New and even bigger milestones for preformed solutions!

Drawing on its fifty years’ experience in the design and construction of prefabricated refractory linings, the company is always ready to accept new challenges. Now, in addition to its successful IPSM® solution for combined induction furnaces, the A/R® range for reverberatory furnaces and shafts and upper courses of channel induction furnaces, Eredi Scabini is proud to present the new IPSM® Inductor Preformed System—a versatile solution for the induction of lower parts of the reactor. The project comprises a preformed, pre-arranged, self-supporting structure to be welded to the metal structure of the inductor by means of a refractory safety lining. This concept allows the use of products with chemical and physical properties (e.g., abrasion and corrosion resistance) far superior to those of conventional refractories, and eliminates the most critical operations related to the installation of the lining and the pre-arrangement of the structure. Moreover, the use of IPSM® ensures the desired performance in terms of productivity, reliability, and safety. Design of IPSM® systems is highly customized and they are manufactured for our production department, which reproduces the optimal conditions of a laboratory on an industrial scale to guarantee quality and reliability. In view of the unique shape and position of the lower channels, additional procedures have been adopted for their verification and validation of each system. IPSM® is therefore more reliable and quicker to apply than other conventional systems.
Engineering & flextron® HT: a winning combination for a long-lasting solution for tundish cover.

The customer is an European electric steel mill which produces about 900,000 tons per year of carbon steel using a 100 tons E.A.F. and two continuous casting (CC) lines, with a capacity of 15 and 25 tons respectively.

Flextron® is a preferred ceramic matrix composite reinforced with heat resistant steel. The product has excellent resistance to thermal shock, impact, fracture and oxidation as well as to contact with metallic melts. The product is used to replace both refractory linings of metal castings.

The customer had various problems on tundish cover consisting of 9 used iron sections. Most critical areas were the joint between sections (Photo 1) and pre-heating burner holes where high temperature thermal shocks and oxidation deformed the cover forcing the customer in replacing both sections in just 20 heating cycles. Eredi Scabini designed and produced a new tundish cover consisting of 3 parts: the middle section in flextron® HT (Photo 2) and the two side sections in cast iron.

The test performed with the new design gave very encouraging results: 130 heating cycles (Photo 3) compared to the 20 achieved previously. On the basis of these results, the customer decided that are interested to use the flextron® HT solution for the entire CO2 tundish cover (Photo 4) and then to do the same for the CO1. The new lids in Eredi Scabini flextron® HT are still in use in both continuous casting machines.

Eredi Scabini excels itself with Alfindix® in EAF delta section.

The customer is an European electric steel mill which produces about 250,000 tons a year of billets and ingots, partly forged and machined in house and also sold on the export market. Its output is intended for the petrochemical and energy market.

Alfindix® is the Eredi Scabini monolithic performed shape with amorphous Silico-Aluminate binder which features an exceptional resistance to corrosion and thermal shock.

The steelworks contains an 80 tons EAF (Electric Arc Furnace) with a VD (Vacuum Degassing) unit and a LF (Ladle Furnace) for 80 tons ladles. The customer’s biggest headache has always been the lifetime of the L.F. delta section. Traditionally, the EAF delta was lined with bricks (Photo 1), which however became worn very fastly forcing the customer to change the lining too often, after just 100 heats. Eredi Scabini’s first step towards solving the problem was to design and deliver a new preferred delta, produced using its exclusive Megablock® large aggregate product (Photo 2). The results were immediately encouraging: the delta lifetime was extended by almost 100% (540 heats compared to 180 heats) (Photo 3). Delighted with the performance achieved, the customer decided to carry out a further upgrade by testing a new preferred delta, this time produced using Eredi Scabini’s new non-plastic product "Alfindix®" (Photo 4). With its key characteristics of excellent resistance to thermal shock and chemical attack, the Alfindix® solution proved to be absolutely the right choice. The customer immediately found that the inner surface stayed cleaner and showed less wear, as well as remaining more uniform across the entire surface. Alfindix® delivered a performance of 400 heats (Photo 5).
**Alfaplast**, the perfect product for furnace maintenance.

The customer is a steel mill which produces about 100,000 tons a year of ingots, forged in-house, for petrochemical and energy applications.

Alfaplast® is an amorphous Silica-Aluminite bonded refractory product. Cement-free, supplied in two components unit, the product has excellent bonding properties, fast setting and does not require any acoustic and long-term heat-up schedule.

The forge department contains a number of top grade furnaces used for re-heating and heat-treating ingots, with capacities ranging from 80 to 400 tons. Both types of furnaces require frequent maintenance to both the hearth and the perimeter of the car, due to the mechanical stress and the abrasion caused by the bars used to remove the scale. Repairs were performed by eliminating the damaged areas and reconstituting them with dense refractory castable (Photo 1). This procedure increased working stoppages and the repairs were fairly short-lived (Photo 2). With the advent of the new Nanoplastic products Eredi Scabini decided that its Alfaplast® was the ideal solution for this type of problem and recommended it to the customer, which used it both for complete reconstructions and for surface repairs (Photo 3). With Alfaplast® it was possible to perform repairs without any demolition, mainly cleaning the surface of the damaged area to remove the scale. What's more, thanks to Alfaplast®, the installation could be carried out very quickly, so the product ensured rapid drying. To conclude, the results of the repairs were extremely satisfactory, setting the absolute record of 10 months' service (Photo 4). This persuaded the customer to decide to use the use of Alfaplast® for the complete and partial repair of all the furnaces in the department.

**Alfaplast** for ductile iron ladles: only Eredi Scabini can beat Eredi Scabini.

Over time, Eredi Scabini has won the confidence of this customer, which has trusted the company to be a reliable partner capable of delivering prompt solutions to requirements of all kinds. Well aware of the market's latest developments, with the advent of the new Nanoplastic products the customer was one of the first to decide to test the new Alfaplast®, even though it was already satisfied with the Eredi Scabini products in use at the time.

The customer is an iron foundry which produces about 80,000 tons a year of ductile iron and cast-iron cast-iron. The foundry has three 36-ton coreless induction furnaces, 6 treatment ladles with different capacities and 2 pressure jet ladles. The treatment ladles are lined with our Flustone® castable, with average lifetimes of about 6 months, considered very satisfactory by the customer (Photo 1). Only light repairs are carried out during the ladle's lifetime, bringing it to the end of its cycle without any particular problems. With the arrival of the new Eredi Scabini Nanoplastic products, the customer decided to test the first ladle lining using Alfaplast®, which required much shorter installation and drying times than the previous lining (Photo 2). Once in operation, the customer immediately noticed that the sidewalls of the ladle were cleaner than ever before (Photo 3). Currently, 5 months later, the Alfaplast® ladle is still in service without having undergone any repairs.

With Flustone®, coreless furnace top cap linings are easier to apply and tougher.

The customer is a leading international corporation with iron foundries in the Middle East and Europe. In its Middle Eastern plant, it processes about 170,000 tons a year of grey and ductile iron castings.

Flustone® is a line of monolithic dense castables with excellent flow ability allowing application by self-distribution. They are used mainly for working linings receiving high resistances to abrasion and/or saturation by metals and/or slag. They are self-bonding, allowing linings to be repaired by applying the same product to the worn surface without changing the whole lining.

The melting department consists of several coreless induction furnaces with capacities from 8 to 28 tons and two electric arc furnaces. The coreless induction furnaces working lining is a silica-based dry running mix with a lifetime of 80 loads over about 3 weeks. During the campaign, due to the mechanical stress of the charging process, the lining of the top cap, also in silica, had to be restored on a weekly basis (Photo 1 and 2). In 2012, we suggested the use of our Flustone® HT for construction of the top cap (Photo 3). With this solution, the customer has extended the lifetime of the entire lining up to 120 changes (about 4 weeks), and above all it no longer has to perform any repairs on the top cap at any time during the lining’s life (Photo 4).

**Advanced Refractory Solutions**

Photo 1 - Installation of Flustone® HT top cap
Photo 2 - Overview of damage to dry running mix top cap
Photo 3 - Installation of Flustone® HT top cap
Photo 4 - Flustone® HT top cap in service
**Resistone:** the ideal product for industrial floorings with unbeatable strength.

The customer is a multinational company, which produces castings in both aluminium and cast iron for the automotive industry.

Resistone is a line of castables specifically developed for industrial floorings. They are installed with procedures similar to those used for construction cement, but they develop extremely high mechanical resistance within just a few hours and can be used up to a temperature of 1,400°C even in contact with metal and slag splashes. Resistone’s quick setting and ease of use make it an excellent product for maintenance too.

Eredi Scabini has been supplying the group companies with refractory solutions since 2001 and in 2006 Resistone ST was used in one of the Italian iron foundry for the flooring around the melting furnaces. Thanks to its distinctive qualities, Resistone quickly became one of the group’s benchmark products, with a succession of further orders, such as in 2005 when a new aluminium foundry was opened. In this case, Resistone ST was used for the flooring of the area next to the melting furnaces, where the transfer ladles are filled. The floor was laid using 20 tons of Resistone ST with the aid of a cement mixer truck, manual tools and a power trowel.

Installation, by casting, took about 4 hours’ work: the floor could be walked over after just 48 hours. 6 months later the customer purchased another 19 tons of Resistone ST for the flooring of another part of the foundry. Almost 5 years since the latest installation, the floor is still in excellent condition.

**Big blocks for bigger goals in shaft melting furnaces.**

The customer is a multinational company, which produces castings in both aluminium and cast iron for the automotive industry.

Resistone is a line of castables specifically developed for industrial floorings. They are installed with procedures similar to those used for construction cement, but they develop extremely high mechanical resistance within just a few hours and can be used up to a temperature of 1,400°C even in contact with metal and slag splashes. Resistone’s quick setting and ease of use make it an excellent product for maintenance too.

Eredi Scabini has been supplying the group companies with refractory solutions since 2001 and in 2006 Resistone ST was used in one of the Italian iron foundry for the flooring around the melting furnaces. Thanks to its distinctive qualities, Resistone quickly became one of the group’s benchmark products, with a succession of further orders, such as in 2005 when a new aluminium foundry was opened. In this case, Resistone ST was used for the flooring of the area next to the melting furnaces, where the transfer ladles are filled. The floor was laid using 20 tons of Resistone ST with the aid of a cement mixer truck, manual tools and a power trowel.

Installation, by casting, took about 4 hours’ work: the floor could be walked over after just 48 hours. 6 months later the customer purchased another 19 tons of Resistone ST for the flooring of another part of the foundry. Almost 5 years since the latest installation, the floor is still in excellent condition.

**With Eredi Scabini’s ABT system you can forget about your furnace lining!**

The customer is Europe’s largest producer of brass rods, with a melting capacity of 700,000 tons/year. Eredi Scabini has always believed in the development of preformed shapes and its capability for producing preformed shapes up to 15 tonnes in weight places Eredi Scabini amongst the undisputed world leaders in this market sector. Eredi Scabini’s ABT – Advanced Block Technology- solutions are preformed and customized kits for furnace linings. The kit developed for this customer included several products, among which Ultrablock®, dense pre-formed shapes offering excellent “non-wetting” properties. The low porosity, the controlled pore size and the unique bonding system result in a winning combination against abrasion and chemical attack.

In this plant the melting center comprises 3 furnaces. The largest is equipped with two coreless induction melting furnaces of 75 and 32 tons, two channel induction melting furnaces of 120 tons and a 200 tons channel induction holding furnace, all supplying a vertical continuous casting plant. In 2006, after successfully building the two channel melting furnaces using its ABT – Advanced Block Technology - system, Eredi Scabini designed and installed the lining of the holding furnace using the same system, replacing the old brick lining. The results obtained were undoubtedly amazing, starting from the installation itself, which with our solution took just 5 days compared to the 30 required for the previous lining. But that is not all. While in service, the brickwork lining underwent maintenance on many occasions, until it was eventually completely replaced after just 6 years; the Eredi Scabini ABT – Advanced Block Technology solution is still in operation, 9 years after its installation!

Eredi Scabini has been supplying the group companies with refractory solutions since 2001 and in 2006 Resistone ST was used in one of the Italian iron foundry for the flooring around the melting furnaces. Thanks to its distinctive qualities, Resistone quickly became one of the group’s benchmark products, with a succession of further orders, such as in 2005 when a new aluminium foundry was opened. In this case, Resistone ST was used for the flooring of the area next to the melting furnaces, where the transfer ladles are filled. The floor was laid using 20 tons of Resistone ST with the aid of a cement mixer truck, manual tools and a power trowel.

Installation, by casting, took about 4 hours’ work: the floor could be walked over after just 48 hours. 6 months later the customer purchased another 19 tons of Resistone ST for the flooring of another part of the foundry. Almost 5 years since the latest installation, the floor is still in excellent condition.

**Big blocks for bigger goals in shaft melting furnaces.**

The customer is a multinational company, which produces castings in both aluminium and cast iron for the automotive industry.

Resistone is a line of castables specifically developed for industrial floorings. They are installed with procedures similar to those used for construction cement, but they develop extremely high mechanical resistance within just a few hours and can be used up to a temperature of 1,400°C even in contact with metal and slag splashes. Resistone’s quick setting and ease of use make it an excellent product for maintenance too.

Eredi Scabini has been supplying the group companies with refractory solutions since 2001 and in 2006 Resistone ST was used in one of the Italian iron foundry for the flooring around the melting furnaces. Thanks to its distinctive qualities, Resistone quickly became one of the group’s benchmark products, with a succession of further orders, such as in 2005 when a new aluminium foundry was opened. In this case, Resistone ST was used for the flooring of the area next to the melting furnaces, where the transfer ladles are filled. The floor was laid using 20 tons of Resistone ST with the aid of a cement mixer truck, manual tools and a power trowel.

Installation, by casting, took about 4 hours’ work: the floor could be walked over after just 48 hours. 6 months later the customer purchased another 19 tons of Resistone ST for the flooring of another part of the foundry. Almost 5 years since the latest installation, the floor is still in excellent condition.
No more Corundum in Aluminium melting furnaces with SigmaPlast®.

The customer is an aluminium castings foundry for the automotive industry, producing 46,000, 47,000 and 44,000 alloys.

SigmaPlast® is a new generation nanoplastic amorphous multi-bonded refractory product. Current-free, silica-free, fast-lining two components products with exceptional thermal shock resistance, excellent bonding properties, and corrosion resistance. A large number of industrial tests on customers’ premises have clearly demonstrated that the product is far superior to conventional alternatives (LCC or UOCC) as well as to other, competitor nanobonded products. Little more than a year after its launch, SigmaPlast®, a part of the much wider Eredi Scabini NanoplástTM project, has already collected a large number of successful case histories, such as the one recounted below.

The foundry is equipped with 10 melting and holding furnaces of different capacities. The customer’s standard practice was to purchase new furnaces from the OEM complete with refractory lining; not long after commissioning, huge amounts of corundum were already forming on the walls around the bath, blocking off the melting chamber (Photo 1). The customer cleaned the furnace regularly, but as the amount of corundum on the walls increased it became impossible to remove it. The lining lifetime before complete repair varied from 10 to a maximum of 14 months. Eredi Scabini suggested constructing the entire furnace lining with state-of-the-art SigmaPlast®, which immediately gave great satisfaction because amongst other benefits - it completely eliminated the corundum problem, allowing the furnace to be cleaned effectively and more easily. In spite of the passing months, the Eredi Scabini SigmaPlast® nanolining is still in brand-new condition (Photo 2). The furnace, which has now been in service for 10 months, is still free from corundum (Photo 3). The customer, very happy with this performance, has decided to use SigmaPlast® lining in other furnaces.

ABT: the right solution for reverberatory furnace lining.

This major European secondary aluminium foundry produces about 500,000 tons/year of slabs for the internal production of rolled products for the food packaging and automotive industries. ABT (Advanced Block Technology), is the solution developed by Eredi Scabini to replace conventional refractory lining with big preformed shapes.

The production line consists of 2 reverberatory melting furnaces of 100 tons each and 1 holding furnace. Every day, the line produces about 700 tons of series 3xxx and 5xxx Aluminium. 4 regenerative burners are installed on each melting furnace. The original solution comprised a traditional brick lining which required maintenance on the hearth every 12 months and complete reconstruction every 48 months. The customer had been looking for some time for a solution capable of guaranteeing better performances, meaning achievement of the following aims:

- Reduction of furnace downtime due to complete reconstruction of the refractory lining;
- Reduction of the number of scheduled maintenance stoppages;
- Extension of the time interval between complete reconstruction of the refractory lining and the next;
- Increase in output thanks to the reduction of the number and duration of stoppages.

The Eredi Scabini’s solution provided the right answer, and uses large preformed blocks for the hearth, walls and roof of the furnace. The use of big blocks guarantees the highest quality since they are manufactured under the strictest quality controls and, thanks to the heat treatment carried out in our kilns, the lining thus produced is uniform throughout its thickness. What’s more, the large size of the blocks drastically reduces the number of joints, well known to be the weakest part of the lining.

Thanks to its quick installation, the new design by Eredi Scabini has enabled the customer to produce 35,000 tons more aluminium compared to the previous stoppage and the expectation is that the time interval between maintenance stoppages will be doubled, while the overall life of the lining will be increased by 50%.

FlexTrong® HT: the Eredi Scabini answer to sill problems!

The company is an European aluminium refiner specialized in the production of nuts. FlexTrong® is a preformed ceramic matrix composite reinforced with heat resistant steel used to replace both refractory linings and metal castings.

The foundry has two 60 tons dual chamber reverberatory furnaces which produce 120 tons per day. In these operating conditions, the refractory lining of the sill in the holding chamber is exposed to thermal shock, abrasion and chemical attacks. The door frame lining of the furnace’s main door used to be constructed of refractory castables, which due to the thermal shock, abrasion and chemical attack were very quickly, lasting no more than 6-8 months. The most serious problems occurred on the sill due to the abrasion caused by the skimming tool. Another problem was caused by the oxidation of the containment plates installed both on the sill and on the jams, which forced their complete replacement after just 10/12 months (Photo 1). Eredi Scabini designed a solution using FlexTrong® HT preformed shapes, which would protect the metal plates in the sill, with the complete stripping of the metal from the two jambis and the limit (Photo 2). Today, after 18 months in service, the preformed shapes are still in excellent condition, even though they have undergone a large number of skimming cycles, and the protection applied for the metal plates underneath has meant that they have not required replacement (Photo 3).

For further information contact us: sales_dept@erediscabini.com
Better performances with **Ultrablock**® for casting launders.

The customer is an aluminum re-melter with a production capacity of about 65,000 tons of solids per year. The foundry belongs to a major multinational group with production plants all over the world. **Ultrablock**® is the preferred solution that Enosi Scabini offer for launder systems.

The foundry has 5 production lines, each with a melting furnace and 2 !okking furnaces. The launder working lining is prepared both in high density calcium aluminates and in ceramic material. Due to thermal shock, abrasion by the metal and manual cleaning by the operator, which tends to scratch the surface, the refractory lining wear quite rapidly (Photo 1 and Photo 2), the customer normally replaces parts of the launders after only 6/10 months in service. A more efficient solution therefore had to be found. For the lining of the fifth new casting launder, Enosi Scabini designed and installed a solution using Ultrablock®. Together with the Zlite® insulating foam for the backup lining. With this new solution, the customer was able to install the whole line in a very short time (Photo 3), and throughout the period in operation none of the problems experienced with the traditional solution has occurred. As of today, after 24 months in service, none of the launders has yet been replaced (Photo 4, Photo 5 and Photo 6).

---

**More insulation and greater safety for launders with Zlite®.**

The customer belonged to a multinational company which is a leading producer of rolled products for the automotive industry. In one of its European foundries, a complex network of launders connects the 5 casting lines to the depositing / filtering systems and the 15 furnaces installed in the plant. 

Zlite® is a dual component nanolitic foam with very low thermal conductivity, high mechanical strength and excellent non-wetting properties.

The launder working lining is made with perforated shapes, insulated by means of a combination of insulating concrete and panels. The insulation obtained with this solution was unsatisfactory, and the safety level in the event of metal infiltration was not sufficient: what’s more, lengthy preheating was required to eliminate the moisture from the concrete. Enosi Scabini therefore recommended and installed the next-generation product: Zlite®, a dual component nanolitic foam with very low thermal conductivity and high mechanical strength and thermal shock resistance.

The process is quickly installed by mixing the two components and pouring the mixture into the interface between the perforated launder and the steel shell (Photo 1). Once installed, the mixture expands and an exothermic reaction draws the moisture from it (Photo 2). In the event of metal infiltration, there is no damage to Zlite® due to its excellent non-wetting properties (Photo 3). During the months in operation, none of the problems previously experienced with the traditional solution has occurred. Using Zlite® it was possible to replace the working lining perforated shapes without repairing the insulating part (Photo 4). The customer has subsequently installed Zlite® on several production lines.

---

**Thanks to FleNG®**, skimming and stirring tool performances are greatly multiplied.

The customer is a primary aluminum producer specialized in aluminium alloys production. FleNG® Enosi Scabini's perforated ceramic matrix composite, has replaced steel skimming and stirring tools.

The ladle house is equipped with several casting lines for ingots and billet production. Several melting furnaces, with capacity varying from 18 to 30 tons are used to re-melt and alloy the metal. Skimming and stirring tools, fitted on ladleflits, are used in the reverberatory melting furnaces for:

- Stirring the bath to re-melt deforming elements and speed up the re-melting of recycled scrap
- Skimming slag from the surface of the bath
- Cleaning the lining

Every day, the tool is used 48 times for skimming and skimming the surface. Each stirring cycle lasts from 15 to 20 minutes, depending on the furnace capacity. Originally, the tools were made of carbon steel plate (Photo 1), and lasted from 1 to 2 days. In this past, the customer also performed tests with special steels, achieving lifetimes of up to 7 days, and more tests with other competitor composites (photo 2), without ever exceeding a lifetime of 2 days. In 2005, Enosi Scabini supplied the first FleNG® tools (Photo 3), which immediately gave results considerably better than the competitor products. The company then went on to develop and produce a tool for the customer with connecting arm lined for about 15 meters (Photo 4), to prove the latter from being corroded and extend the tool’s lifetime. Since 2012, Enosi Scabini has been supplying the customer with skimming tools with arm in FleNG®, achieving lifetimes of as much as 100 days, and FleNG® tools without lined arm with lifetimes of up to 55 days.

---
CPS® the exclusive solution for lining coreless induction furnaces with no rivals on the market.

The customer is a leading Middle Eastern company which produces rolled aluminum products with continuous casting machinery. Their production capacity is about 250,000 tonnes/year in two plants.

CPS® – Double Preferred System – is the Eredi Scabini solution for lining coreless induction furnaces with a pre-formed and pre-acted crucible.

The customer uses a 4-tons uncooled induction furnace to re-melt production returns. This furnace is charged with return coils which weigh up to more than 150 kg per coil, as it is constantly subjected to heavy stresses. The customer used to line the coreless induction furnaces with a differ refractory castable. After the installation, this solution required frequent and then a drying/sintering schedule; a procedure which took 6 or 7 days, during which time the furnace could not be used. This type of lining did not last more than 6/9 months. Since 2010 Eredi Scabini has been supplying this customer with the CPS® solution, which comprises a pre-lined, pre-formed working lining and a dry-named back-up lining. Installation takes less than one day, as soon as the first heat-up schedule. The customer can therefore start to produce rolled aluminium at the end of the second day. The average lifetime of the Eredi Scabini CPS® solution is 12-14 months.

ABT increases output and reduces problems for channel induction furnaces.

The customer is a multinational company with several secondary aluminium facilities to produce aluminium ingots for the internal production of flat products for the food packaging and automotive industries.

ABT – Advanced Back Technology solutions are customized preferred furnace lining kits.

The kit developed for this customer comprises several products, including Ultrablock®. These preferred shapes with excellent “non-welding” properties.

The low porosity, controlled pore size and unique bonding system deliver a winning combination against abrasion and chemical attack. Eredi Scabini has always believed in the development of preferred shapes and its capability for producing them up to 15 tonnes in weight. This company applied the uncooled world leaders in this market sector.

The line for the production of series 5000 Al always comprises 2 channel melting furnaces of 45 tons each and 1 holding furnace. 4 induction heads are installed on each melting furnace. The project for refurbishing the furnaces with big blocks area and was developed in a number of phases in response to the customer's need to use a refractory lining technology capable of achieving the following aims: reduction of the furnace downtimes, increase of the two furnaces’ capacity, reduction in repair and maintenance costs, reduction of the number of maintenance stoppages, extension of the time interval between two complete reconstructions of the refractory lining, increase in output due to reduction of the number and duration of stoppages plus the increase in the inductor melting capacity.

In the original solution, the furnace was lined with bricks, the throat with ramming mix and the top lip with low cement castables. Maintenance work was performed frequently and major repairs were needed whenever an inductor was replaced. The first phase of this project began in March 2015. It involved the reconstruction of the throats of one furnace with Eredi Scabini Flustone® castables. In view of the good results achieved, in 2019 the throat of the second furnace and the top lip of both furnaces were rebuilt using the same castable. The rest of the lining was unchanged. Compared to the original solution, even this partial introduction of Eredi Scabini products generated considerable improvements: the throughs and top lip required very little maintenance – the lifetime of the throats was doubled (from 10 to 20 months).

The definitive project includes the use of Ultrablock® big blocks for the working lining, combined with a monolithic, back-up lining in Flustone® and Cast-Lite™.

The reconstruction of these two furnaces was completed in 40% less time than with the previous solution, drastically reducing the plant downtime. Staff immediately reported that the furnaces were showing less cleaning, since aluminium slag does not stick to the lining easily. The furnaces’ capacity was increased, but even through these modifications reduced the thickness of the lining, there are no significant increases in the temperature on the steel shell. Simultaneously with the design of the basins, Eredi Scabini also developed a solution for the lining of the inductors which increased their lifetime by 30% compared to the previous lining.

Tilting rotary furnace lining lifespan has increased by +35% with Flustone®.

The customer is an aluminum refiner with production capacity of about 100,000 tons a year.

Flustone® is a line of technical dense castables with excellent flow ability allowing application by self-distribution. They are used mainly for working linings requiring high resistance to abrasion and/or saturation by metals and/or slags. They are self-bonding allowing linings to be repaired by applying the same product to the worn surface without changing the whole lining.

Apart from the various rolling and holding furnaces, the factory contains 2 tilting rotary furnaces with capacities of 14 and 20 tons. The tilting furnaces produce aluminium by rolling 4s and 5s (7060) and is charged every 6 hours, with continuous operation for 6 days a week. This causes problems with thermal attack, abrasion and chemical attack. In the past, tilting rotary furnace linings used to be made from Low Cement Castable, which tended to wear very quickly, lasting only 6/7 months in tilting furnace 1 (14 tons) and just 8/9 months in tilting furnace 2 (20 tons) (Photo 1). Most of the problems occurred on the charging/pouring dome, in the first part of the basin and on the end wall.

Our solution: the tilting rotary furnaces were lined with Flustone® castables. The first lining was installed on tilting furnace 1 and lasted 20 months, while the second, installed on tilting furnace 2, is currently still in service after 25 months (Photo 2). A number of infrared pictures were taken during production and showed very low heat losses (Photo 4). All the factory’s tilting rotary furnaces now have complete Flustone® linings.
High temperatures and oxidizing atmospheres are no longer a problem for titrating rotary furnace lip ring with FleX(trong)-HT.

The customer is a major European secondary aluminium foundry, as well as producers of refined aluminium products, also producing and distributing all types of melts. Fibrous and liquid aluminium for all types of products, including 20,000 tonnes per year. FleX(trong)-HT is a preferred ceramic material composite reinforced with heat-resistant steel used to replace both refractory bricks and metal castings.

Some of the aluminium is produced by refining scraps in a rotary furnace. Apart from charging aluminium for melting and refining, the smelting of the furnace is used for discharging the refined aluminium. Followed by the slag and the refining all. The lip ring — the edge of the mouth of the furnace — is subject to erosion due to the passage of the aluminium and slag, as well as the thermal shock due to the continual opening of the door for charging and discharging of the various elements. It is in the door that the burner is recirculated. The lip ring is to be lined with stainless steel, covered with a refractory lining. Since the lip ring is the extremity of the furnace, it was not always dried and protected, and thus, as the lip ring took shape before the time for routine maintenance came around, causing an unscheduled production stoppage. The use of standard blocks of FleX(trong)-HT, specifically developed by Trelleborg for high-temperature applications and collecting data, offers the customer a solution to issues: resistance to thermal shock and impacts, fracture strength and resistance to oxidation and corrosion combined with malleability. While, more, replacing the blocks is a much quicker and easier, and the pretreated material does not require drying. The pretreated FleX(trong)-HT solution was installed during the maintenance shutdown over the 2015 Christmas holidays and is currently still in excellent condition.

For further information contact us: sales_dept@erediscabini.com

**Comparative Hot Module of Rupture**

<table>
<thead>
<tr>
<th>Material</th>
<th>Aluplast®</th>
<th>SigmaPlast®</th>
<th>ZetaPlast®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load (kN)</td>
<td>1200</td>
<td>1050</td>
<td>950</td>
</tr>
</tbody>
</table>

**Comparative Dry-Out Schedule**

<table>
<thead>
<tr>
<th>Material</th>
<th>Aluplast®</th>
<th>SigmaPlast®</th>
<th>ZetaPlast®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (h)</td>
<td>250</td>
<td>300</td>
<td>350</td>
</tr>
</tbody>
</table>

**Genesis of the Name**

Aluplast® is a product that has been developed by Trelleborg in cooperation with the leading European aluminium foundry in the North of Italy. The product has been specifically developed to meet the needs of the aluminium foundry industry, where high temperatures and oxidizing atmospheres are a common occurrence. The product is a refractory material designed to withstand the harsh conditions of the aluminium foundry, and it is known for its excellent performance and durability. The name Aluplast® is a combination of the words aluminium and plastic, reflecting the product’s unique properties.

**Aluplast®** - The Nanoplant® Pioneer

Aluplast® is the first product in the Nanoplant® project. It is the most versatile in the range, since it can be used in a very wide range of applications and sectors. Aluplast® was developed as the first step in the Trelleborg vision to bring new nanotechnology products to the market.

**SigmaPlast®** - Amorphous Silica-based refractory products.

SigmaPlast® is a new nanotechnology product that is specifically designed for high-temperature applications. It is a refractory material that is able to withstand extreme temperatures and harsh conditions. SigmaPlast® is a product that is known for its flexibility and reliability, making it a valuable addition to the Trelleborg product range.

**ZetaPlast®** - Special amorphous Cerium-based refractory products.

ZetaPlast® is a new nanotechnology product that is designed to withstand extreme temperatures and harsh conditions. ZetaPlast® is a product that is known for its flexibility and reliability, making it a valuable addition to the Trelleborg product range.

**ADVANCED REFRUCTORY SOLUTIONS**

**2015 n° 3**

**CONTINUED FROM PAGE 1**

Yesterday, today and tomorrow: opportunities, never just products.

I can still remember those looks of bate with eyes wide open, breath at 100% and support to help us as we are the most difficult times. I was still at school, I knew nothing about innovation and even less about the world of work. But I was a good student and I wanted to get an engineering degree. I was interested in engineering for the business, which then consisted of three people, myself included. I had to go to school in the afternoon and attend various evening courses in industrial chemistry. I was immediately fascinated by those special shapes for boilers. I can still remember their names: Nova, Nova 3, Nova 4... and so on. I think it should be about various types in which they did not have to see these supplies that, at the same time, I discovered were probably for us we were also working at our competitor. I wanted to maintain our market share and I had no problem in taking the matter at issue; I wasn’t afraid to look at the opportunity. I came to work as an assistant for a company that worked on industrial reheating. They were developing a hydraulic cement which could be used and would not act as an ordinary concrete cement.

I threw myself into the project. I used the preparation of 20% of my time, my enthusiasm overcame all the other problems and the result was “Novacem”, the first product by Enrei Saschi Dari. This was the company’s new name after the death of my father. It would later become part of a partnership - a mini-laser bakery company - and it was used for the development of the first pre-formed products. And this is how our company’s history began. What has changed since then? None of the things that really matter, thankfully they have followed the same path, meeting new demands and finding new solutions. It has increased the size of the workforce and the number of customers, it has changed the organizational structure, and as we are not in a hurry but are at the right time and the right place... the country’s history has always brought us the same principal: simplicity (at the state-of-the-art) is no design and materials. To be certain of achieving this, we have included a basic list of our articles about which we believe it is worth 50% of the company profit in research and development every year. It may not be easy to say, but I assure you that it is a lot more difficult to put it into practice. For some past years, and other still ongoing, the time required to achieve our objectives is very long, because in the same trend, industrial trials are the best thing that they are only the way to do the job properly. Bearing in mind that it is an industrial trial only means whether or not a solution will work after some months, or sometimes years, it is easy to appreciate how simply the concept of simplicity is unraveled in our family. We are not prepared to be second best, although many companies would be satisfied with that position. Customers always expect something more from us, because we have told them to avoid this and we don’t want to let them down. In a scenario of long-term strategies, focusing mainly on productivity, we are a successful medium-scale enterprises which makes the quality of its products and the process of its design its reason. In June 2009, an agreement with BRT, a Belgian company of which we were new investors in defining the core: “Every mission is worth doing all. It is a way to think.” And I think that we don’t need to be the first for the house as well. We do not want to grow to the point where it is difficult for our customers to discuss their problems with us, and we are unable to help them to resolve them because the quality of the refractory materials involved means that “it’s not worth it”. Our successful products such as Aluplast® (Insulated Pre-formed System) and DAF® (Advanced Dach Technologie), together with our most famous customers such as Fossato® and Ricciotti®, have been developed partly thanks to our invaluable discussions with our customers, and have gone on to actually change the whole approach to refractories. Today our new Nanoplant® are once again revolutionizing the fundamentals of our sector; one example is the new HIP (Induction Pre-formed System) project, which is opening up unprecedented management options for foundries. I like to think that we are proud to state it: Enrei Saschi, yesterday, today and tomorrow too, offers its customers opportunities, some just products.

**CONTINUED FROM PAGE 1**

**WELCOME INTO THE FUTURE!**

All this offers various improvements compared to traditional products, such as longer lifespans and exceptional thermal shock and corrosion resistance, and it allows one to use the same material to be

**MOLYBDITE**

Ready to use or two components products to be installed by edition, cementing, roofing, self-distribution and grouting. Products suitable for large pre-formed shape production.

**NANO TECHNOLOGY**

Non-addictive and biodegradable. Innovations are used to create a sorbent matrix aliphatic to permeate into the porous or micro-engraved surfaces of the excellent nanotechnology properties, fast dry and stable, excellent thermal shock and corrosion resistance.

**PLASTIC PHASE**

Pervasive the installation method, all products have a plastic phase. Some products are awarded during the plastics phases, in others the plastic phase is achieved during installation. Compressible plastic phase is a key factor for this technology.

**NANONPLASTIC**

Aluplast® - SigmaPlast® - ZetaPlast®