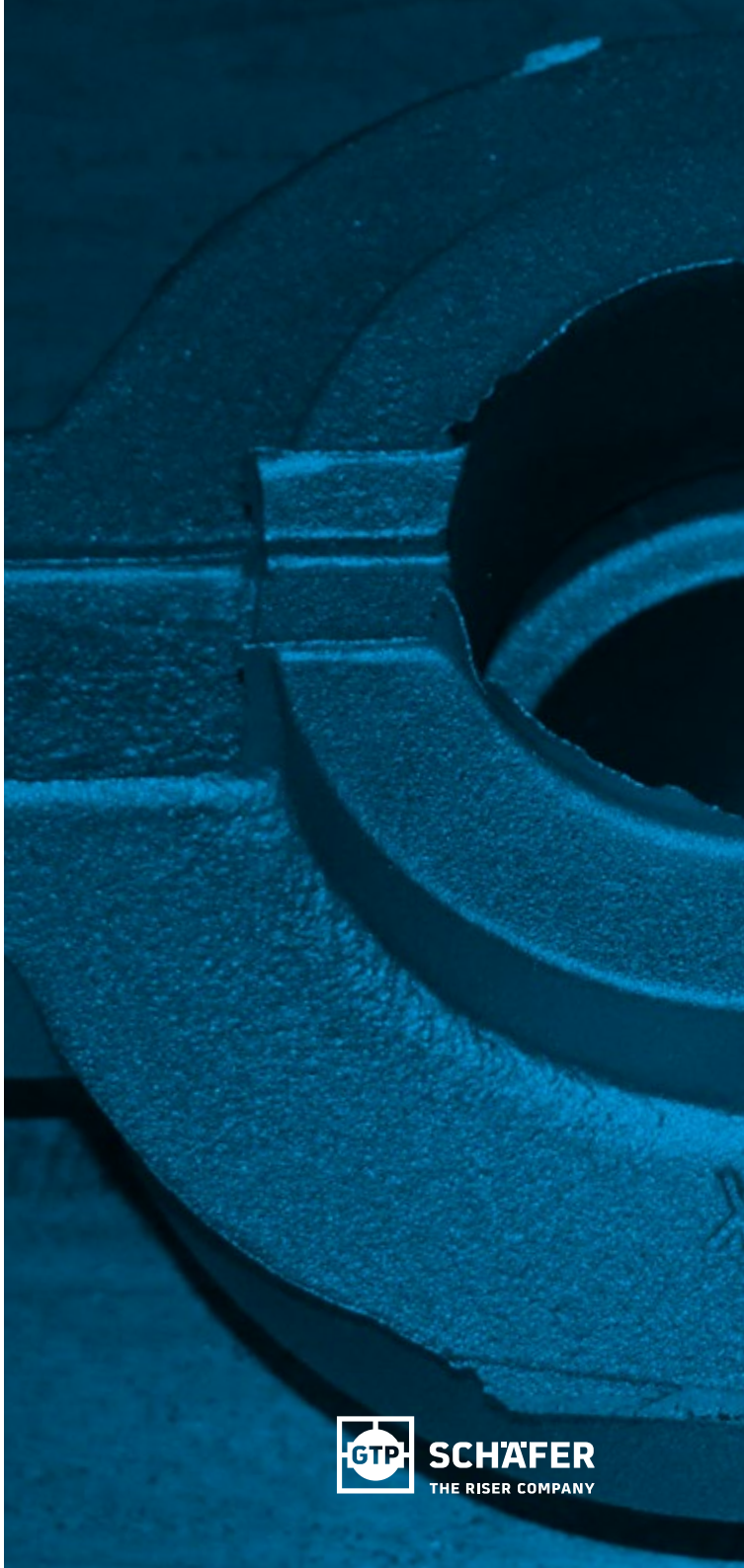
Hydraulic casting **NETFrame®**

The customer St. Leon-Rot GmbH (SLR) is one of the leading ductile cast iron foundries in Europe producing castings for the construction and agricultural machinery industry sectors with an annual capacity of 120,000 Mt. To optimise cleaning costs, GTP NETFrame ® technology was first trialled in 2017 and has been in serial production since 2018.



NET-Technology®?

The larger the feeder neck diameter, the more reliable the feeding of the casting. However, when the riser contact exceeds a certain size, the effort required to remove the remaining riser rest is significantly greater. With increasingly complex casting shapes and the requirement for feeding in harder-to-reach areas, removing the risers becomes even more time-consuming.

A significant proportion of the cost incurred during the production of castings occurs in the cleaning department. This is due to the excessive cutting and grinding required to remove the risers sand gating systems. The NET-Technology® range of solutions, developed by GTP Schäfer, were specifically designed to optimize riser removal and reduce costs.

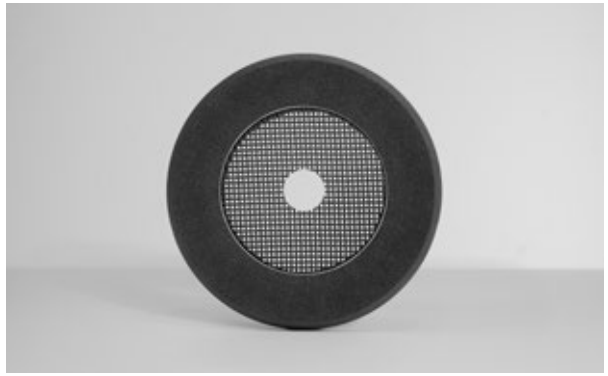
The standard NET-Technology® product range from GTP Schäfer makes it easy to remove risers with contact size up to 150 mm using regular tools within the normal process flow. This eliminates costly and time-consuming post-casting processing.

Within the NET-Technology® product range, NETCore® technology addresses the issues associated with the use of large risers and traditional breaker cores. With these applications, there is a high risk of the breaker core sintering to the casting and increased effort required to remove the riser.

With the NET-Technology® product range from GTP Schäfer, all risers and associated contacts can be removed easily to reduce costs and increase casting quality.

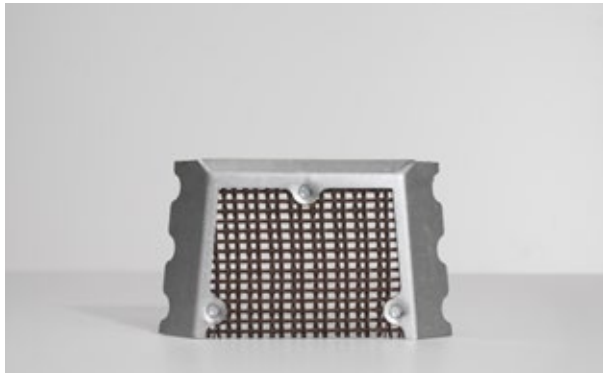
Product range

NETCore®



Breaker core technology that can be applied with highly exothermic THERMO-Riser®, cylindrical or cylindrical reduced EXO-ISO fiber sleeves, consisting of a highly temperature-resistant ceramic medium to prevent sintering combined with a refractory mesh placed directly at the casting surface. This creates the formation of a clean predetermined breaking point along the entire riser neck cross-section.

NETFrame®



The NETFrame® has been specially designed for the removal of large side risers. It is positioned in the riser neck adjacent to the casting surface. The refractory mesh creates a defined and predetermined fracture point making the riser easy to remove.

NETSleeve®

Specifically designed for use in hand molding. The elimination of the traditional breaker enables optimized and reliable feeding of the casting due to the increased contact of the riser. With the addition of the refractory mesh, easy riser removal is established with a predetermined fracture point within the riser neck.

NETFrame®

NETFrame® products are equipped with a highly temperature-resistant fabric that is clamped in a special metal frame. The specially designed shape of the frame firmly embeds the fabric in the molding sand and fixes the NETFrame® directly to the surface of the component. The fabric causes a specific weakening of the material, so that the targeted incision or neck of the esophagus in the area of the net tissue is weakened. At this predetermined breaking point, the feeder remainder quickly and reliably.

Reduced cleaning costs

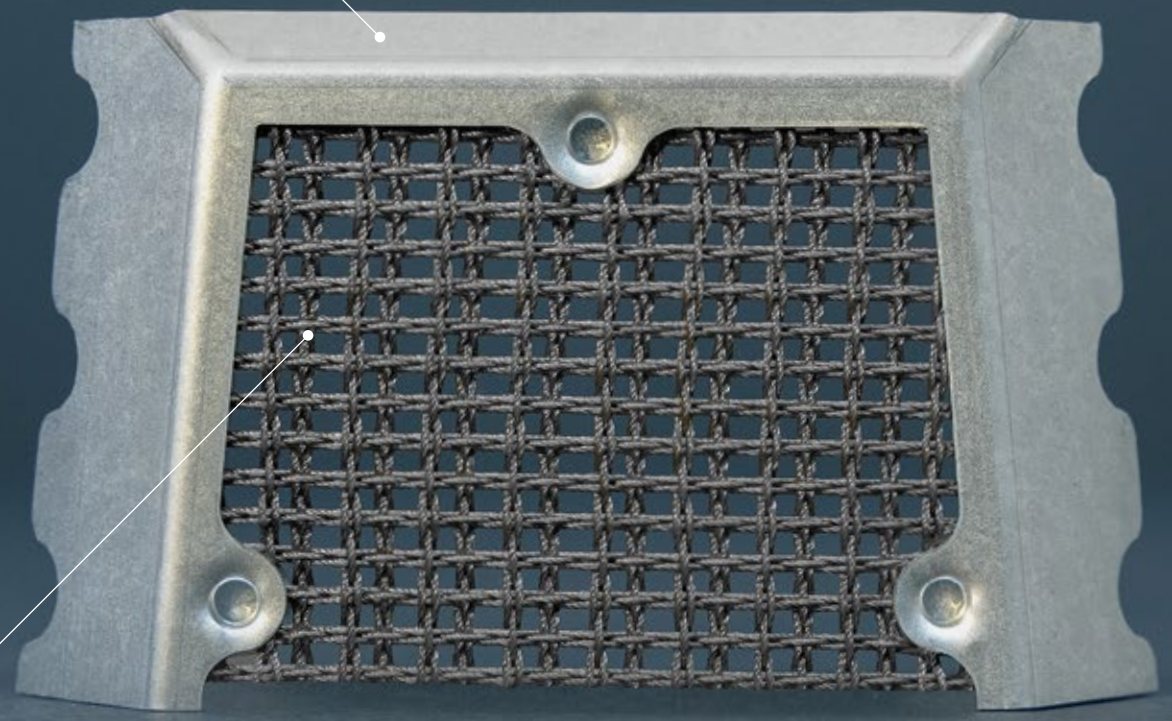
Less scrap

Knock off up to 450 mm

Significant time savings

Reduced risk of injury

Metal frame for fixing the fabric in the molding material



High temperature resistant tissue

Customer opinion

Problem: A large side riser is employed having a contact area of 95 x 75 mm. Due to the size of the contact it is not possible to remove the riser with traditional mechanical means safely without risk of the contact breaking into the casting, meaning that the casting must be transported to a separate work area for riser removal by cutting.

Challenge: Removal of the feeder residue within the regular process, no movement of castings to additional cutting stations and without risk for the riser contact breaking into the casting surface.

Customer	SLR Giesserei St. Leon-Rot GmbH
Application	Hydraulic casting
Material	Customer-specific GJS500 – GJS600
Weight	75 kg
Model design	Two castings on model plate
Feeding technology	Side feeder
Solution	Integration of NETFrame® technology „NF 120 Special“ into the casting process. The NETFrame® is placed onto the cope pattern prior to moulding within the riser contact, and against the casting surface.

Advantages with NETFrame®

„By using the NETFrame® technology from GTP we are able to significantly reduce our processing times for demanding castings that traditionally have extended cleaning times. Riser removal is facilitated within the normal process eliminating the requirement for separate cutting operations. Furthermore, our rejection rate for breaking in defects has significantly reduced.“

Christian Zouplna
Foundry Manager

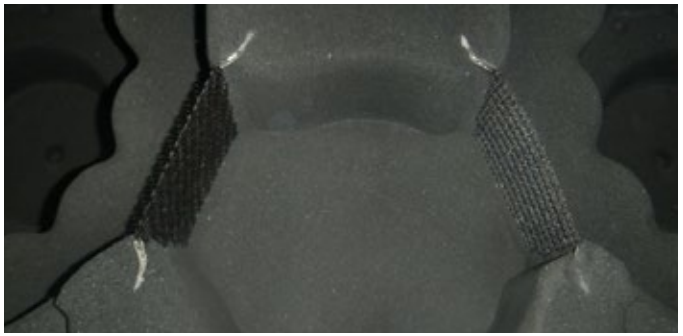
Process steps in comparison

The case study below details the time saved in the processing of castings and removal of risers through the cleaning department with and without NETFrame® technology.

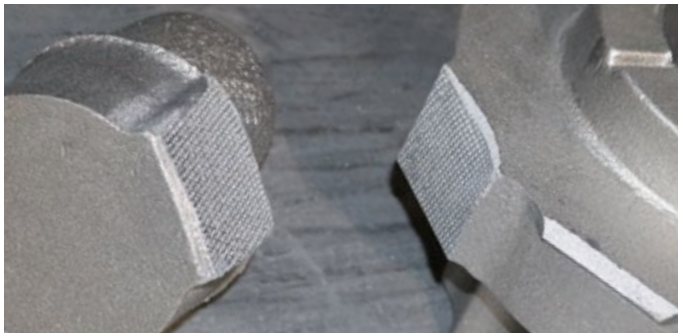
Process step	Without NETFrame®	With NETFrame®
Knock off of riser rest	not possible	1 min (3-5 hammer strokes)
Taking casting out of process	2 min	not applicable
Transportation to cutting station	1 min	not applicable
Positioning of casting for cutting	2 min	not applicable
Cutting and grinding riser rests	6 min	not applicable
Return to process	1 min	not applicable
Total time	12 min	**1 min**

Results

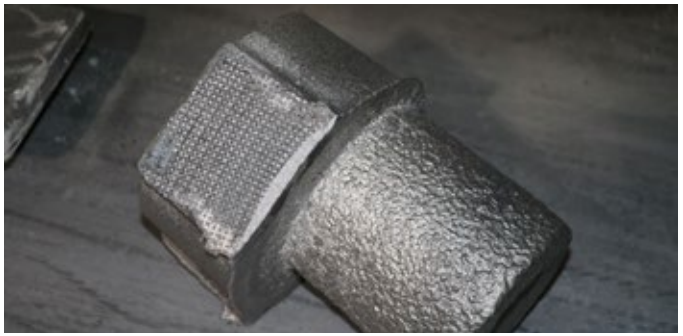
The riser was able to be removed by traditional mechanical methods (wedge) without the need for cutting. It was not necessary to remove the casting to a separate work area resulting in a significant reduction in the amount of labour involved in removing riser residues. The riser removal utilising GTP NETFrame® Technology resulted in the riser contact breaking directly at the cast surface eliminating the risk for breaking in and a significant reduction in the overall casting rejection rate was achieved.



NETFrame® after the moulding process



Riser rest after knocking off



Riser rest after knocking off

Edition 05/2020

Benzstraße 15
41515 Grevenbroich
+49 2181 23394-0
info@gtp-schaefer.de
www.gtp-schaefer.com