



等离子割缝筛管 Plasma Slotted Liner

产品特点:

Characteristics of Plasma Slotted Liner:

等离子割缝筛管的结构特点——复合（T型）缝腔

等离子割缝筛管的缝腔为复合（T型）缝腔，它的结构为每条割缝从管外至管内都是由依次连接的角度较小的梯形缝、过渡圆弧和角度较大的梯形缝构成的。该筛管外层的角度为较小的微梯形，厚度为2~3mm，由于角度很小，降低了液流对缝口的磨损速度，管壁内层较大角度的梯形缝可使缝腔保持畅通，具有很好的“自洁”能力。

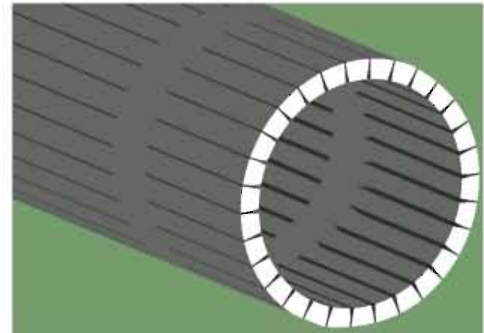


图1 复合缝腔示意图

Structural characteristics——compound cavity

Every slot from outside to inside of the pipe consists of trapezoidal slot similar to rectangle with outside narrow and inside wide, transitional arc and another trapezoidal slot with one large angle. The outside trapezoidal slot is similar to rectangle whose thickness is 2~3mm. The angle of outside trapezoidal slot is very small, which weakens the corrosion ratio of oil with sand and therefore prolongs the service life of screen pipe. Because of the large angle of inside trapezoidal slot, the flow resistance of crude oil caused by the slot can be greatly reduced, which improves the efficiency of oil production. Plasma slotted liner has the advantage of “self-cleaning”

等离子割缝筛管的机械特性——强度高于激光割缝筛管

等离子割缝管是由高频等离子束在水基复合工作液中切削加工的，没有热应力，不会出现激光割缝管中的微裂纹、爆孔等现象，其机械强度明显高于激光割缝管。

Mechanical characteristics---higher mechanical strength than laser slotted liner

Plasma slotted liner is slotted in water-base compound operating fluids by high-frequency plasma beam without heat stress, therefore no heat-affected zone like micro crack and blast of laser slotted liner, which makes the plasma slotted liner preserve higher mechanical strength than laser slotted liner.

等离子割缝筛管缝腔特性——耐腐蚀抗磨性强

等离子束在对筛管进行切割加工的过程中，在高频热处理作用下缝腔表面金属材料产生物理、化学反应，形成一层厚为0.1~0.2mm的淬硬防腐层，该淬硬层的硬度是管体硬度的三倍以上，可有效的增强缝的耐磨性和耐腐蚀性。

Slot surface characteristics——better abrasion resistance and inoxidizability

When the plasma beam is processing the base pipe, the slot surface with the help of high frequency heat treatment generates a 0.1-0.2mm hardening and antiseptic layer after physical and chemical reaction. The layer hardness is three times better than base pipe, which effectively prompt the abrasion resistance and inoxidizability of the slot

等离子割缝筛管缝腔加工特性——精度高

等离子切割缝的缝腔加工精度高、缝宽公差在 $\pm 0.03\text{mm}$ ，表面光滑、粗糙度低，可达 $Ra1.6\mu\text{m}$ 。



图2 等离子割缝筛管缝腔横剖面图
Fig 2. The transverse metallograph reinforcement of plasma slotted liner

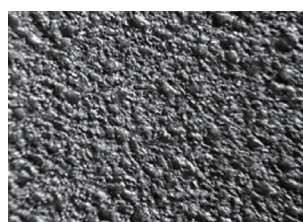


图3 等离子割缝筛管的割缝表面图
Fig 3. The section view of the slot surface of plasma slotted liner

(注：此为显微镜200倍图像 Remarks: 200x magnification under a microscope)

Slot processing characteristics——high accuracy of slot width

The slot width shows high accuracy and the tolerance is $\pm 0.03\text{mm}$. The smooth surface can be $Ra 1.6\mu\text{m}$.

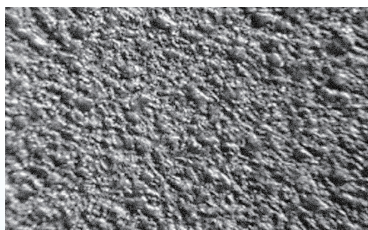


图4 等离子割缝筛管割缝表面图
Fig 4. The surface profile of plasma slotted liner

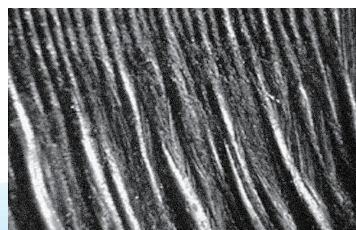


图5 激光切割筛管割缝表面图
Fig 5. The surface profile of laser slotted liner

(注：此为显微镜200倍图像 Remarks: 200x magnification under a microscope)

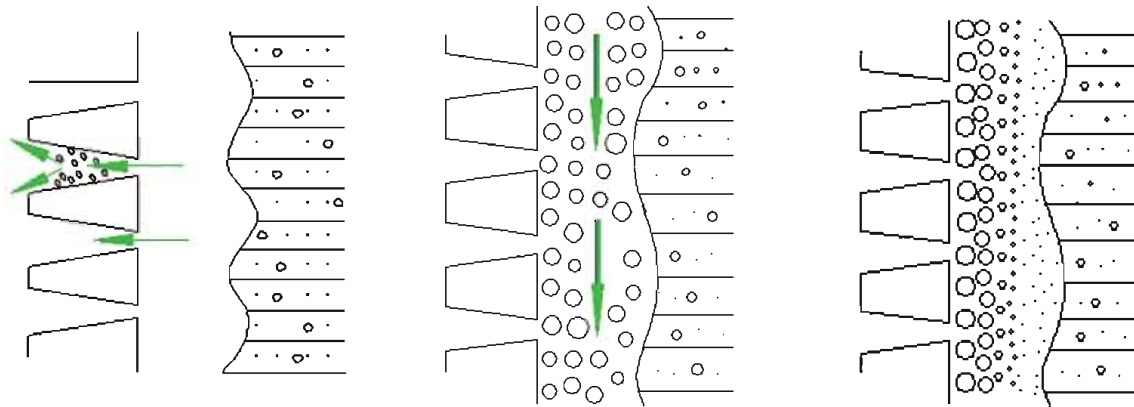


等离子割缝筛管使用特性——自洁能力强

自洁功能是由外窄内宽梯型缝隙结构决定的。且缝腔光洁，所以小于缝宽的细粒粉砂或泥质很容易通过梯型缝隙，大于缝隙宽度的砂挡在管外，在重力作用下下沉，形成高渗透“砂桥”，起到了管外砾石充填的作用。

Application characteristics——self cleaning effect

Self cleaning effect is generally attributed to trapezoid slot shape, narrow at the surface and increasing in width at the interior, and the slot surface is smooth, which lets fine sands or shale easily enter without plugging. The larger sands blocked will sink as result of gravity to form permeable sand bridge to achieve the effects of external gravel pack.



Interior Self Cleaning

Exterior Self Cleaning

Sand Bridge



等离子割缝筛管规格:

Plasma Slotted Liner Specification

筛管外径 (mm) Plasma Slotted Liner OD			φ 50——φ 219	
筛管长度 (mm) Length of Plasma Slotted Liner			1000——12000	
割缝宽度 (mm) Slot width	外径割缝宽度 Outside slot width	0.15—0.5	割缝宽度公差 Tolerance	± 0.03
		0.6—4.0	割缝宽度公差 Tolerance	± 0.10
	内径割缝宽度 Inside slot width		约外径缝宽+0.2 Inside slot width	
割缝缝长 (mm) Slot length	割缝长度 Slot length		60、80、85、100、120	
	缝长公差 Tolerance		± 1.00	
每圈缝数 Slot quantities per circle	根据客户要求定 According to customers' request			
缝圈间距 Distance between the adjacent slots	根据客户要求定 According to customers' request			

适用范围

该筛管适用于直井、斜井、水平井、分支井的下列完井方式:

- 割缝衬管完井
- 裸眼筛管完井
- 裸眼砾石充填完井
- 套管砾石充填完井
- 管外封隔器衬管完井等



Application scope

It can be applied to the following well completion methods of horizontal well, side well, branch well, and gravel pack well completion:

- Slotted Liner Well Completion
- Open Hole Screen Well Completion
- Open Hole Gravel Packing Well Completion
- In-Casing Gravel Packing Well Completion
- Slotted Liner Well Completion with External Casing Packer