



POINT-Riser®  
点冒口  
PX-ME N  
配套金属易割片



## Innovative feeder systems provide cost savings

### 创新的冒口系列产品可以为您节约成本

The trend continues towards increasingly complex technical castings with challenging feeding requirements. Design engineers and foundries seeking to gain performance and cost advantages demand improvements to the traditional feeding systems that are available. The feeders of the PX-ME N product line from GTP Schäfer were specially designed to meet the current requirements of foundries to support the demand for complex castings at lower cost. Internationally, foundries are facing evolving requirements in terms of process optimization, productivity increase, reduction of cycle material of the feeding and gating system, and the cost of machining and cleaning along with the increasing technical complexity of part geometries. To support foundry engineers in meeting these challenges, suppliers are asked to prioritize the development of innovative and process-optimized product solutions for their customers.

To respond to their customers' need for a standard product that offers a technical solution with both cost and efficiency benefits, GTP Schäfer developed their "POINT" riser portfolio. The portfolio has been developed to meet the demand for increasingly smaller feeder-to-casting contact areas on complex pattern contours and handle the high compaction pressures of the molding machines.



burning POINT-Riser®



随着铸造技术越来越复杂的发展趋势，对补缩系统也提出了新的挑战。为了寻求在性能和成本优势上的进一步要求，设计工程师和铸造厂要求对现有的传统补缩系统进行改进。GTP Schäfer公司的PX-Me N 产品线的冒口经过特殊设计，以满足铸造厂当前的要求，以较低的成本满足复杂铸件的需求。

在国际上，随着技术水平的提高，铸造厂在工艺优化、生产率提高、浇注系统循环材料减少、加工和清洗成本等方面面临着不断化的要求，要求供应商优先为客户开发创新和工艺优化的产品解决方案。

为了满足客户对标准产品的需求，该产品提供了一种既有成本又有效率的技术解决方案，GTP Schäfer开发了他们的“点”冒口组合。该组合已开发成为以满足冒口颈与铸件接触面积越来越小，在复杂的模具形状和高压力机械造型线上使用。

## Individual options for every application

### 适用于各种选择的配件

**POINT-Risers® have a self-centering shape with a large internal diameter reduced by a smaller aperture in the accessory glued to the feeder, in order to generate a smaller feeder neck profile.**

In addition to the traditional alternatives (exothermic reduction plates), the self-centering POINT-Risers® are also available with a metallic breaker core, or "ME metal sheet." It comprises a convex metal sheet firmly joined to the feeder body. Its major advantage is the high mechanical stress resistance of the metallic breaker core, especially on state-of-the-art high-pressure molding machines. The ME metal sheet is available with bore diameters ranging from 15 to 55 mm, depending on the modulus of the feeder as well as the individual application (e.g. material characteristics). In addition to standard round diameters, oval contact diameters (20 mm x 30 mm) are available for narrow and elevated positions, such as flanges, that only have a wall thickness of 20 to 30 mm but require the largest feeder neck possible.

This development is a key characteristic of the comprehensive feeding system solutions represented by POINT-Risers®. The feeder system is tailored to the needs of customers and processes with a variety of sizes and configurations.

The feeder can also be customized with regard to the choice of the feeder material. If, for example, the customer wishes to avoid fluorine contamination of the sand system from the feeders to meet the disposability criteria of returned sand, it is possible to choose fluorine-reduced or fluorine-free feeder material instead. For larger feeder modules, it is best to increase the insulating properties of the feeders. Cold-box-bound feeder materials are also available. Feeder size, contact geometry, and material type can be selected to support all customer and technical requirements.



Selected types the POINT-Riser portfolio®

**点冒口具有自我定位中心功能，将金属易割片用胶粘在冒口颈位置来达到将冒口颈缩小的功效。**

除了传统的替代品（放热易割片），自我定位中心的点冒口还配有覆膜砂易割片或“ME金属片”。它包括一个牢固地连接到给料机主体的凸面金属板。其主要优点是金属易割片具有较高的机械应力抗力，尤其是在最先进的高压造型机上。ME金属板的孔径范围为15至55 mm，这取决于冒口的模数以及单独应用（例如材料特性）。除了标准的圆直径外，椭圆冒口颈直径（20mmx30mm）也可用于狭窄和升高的位置，如壁厚仅为20至30 mm但需要最大冒口颈的法兰。

这一发展是POINT Risers®代表的综合补缩系统解决方案的一个关键特征。冒口系统可根据客户和各种尺寸和配置的流程进行定制。

冒口也可以根据冒口材料的选择进行定制。例如，如果客户希望避免冒口对砂系统的氟污染，以满足砂循环的可处置性标准，则可以选择减氟或无氟的冒口材料。对于较大的冒口模数，最好提高冒口的保温性能。也可提供冷箱装冒口材料。可以选择冒口尺寸、触点几何形状和材料类型，以满足所有客户和技术要求。



## Best choices for foundry engineers 铸造厂工程师最好的选择

The feeders of the PX-ME N series offer foundry engineers a wide range of possibilities with regard to the molding application technology to be applied, making it possible to tailor the application technique to the individual casting conditions.

For the self-centering inner contour of the POINT-Risers® both spring-loaded and fixed-location pins can be used to hold the feeder above the pattern contour prior to compaction. Image 1 shows the schematic example of a PX-ME N feeder before and after compaction, using either spring-loaded or fixed pins.

### Application technology

During the compaction of the molding sand, the high mechanical pressure exerted by the molding machine squeezes the ME metal sheet with the feeder previously held upright towards the pattern plate, thereby forming a predefined breaker edge right on top of the casting surface. The ME metal sheet is held on the pin above the pattern (image 2), and the metal sheet will be pushed down to the pattern plate during the mold compaction process. Variations in the pin height make it possible to streamline the process parameter “height of feeder neck” with regard to process safety and stability.

After compaction, the POINT-Riser® fits against the pattern contour with the edge of its metal sheet (image 3). Thus the locating surface of the feeder is only marginally larger than the selected riser neck diameter of the ME metal sheet.

Optimum sand compaction underneath the feeders is another advantage achieved by the fact that the PX-ME N feeder is held upright by the pin prior to compaction. The compaction level of the sand under the riser can also be controlled by the height of the pin and customized to suit the individual position.

PX-ME N系列的冒口为铸造工程师提供了一系列关于所应用的成型应用技术的可能性，使其能够根据具体的铸造条件调整应用技术。

对于POINT Risers®的自动定心内部结构，在压实之前，可以使用弹簧和固定定位销将冒口固定在模具上方。图1显示了PX-ME N冒口在压缩前后的示意图示例，使用弹簧或固定销。

### 应用技术

在型砂压实过程中，成型机施加的高机械压力挤压ME金属板，冒口先前垂直朝向模板，从而在铸件表面的正上方形成预定义的冒口颈去除点。

Me金属板固定在模具上方的销上（图2），在模具压实过程中，金属板将向下推到模板上。销钉高度的变化使工艺参数“冒口颈颈部高度”在工艺安全性和稳定性方面得以简化。

压实后，POINT Riser®与金属板的边缘紧靠模具边缘（图3）。因此，冒口的定位面仅略大于所选ME金属板的冒口颈直径。

冒口下方的最佳砂压实是另一个优势，即在压实之前，PX-MeN毛裤由销保持直立。冒口下砂的压实度也可以通过销子的高度来控制，并根据具体位置进行定制。

根据材料、加工余量和位置，销的下端可以有一个额外的斜边。它避免了在去除过程中，由于冒口残余去除时产生凹陷对铸件表面造成的损坏。

## Application technology

### 技术应用

#### Application technology with fixed pin 固定销的技术应用

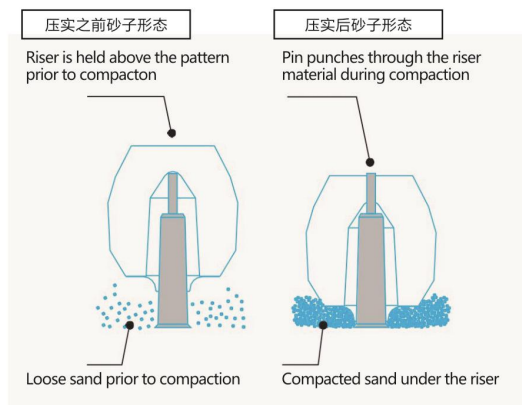


Image 1: Application technology with fixed pin

#### Application technology with spring-loaded pin 弹簧销的技术应用

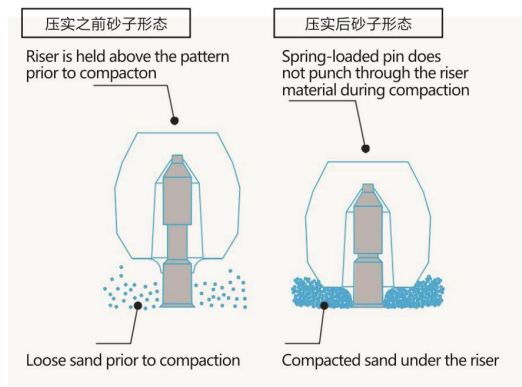


Image 2: Application technology with spring-loaded pin

## Process-secure feeding

### 工艺-安全补缩

In addition, these sleeves significantly reduce the length of the feeder neck, which in turn lessens the risk of early “freezing” of the feeder neck.

The innovative POINT-Riser® technology with ME metal sheets makes it possible to apply feeders to small, irregular, or even bent surfaces without risk of damage to the breaker core. This feeder system significantly enlarges the field of application of feeders, especially on extremely small or protruding locating surfaces such as cams, knuckles, or flanges.

In narrow areas or positions, the foundry engineer usually has the option between oval breaker cores or a POINT-Riser® with an exothermic reduction plate. The application of oval breaker cores is restricted by the available support area on the pattern, or these support areas need to be enlarged, which creates additional cleaning work. While using POINT-Risers® with exothermic reduction plates, it is possible that parts of the riser necks remain after the knock-off process. Especially for these narrow contours, the “MEov N” metal sheet has been developed. Using the

The lower end of the pin can have an additional bevel edge, depending on the material, machining allowance, and location. It avoids damage to the casting surface caused by feeder rests breaking into the casting during knock-off.

oval metal sheets can reduce the riser neck diameter by 10–15 mm compared to exothermic reduction plates or flat metal disks.

In the case of narrow surfaces, the foundryman previously had the option of using either an oval breaker core or a POINT-Riser® with an exothermic reduction plate. The application of oval breaker cores is limited by their contact surface on the pattern, or the contact area on the pattern must be enlarged.

The consequence of this is increased cleaning work at the post-processing stage.

With POINT-Risers® with an exothermic reduction plate, parts of the riser necks can remain on the casting when the riser residues are “knocked off,” resulting in comparatively high finishing costs. The “MEov N” metal disk with an oval riser neck cross-section was developed

especially for narrow flanges and web-like contours, so that the above-mentioned enlargements of the contact area can be avoided. In comparison to exothermic reduction plates or flat metal breaker cores with oval holes, experience has shown that the oval neck is the best solution for this purpose and shortens the neck by about 10 to 15 mm.

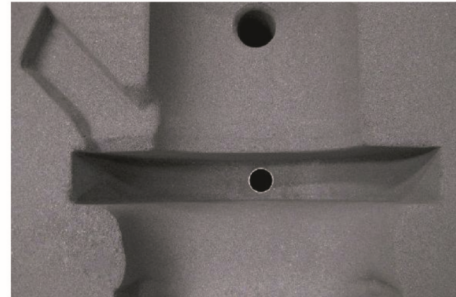


Image 3: POINT-Riser® in mold after 点冒口下压后的造型效果



### 点冒口在模具上的安装位置

采用ME金属板的创新POINT Riser®技术,可以将冒口应用于小型、不规则甚至弯曲的表面,而不会对易割片造成损坏。这种给冒口系统大大扩大了冒口的应用范围,特别是在极小或突出的定位面上,如凸轮、转向节或法兰。

在狭窄区域或位置,铸造工程师通常可以选择椭圆形易割片或带发热片的POINT-Riser®。椭圆形易割片的应用受到模具上可用支撑区域的限制,或者这些支撑区域需要扩大,这就产生了额外的清理工作。在使用带发热片的POINT Risers®时,部分冒口颈可能在敲落工艺后有残留。特别是对于这些狭窄的轮廓,开发了“MEov N”金属片。与发热减压或扁平金属盘相比,使用椭圆形金属板可将冒口颈部直径减小10-15mm。

在窄表面的情况下,铸造工以前可以选择使用椭圆形易割片或带发热片的POINT Riser®。椭圆形易割片的应用受其在模具上的接触面限制,否则必须扩大其在模具上的接触面积。

其结果是增加了后处理阶段的清理工作。使用带有放热片的POINT Risers®,当冒口残余物被“敲掉”时,冒口颈的一部分可以留在铸件上,从而导致相对较高的加工成本。为了避免上述接触面积的扩大,特别针对窄法兰和腹板状轮廓,开发了一种具有椭圆冒口颈横截面的“MEov N”金属盘。与发热片或带椭圆形孔的扁平金属易割片相比,经实验表明,椭圆形颈部是达到此目的的最佳解决方案,并将颈部缩短约10至15mm。



Applicable on small spaces  
应用在小空间部位



Higher output - more castings per box  
提高工艺出频率



Scrap reduction  
减少废品



Shorter processing times  
减少生产时间



Fluorine-containing and fluorine-free feeder masses available

含氟  
无氟冒口质量可选用



Low emissions due to inorganic binders system  
无机粘胶剂排放低



## REDUCING PROCESSING TIME BY EFFICIENT REMOVAL 易于去除冒口减少生产时间

An accurate, predetermined breaking edge formed by the ME metal sheet (image 4) immediately above the casting surface facilitates the efficient and safe removal of the feeder rest in the cleaning shop. The minimized locating surface of the ME metal sheet creates a high-quality surface (image 4). The fettler is saved the tedious task of extensive grinding of the casting around the feeder neck. This reduces the throughput times of the castings as well as the fettling time. In addition, the risk of scrap caused during cleaning is reduced due to defined breaking edges and less complicated fettling operations.

在铸件表面正上方由ME金属板（图4）形成的准确、预定的断裂边缘有助于在清理车间高效、安全地去除冒口残余。ME金属板的最小化定位表面创建了一个高质量的表面（图4）。费特勒省了繁琐的任务，减少了大量的切割打磨铸件周围的冒口颈部的时间。这就减少了铸件的生产时间和焊补时间。此外，由于明确的断裂边缘和容易的清理操作，清理过程中产生废料的风险降低。



Image 4: Knock-off area 冒口颈去除部位的效果

## COST ADVANTAGES FOR VOLUME PRODUCTION

### 批量生产的成本优势

Due to the unique capabilities of the POINT- Risers® the PX-ME N series provides foundries with a highly cost-effective alternative. The cost savings realized far exceed the cost of the risers being used. The saving potential of this functional riser technology can be summarized as follows:

- 1.Yield improvement due to higher efficiency of exothermic POINT-Risers®
- 2.Flexible allocation on extreme casting positions – directly on the spot
- 3.Higher efficiency of pattern space utilization – more castings per box
- 4.Reduction of scrap rate due to higher process stability
- 5.Reduction of cleaning costs, scrap, and time
- 6.Reduction of throughput time

由于POINT-Risers®的独特功能，PX-MEN系列为铸造厂提供了一种高性价比的替代品。节约的成本远远超过使用冒口的成本。这种功能冒口技术的节约潜力可概括如下：

- 1.由于发热点冒口的高效率，产量提高。
- 2.应用于各种复杂位置，定点放置。
- 3.高效的兴办利用空间，可放置更多的铸件模具。
- 4.工艺稳定性提高，废品率降低
- 5.减少清理成本，废品和工时
- 6.减少生产时间



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