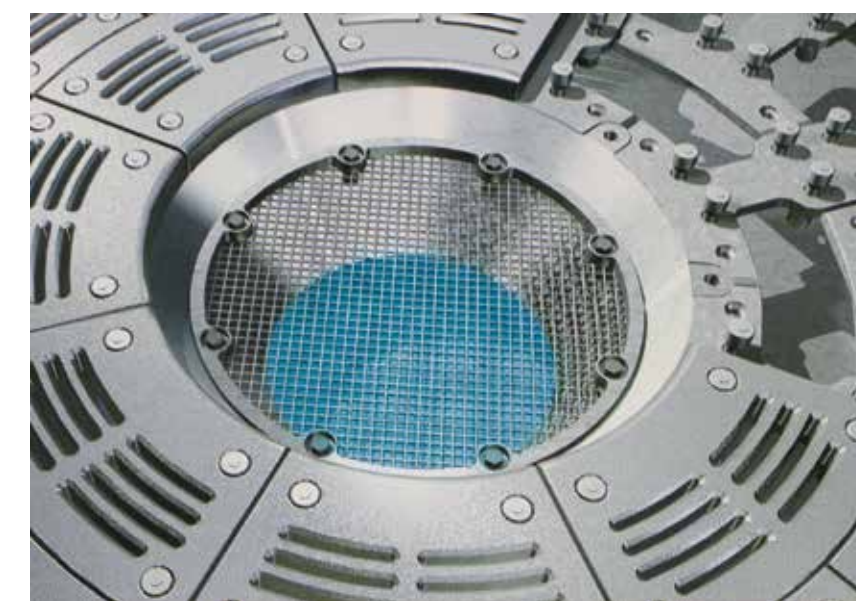
For
RAW mill

2.6 OUTLET DIAPHRAGMS

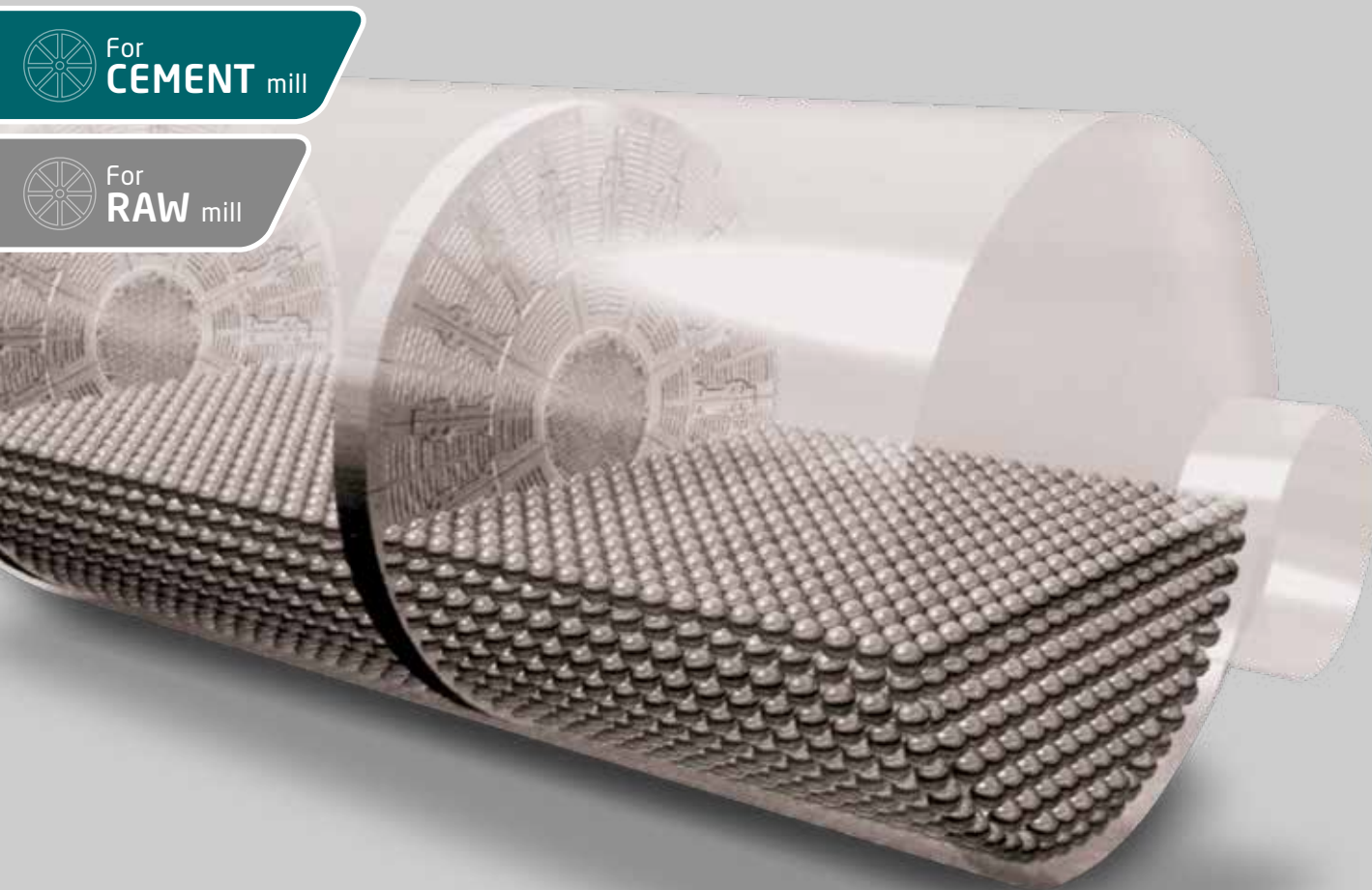


Designed **to retain the grinding elements** (balls, cylpebs, etc.), ensuring the correct level of material in the final grinding chamber.

The structure is fitted to the back wall. The wear-resistant lifters ensure a **proper material discharge**. And the slotted plates, with a good density of slots, ensure a minimum air pressure drop in the diaphragm.



Detail of slotted plates of the outlet diaphragm



2.7 GRINDING MEDIA



CAST and/or FORGED BALLS

We offer grinding media in various diameters, fully complying with Estanda's quality standards.

Material specifications:

- Diameter 60 - 90 mm: Chromium content 16-19 %
- Diameter 17 - 50 mm: Chromium content 10-13 %



Balls of different diameters



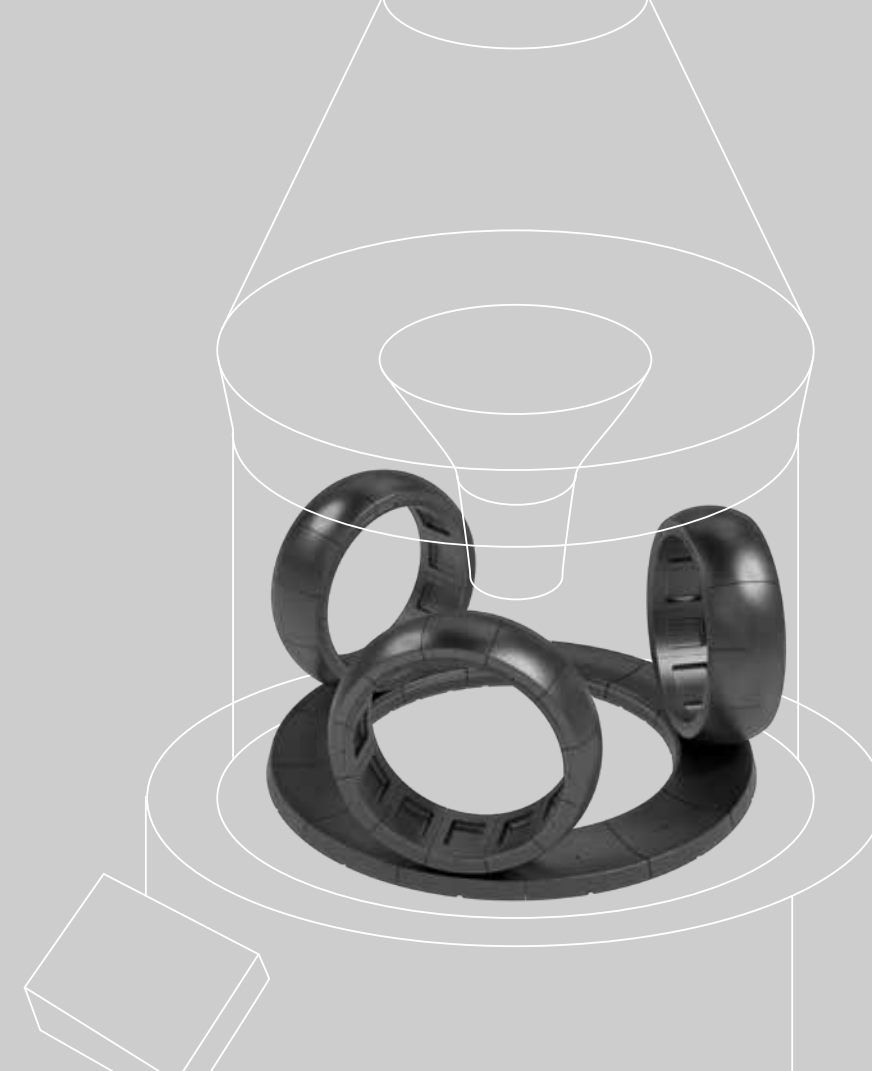
Ball manufacturing tools



Packaging in bags



Packaging in drums



2.8 VERTICAL MILLS: ROLLERS AND TABLES



ROLLING TABLES AND GRINDING ROLLERS

Spare parts for the main components of the vertical grinding systems, made from special wear-resistant steels.

The tables are supplied in segments and the rollers can be either whole or segmented. Industry-standard sizes and materials de la industria.

We also develop non-standard parts on request, based on drawings or samples.

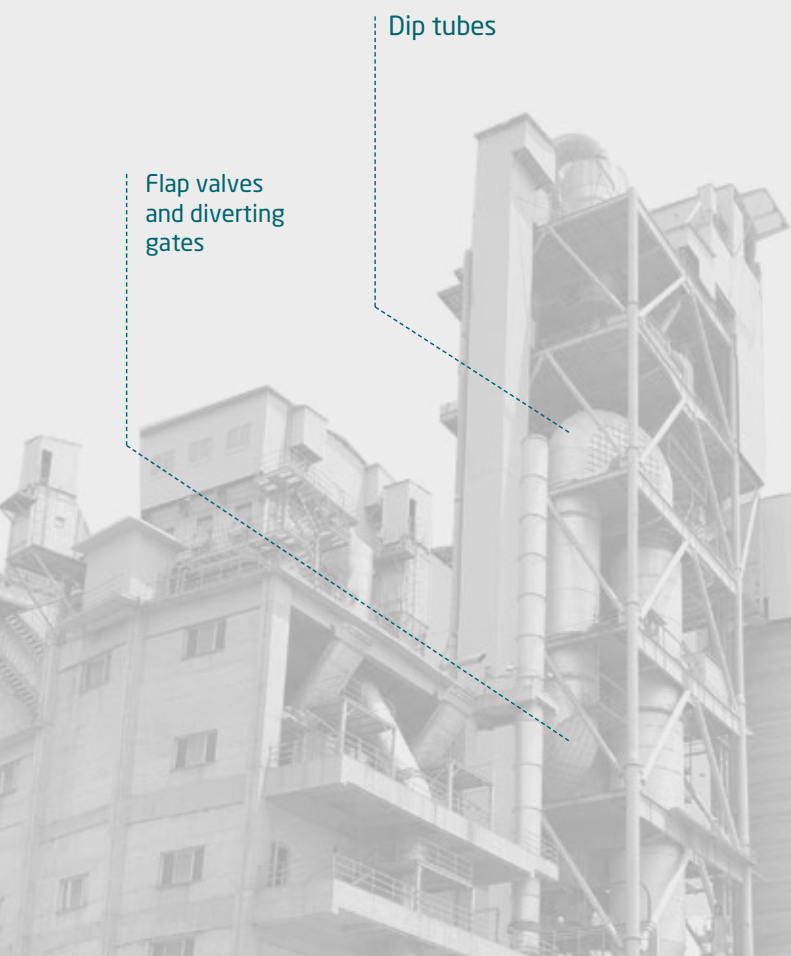


Roller



Table

3



4



5



CALCINATION



3

PRE-HEATER AREA

Heat-resistant steel components for the pre-heater tower. Optimised Dip Tubes, according to Estanda standardised design. We also manufacture dip tubes compatible with the main engineering designs, and tailor-made solutions. Also, flap valves and diverting gates.

Pages 26-27

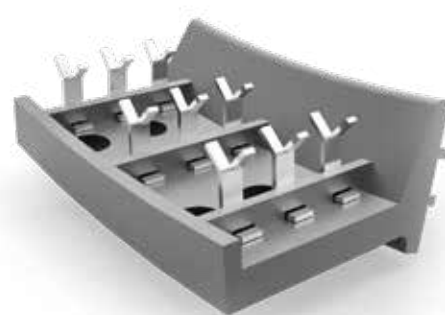


4

KILN AREA

We offer kiln inlet and outlet sectors in heat-resistant steel, as well as pre-assembled systems with refractory concrete.

Pages 28-29

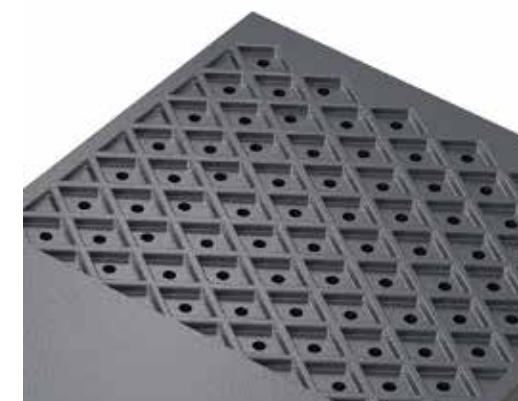


5

COOLER AREA

GRATE COOLERS compatible with the main solutions on the market.

Pages 30

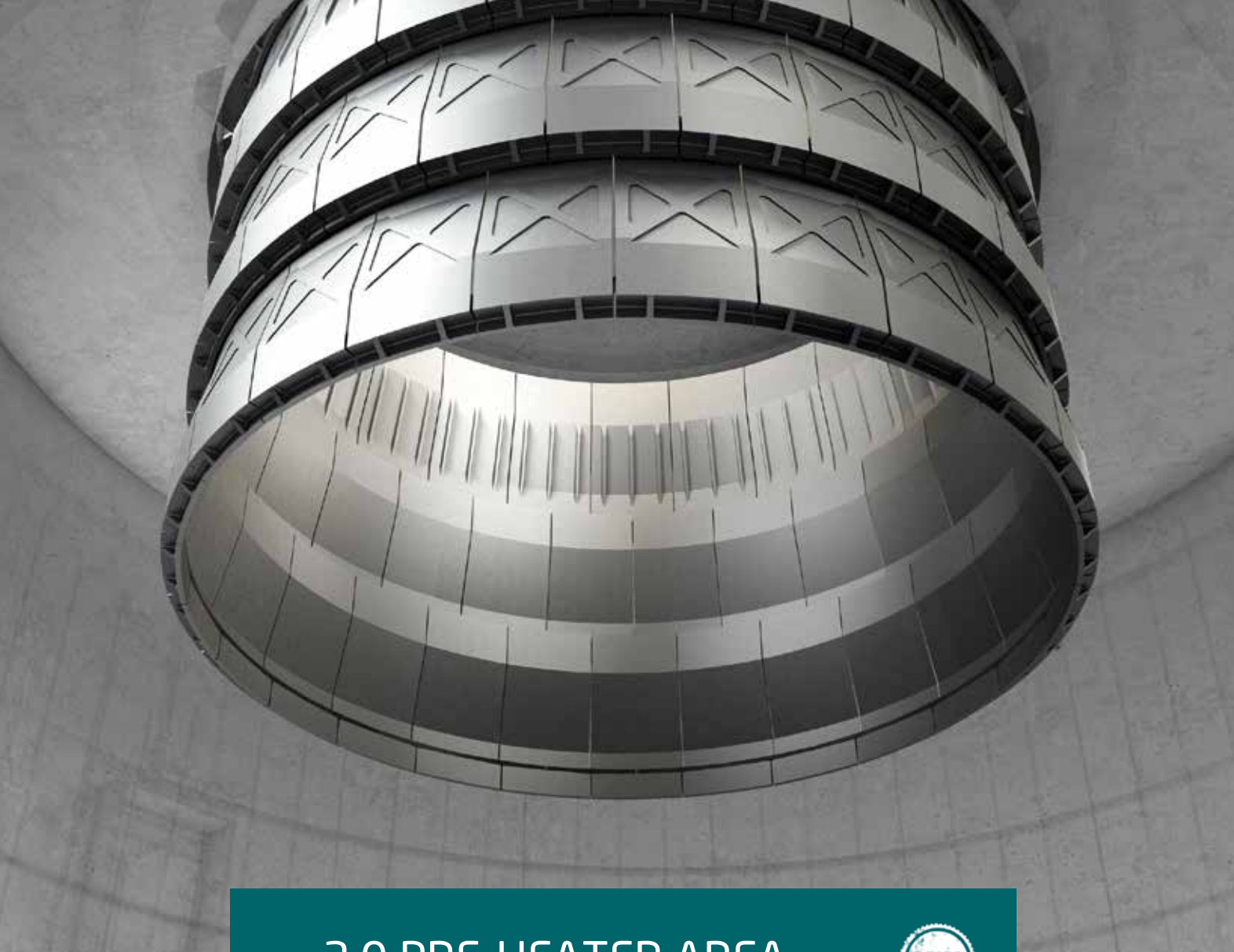


PLANETARY COOLERS

We manufacture replacement parts for internal components and complete shells. Our service includes optional pre-assembly, shipping, and assembly supervision.

Pages 31-35





3.0 PRE-HEATER AREA



DIP TUBES

DESIGN. According to customer drawings or optimised and customised drawings, for better performance. Heat-resistant steel to be selected based on temperature conditions (up to 1,000-1,100°C) and chemical attack (presence of chlorine, sulphur, and others). Experience with alternative fuels.

SUPPLY of complete dip tubes pre-assembled at our facilities, and/or final supervision at our customers' facilities to ensure optimal project delivery.

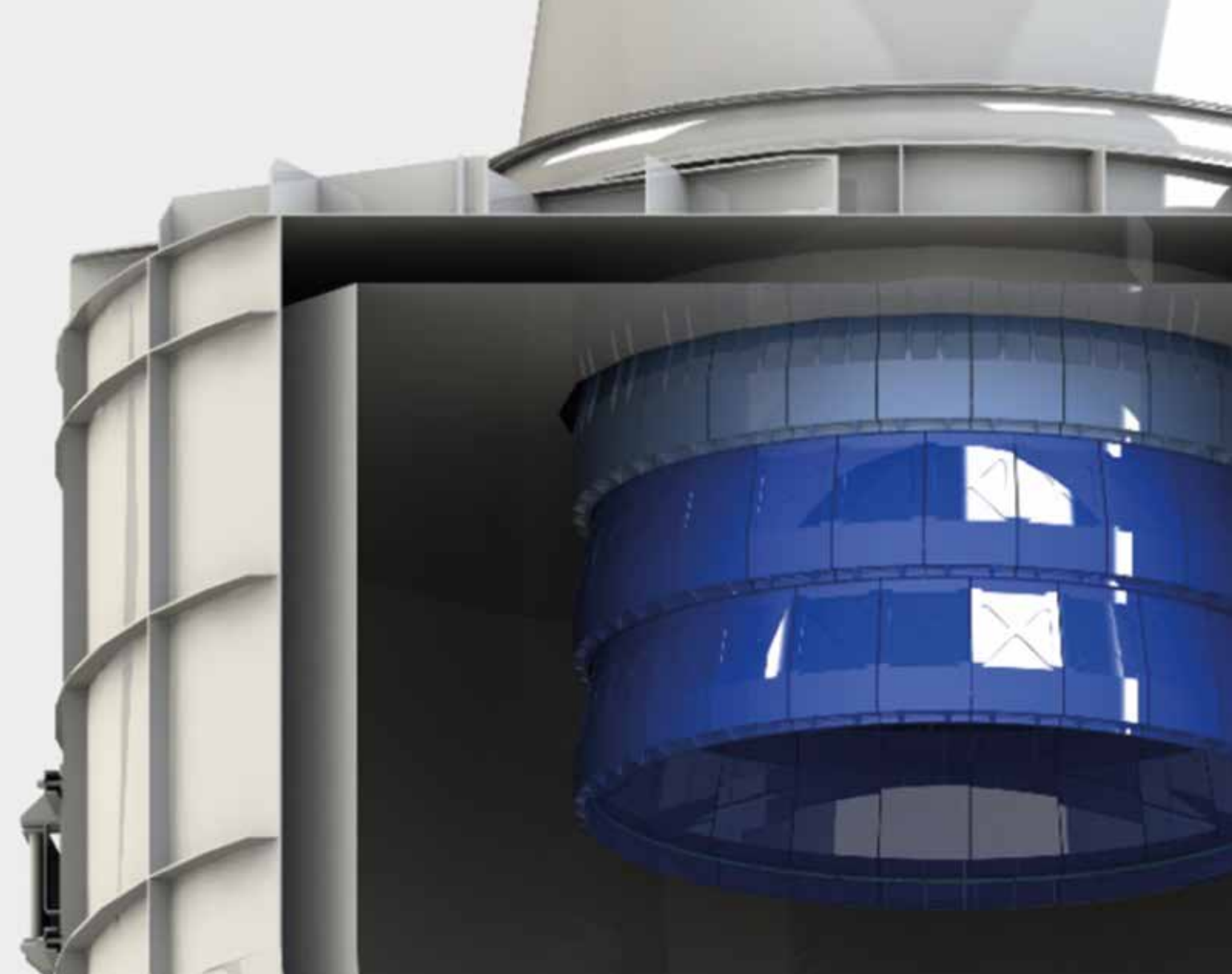
AFTER SALES SERVICE and follow-up of performance.



Detail of the fixing and reinforcement system of the plates



ESTANDA's improved design



ESTANDA's DESIGN DTs

- Improved reinforced design.
- Optimal balance between price and service life: warranty between 24 and 48 months, depending on the heat-resistant Steel and working conditions.
- Flexible and easy to install: our system is based on "standard" segments with different lengths and thicknesses to meet any market requirement. Reinforced options are also available.
- This system allows for low inventory requirements and guaranteed short delivery times.



Dip tube components

FLAP VALVES and GATES

Inside the pre-heater tower, ESTANDA also supplies the different types of flap valves, diverting gates and grate plates currently on the market.



Machined shaft in Cr/ni. Anchorages in stainless steel for fixation of the refractory concrete



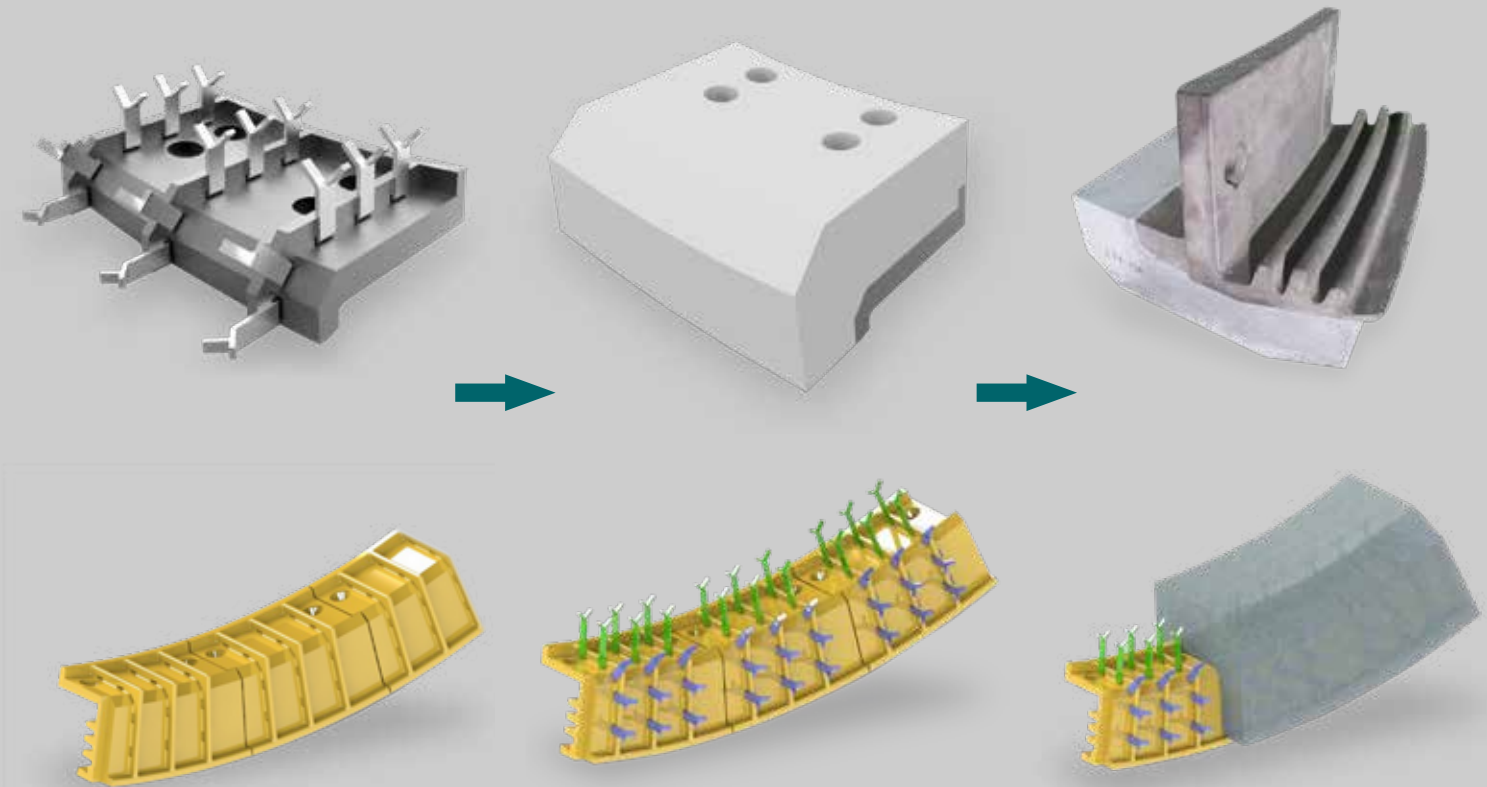
4.1 KILN INLET SECTORS



ESTANDA supplies the **cast parts** that make up the kiln's inlet sectors, in the different shapes and **existing designs on the market**, as well as other **custom designs** tailored to the customer's needs.



Kiln inlet sectors

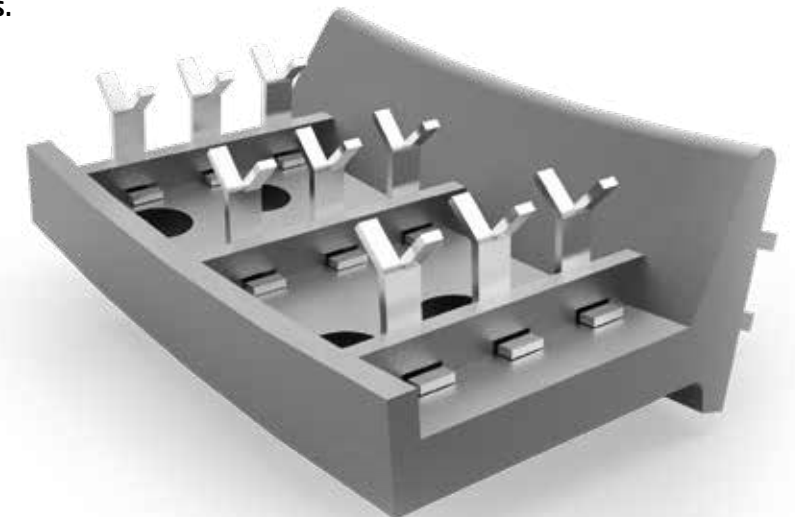


4.2 KILN OUTLET SECTORS



ESTANDA supplies the **different cast parts and designs**, in heat-resistant steel, that make up the kiln's outlet sectors

We also **supply subassemblies** of outlet sectors with special refractory concrete **pre-assembled in our facilities**.



Detail of anchorages in stainless steel on cast part



5.1 GRATE COOLERS

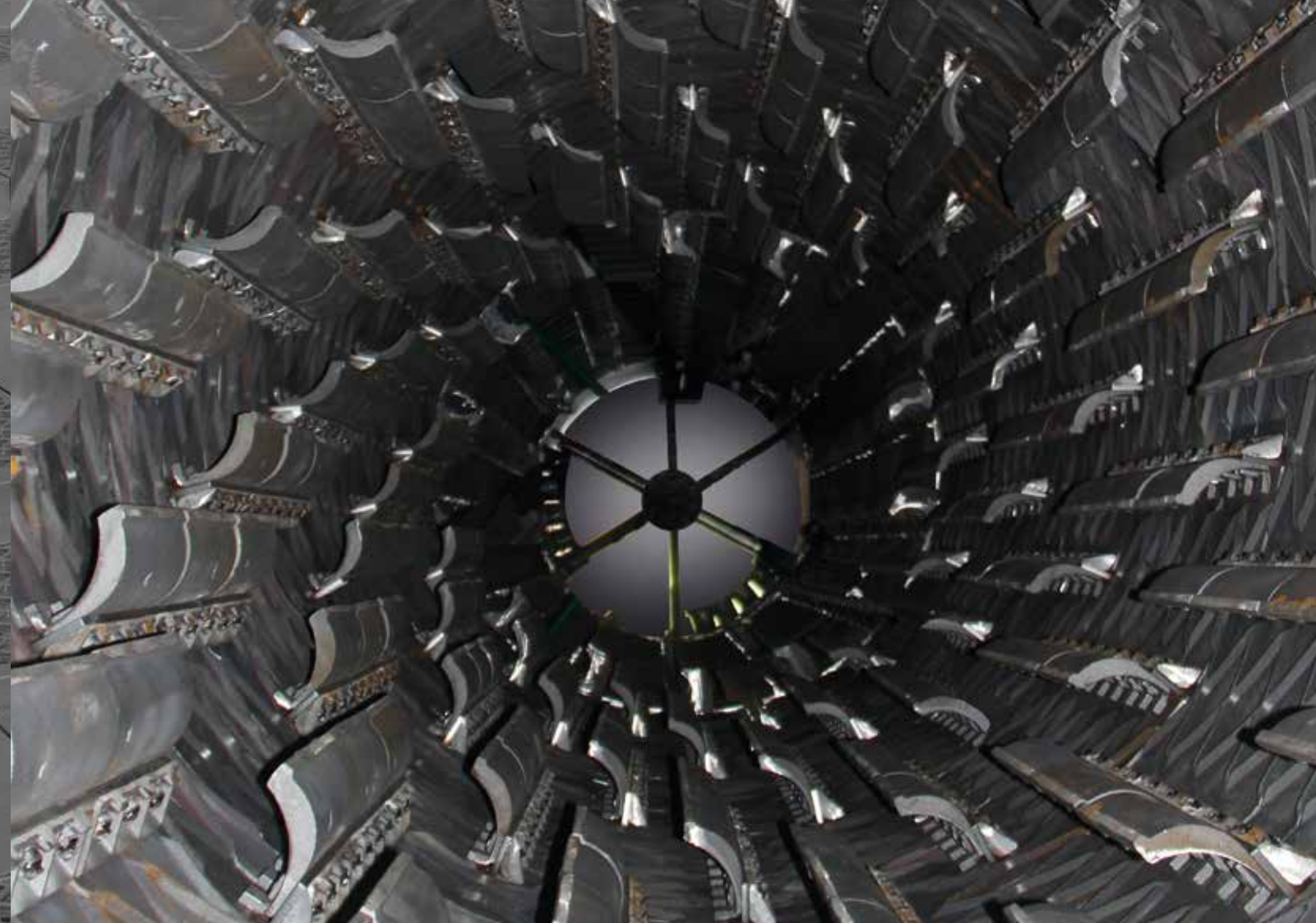


ESTANDA manufacture **components** for all different types and **designs of grate coolers currently on the market.**

We manufacture these components **according to customer drawings** or with design improvements, according to the **specific needs** of each cooler. Our grates are reinforced with welded overlays.



Different examples of cooler grates, including design with welding retrue



5.2 PLANETARY COOLERS



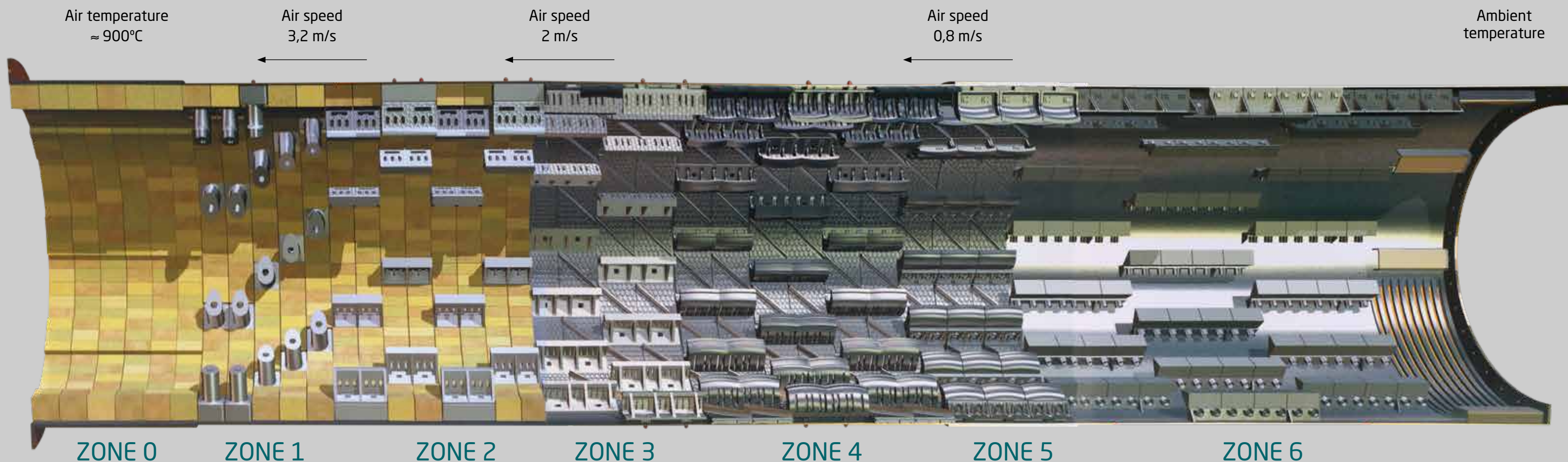
At ESTANDA, we are **experts** in the manufacture and supply of **turnkey planetary cooler projects.**

To date we have **numerous successful installations** of this type of cooling technology for different customers around the world.

More details about the different parts that comprise them, and their characteristics, can be found on the following pages.



Transportation of premounted tubes by sea



5.2 PLANETARY COOLERS



DISTRIBUTION OF COOLING ZONES

Solutions designed to maximise the potential of your cooler, achieving the highest cooling gradient in each zone with maximum heat transfer to secondary and combustion air.

Division into zones based on function:

ZONE 0 Zone covered with brick or monolithic refractory material.

ZONE 1+2 Breaking up zone, with the shell protected by brick / refractory material.

ZONE 3+4 Separation of fine dusty clinker from the larger nodules and lifting and tossing of the larger clinker pieces into the secondary air gas stream.

ZONE 5 Special zone for protecting the tube support saddle.

ZONE 6 Maximum lifting and tossing zone.

DESIGN AND FUNCTION OF THE INTERNALS

Our breaker cones are applied into zones 1 and 2, breaking the clinker into pieces designed to offer the maximum specific surface area of the clinker to the gas stream, for efficient heat recuperation and to make it easier to cool the clinker in other zones in the cooler tube.

Estanda's innovative design of slotted lifter and shell liners with cast diagonal accelerators within the first four zones of the cooler, accelerates out the fine dusty clinker which retain little heat and if allowed to re-circulate into the secondary air and back into the kiln and could disturb the burning regime. Coarser clinker pieces greater than 8mm advance down the tube, allowing the lifting and tossing process to recuperate the specific heat within the clinker pieces and sending the recovered heat into the secondary gas stream.

This process of separating fine from coarse clinker and accelerating out the fines, reduces the overall material loading in the tube, whilst ensuring the coarser pieces are lifted and tossed into the gas stream to fully maximise the heat recuperation process.

ENERGY SAVING

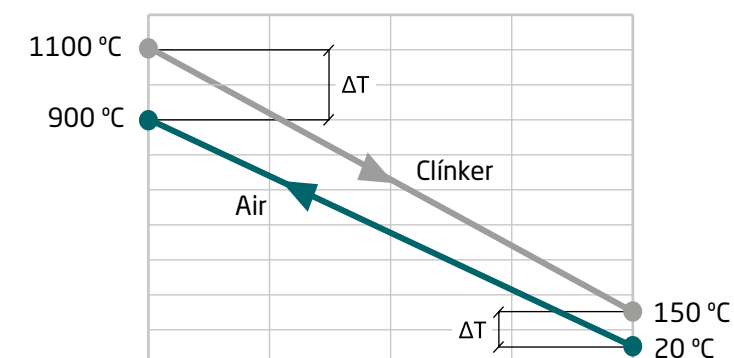
Estanda's optimised design achieves the minimum, ΔT - i.e. maximum temperature of secondary air combined with evacuating the coolest clinker, resulting in maximum energy saving.

OPTIMISED DESIGN

Industry improvements introduced to improve production and operational efficiency in the process of pyro-processing of cement clinker requires the optimisation of planetary coolers to keep pace.

Providing effective solutions to a wide range of specific problems with planetary coolers is one of our specialities, through:

- Correct distribution of the cooling zones.
- Part design specific to each zone and each type of clinker.
- Selection of the right materials.



ZONE 1

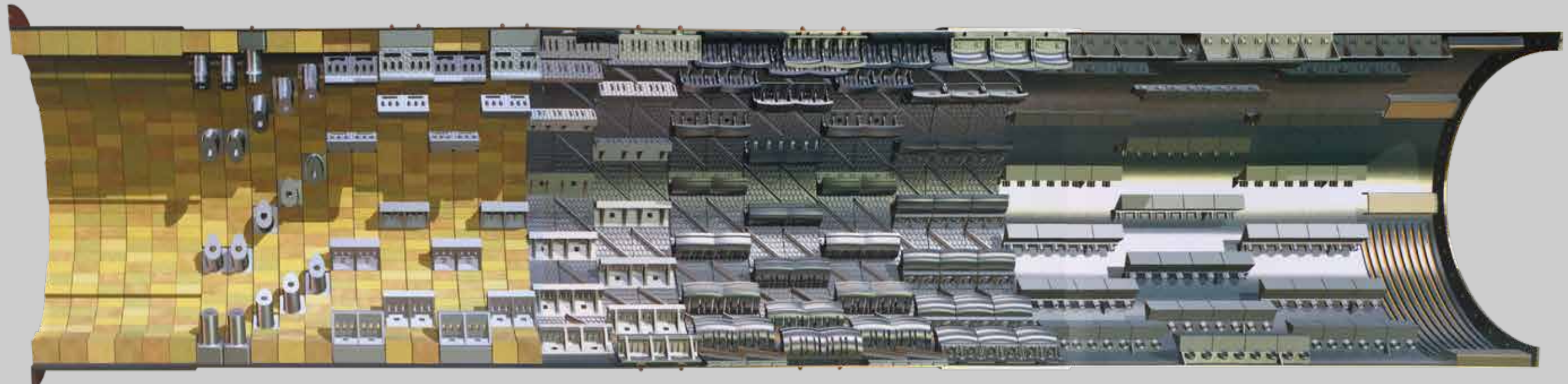
ZONE 2

ZONE 3

ZONE 4

ZONE 5

ZONE 6



5.2 PLANETARY COOLERS



ZONE 1

This zone with its unique breaker cones with their reversed-scroll configuration stops the large clinker material from advancing until broken up, thereafter offering the maximum surface area for efficient cooling.

ZONE 2

Breaking zone, made up of robust breaker plates fitted on supports which allow for:

- The increase of the specific surface area of the clinker.
- The recovery of heat by means of the secondary air.
- The protection of the preceding cooling zones from large pieces and thermal load.
- The slide of the fine particles along the wall, reducing the chance of them being lifted.
- The protection of the shell by means of standard bricks.

ZONE 3

Transition zone from brick to shell liner plate made up of slotted lifters that separate the fine from coarse clinker. Our shell liners with diagonal cast pushers designed for accelerating out the fines creating the following advantages:

- Keep increasing the specific surface area of the clinker.
- Optimise the heat exchange between the clinker, the plates and the air.
- Continue to send the fine clinker along the tube, sifting the coarse particles into the gas stream, whilst maintaining the fines in the bottom of the tube where the cast diagonal pushers accelerate out the fines to the next tube.
- Protect the shell from the thermal load by means of ceramic insulation fibre under the shell liners.

ZONE 4

Lifting area, made up of hub lifters and wear plates. The number of hub lifters with or without slots depends on the particle size of the clinker and the operating parameters of the cooler.

They allow us to:

- Concentrate on lifting the large clinker particles.
- Optimise the heat exchange between the clinker, the pieces and the air.
- Separate the fine dusty clinker particles from the coarser pieces for more efficient heat transfer.
- Increase the temperature of the secondary air.

ZONE 5

Second lifting zone, consisting of hub lifters and wear plates, to protect the tube support saddle section or cradle from high temperatures.

ZONE 6

Zone where we continue to maximise the tossing and lifting of all the clinker particles. Lower secondary air velocity in this zone ensures we can continue to cool the clinker particles without the fear of finer particles not being picked up into the gas stream.



MATERIALS

Our offering includes a wide range of materials and treatments, which are summarised in the following tables.

The most representative materials are shown, but other options may be available.

The materials are chosen based on the operating conditions and specific design of each part. The selection is made to ensure maximum operating life with minimum investment and maintenance costs.

ABRASION AND IMPACT RESISTANT STEELS



Equipment/ System	page	Part	Steel alloy	Composition	Estimate duration*
CRUSHING	8-9	Hammers (inc. Metallic/ Ceramic Inserts Option)	FED 40	1,15% C , 12,5% Mn	NA
			FED 42	1,10% C , 13% Mn	NA
			FED 44	1,15% C , 17% Mn	NA
			FED 6	0,45% C , 3% Cr	NA
			FED 8	1,65% C , 11,5% Cr	NA
		Rods (inc. Metallic Inserts Option)	FED 40	1,15% C , 12,5% Mn	NA
			FED 42	1,10% C , 13% Mn	NA
	13	Rod-holders	FED 44	1,15% C , 17% Mn	NA
			FED 25	2,7% C , 26% Cr	NA
		Shells & Cladding plates (inc. Metallic Inserts Option)	FED 40	1,15% C , 12,5% Mn	NA
			FED 25	2,7% C , 26% Cr	NA
			FED 6	0,45% C , 3% Cr	NA
		Ejectors (inc. Ceramic Inserts Option)	FED 40	1,15% C , 12,5% Mn	NA
		Jaws (inc. Metallic Inserts Option)	FED 40	1,15% C , 12,5% Mn	NA
			FED 42	1,10% C , 13% Mn	NA
GRINDING	13	Inlet headwall liners	FED 4	0,35% C , 7% Cr	10.000 - 18.000
			FED 13	1,25% C , 12% Cr	15.000 - 25.000
			FED 25	2,7% C , 26% Cr	20.000 - 30.000
			FED 50	0,25% C , 10% Cr	10.000 - 14.000
			FED 4-A	0,35% C , 7% Cr	20.000 - 30.000
	14	1 st Chamber Liners (Lifter - Classifier)	FED 13-R	1,25% C , 12% Cr	25.000 - 40.000
			FED 25	2,7% C , 26% Cr	35.000 - 45.000
			FED 50	0,25% C , 10% Cr	20.000 - 30.000
			FED 13	1,25% C , 12% Cr	25.000 - 40.000
	15	2 nd Chamber Liners (Wavy - Classifier)	FED 14	1,85% C , 13% Cr	55.000 - 70.000
			FED 25	2,7% C , 26% Cr	60.000 - 80.000
			FED 4	0,35% C , 7% Cr	10.000 - 18.000
			FED 13	1,25% C , 12% Cr	20.000 - 30.000
	16-18	Intermediate Diaphragm plates	FED 25	2,7% C , 26% Cr	20.000 - 30.000
			FED 4	0,35% C , 7% Cr	10.000 - 18.000
			FED 13	1,25% C , 12% Cr	20.000 - 30.000
	19	Central Discharge Diaphragm plates	FED 13	1,25% C , 12% Cr	20.000 - 30.000
	20	Transfer Diaphragm plates / Drying chamber lifting plates	FED 50	0,25% C , 10% Cr	10.000 - 14.000
	21	Outlet Diaphragm plates	FED 13	1,25% C , 12% Cr	20.000 - 30.000
			FED 25	2,7% C , 26% Cr	20.000 - 30.000



HEAT-RESISTANT (REFRACTORY) STEELS



Equipment/ System	page	Part	Steel alloy	Composition	Estimate duration*
PRE-HEATER	26-27	Dip tubes	FEKA 32	27% Cr , 4% Ni	>= 2 years
			FEKA 64	25% Cr , 12% Ni	>= 2 years
			FEKA 64-R	25% Cr , 12% Ni , Ce	>= 2 years
			FEKA 68	25% Cr , 20% Ni	>= 2 years
	27	Flap valves	FEKA 32	27% Cr , 4% Ni	NA
			FEKA 64	25% Cr , 12% Ni	NA
FEKA 68			25% Cr , 20% Ni	NA	
KILN	28-29	Inlet & Outlet Sectors	FEKA 32	27% Cr , 4% Ni	NA
			FEKA 64	25% Cr , 12% Ni	NA
			FEKA 68	25% Cr , 20% Ni	NA
			FEKA 63	28% Cr , 10% Ni	NA
COOLER	30	Grates	FEKA 10	7% Cr	NA
			FEKA 64	25% Cr , 12% Ni	NA
			FEKA 68	25% Cr , 20% Ni	NA
	31-35	Planetary internals (Breaker cones) - ZONE 1	FEKA 68	25% Cr , 20% Ni	>= 2 years
			FEKA 63	28% Cr , 10% Ni	>= 2 years
			SOKA 30	30% Cr , 12% Ni	>= 2 years
		Planetary internals (Breaker plates) - ZONE 2	FEKA 62	25% Cr , 12% Ni	>= 2 years
			FEKA 32	27% Cr , 4% Ni	>= 2 years
			FEKA 30	28% Cr	>= 2 years
		Planetary internals (Breaker plates) - ZONE 3	FEKA 30	28% Cr	>= 3 years
			FEKA 62	25% Cr , 12% Ni	>= 3 years
		Planetary internals (hub lifters and wear plates) ZONE 4	FEKA 32	27% Cr , 4% Ni	>= 3 years
			FEKA 18	17% Cr	>= 3 years
			FEKA 13	13% Cr	>= 3 years
		Planetary internals (hub lifters and wear plates) ZONE 5&6	FEKA 18	17% Cr	>= 4 years
			FEKA 13	13% Cr	>= 4 years
			FEKA 10	7% Cr	>= 4 years
Crusher rings	FEKA 54	20% Cr , 14% Ni	NA		

*Generic lifetime warranty estimated under normal working conditions, for OPC cement or similar.

COMMITMENT, DEVELOPMENT, AND SUSTAINABILITY



ESTANDA is committed to the economic development of its local area, integrated into the society it serves, by contributing to wealth creation and promoting new employment for future generations. Focused on the sustainable development of its activity, which is compatible with the preservation of the environment.

Use of 100% renewable electric energy
20.076.028 kg CO₂
ANNUAL SAVING EMISSIONS



Recycled raw material:
Commitment to use **100% recycled steel scrap**.



Green energy: Commitment to use **100% renewable** energy in melting and machining processes.



Recycling of moulding sands and responsible waste management.



Calculation and **reduction targets** for the company's carbon footprint (GHG Protocol), registered with MITERD.



ISO 14001 certified **Environmental Management System**.



The company is **certified** on various internationally recognised **sustainability platforms** such as EcoVadis (silver medal) and SAQ (84/100).



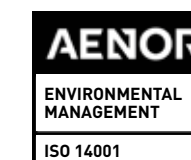
Corporate Social Responsibility, relations with stakeholders and the local community.

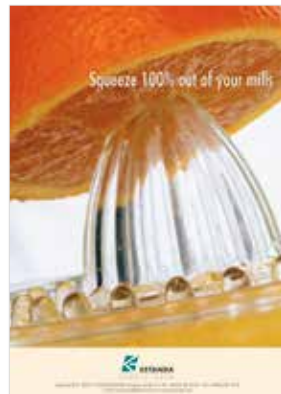
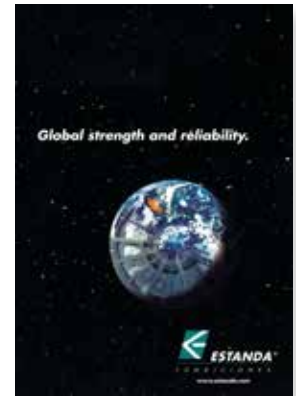


Actions in support of the **United Nations Sustainable Development Goals (SDGs)**.



Occupational Health and Safety ISO 45001, social action, work-life balance.





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