

概述 General

高效结晶器是连续浇铸系统中的关键部件，钢水在结晶器内被迅速的冷却，形成一个与结晶器内腔形状一致,有一定厚度的初生坯壳，最终形成生产需要的钢铁铸坯。

配有电磁搅拌器的高效结晶器，解决了连续浇铸的钢坯组织偏析及组织疏松等缺陷，是获得高质量铸坯的有效保障。高效结晶器装置的核心部件是结晶器铜管，其质量和性能决定结晶器的使用寿命，铜管采用连续锥度结晶形式，大大的提高了铜管的传热效率，与传统的结晶器相比，能有效的使初生坯壳在铜管内的传热迅速和坯壳厚度生长更加均匀。确保了钢坯的内部质量和有效控制漏钢现象的发生。

结晶器铜管冷却采用窄水缝冷却形式，使冷却效果得到优化，其冷却水套采用不锈钢靠模成型和多品种模具冲压成型，确保了内水套与铜管间的水缝间隙；结晶器外壳采用普碳钢板制造，经焊接、退火再机械加工等生产工艺流程，保证机械加工精度。

结晶器的生产制造严格按照ISO9001质量体系要求进行，产品质量优良可靠，得到了国内外大型钢铁企业的认可和肯定。

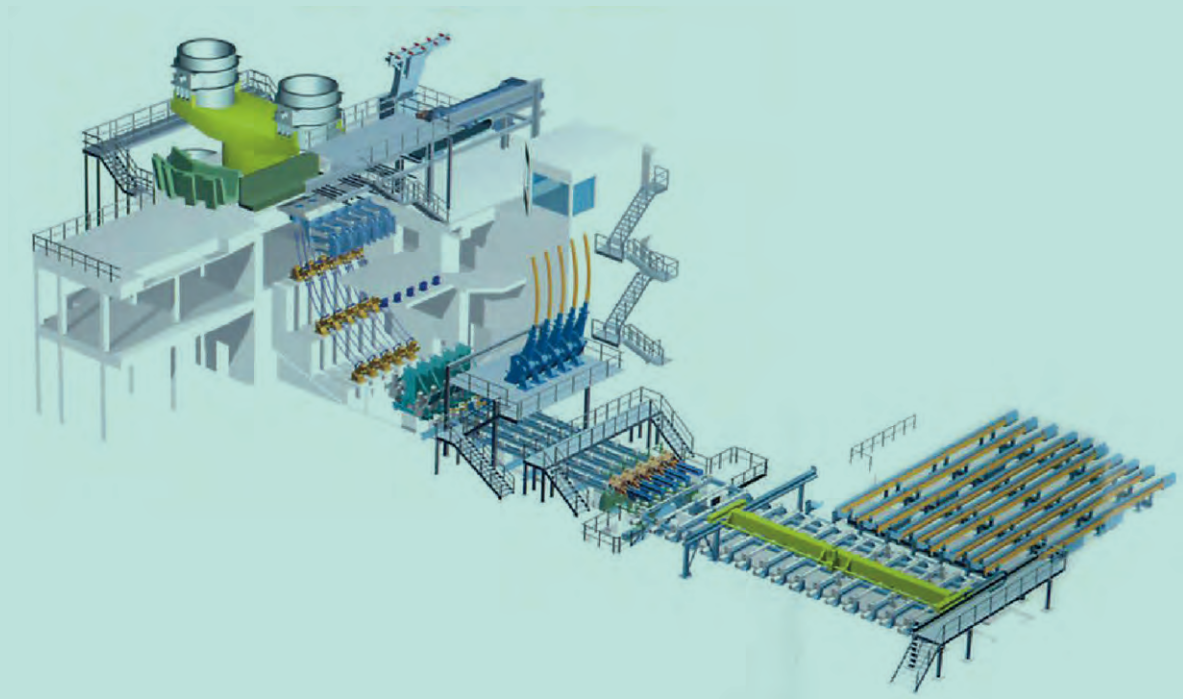
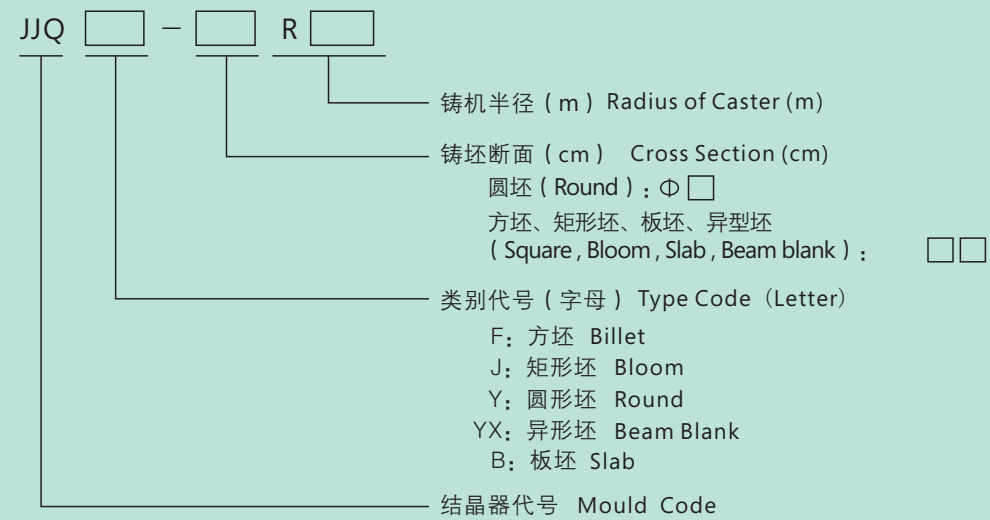
High-efficiency mould is a key part of continuous casting system, in which the molten steel can be rapidly cooled and forms into initial solidification shell of same shape as mould chamber with a certain thickness that finally forms into the bloom needed for production.

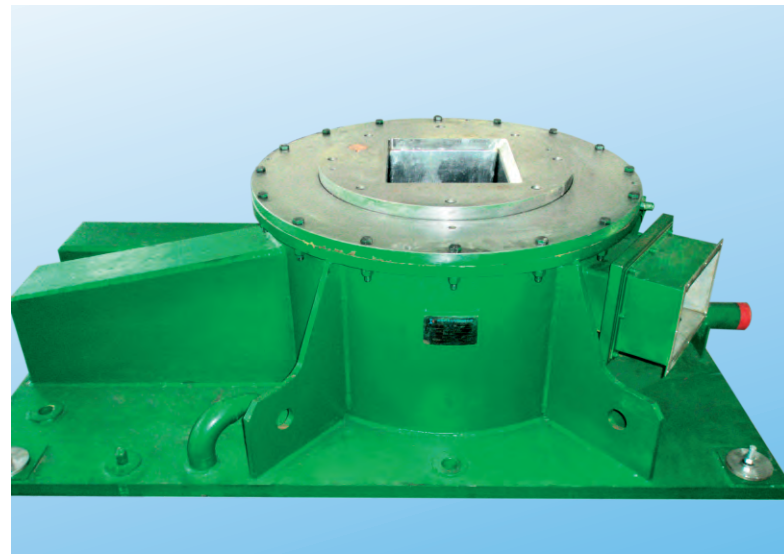
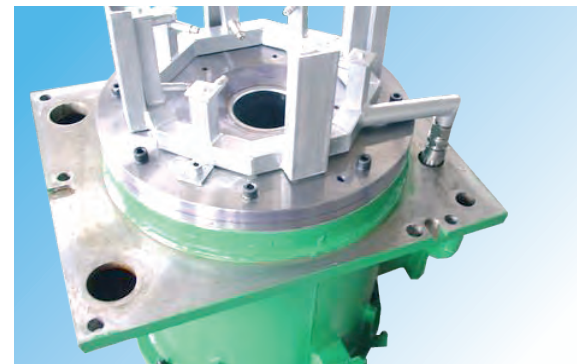
High-efficiency mould equipped with electromagnetic stirrer can solve the problems like segregation and shrinkage during continuous casting, which is a good guarantee for acquiring high quality casting bloom. As key component of mould, the quality and performance of copper tube can determine the service life of mould. The copper tube adopts continuous taper crystallization mode, which can greatly improve the heat transfer efficiency. In comparison with traditional ones, the mould can quicken heat transfer inside the copper tube and equalize thickness growth of initial shell, which ensures the internal quality of bloom and effectively controls steel breakout.

The mould copper tube adopts narrow water gap cooling to enhance the cooling effect, and its cooling water jacket adopts template molding and multi-mold stamping molding with stainless steel to guarantee water seam between internal jacket and copper tube. The mould casing is made of plain carbon steel plate through welding, annealing and machining, etc.

Strictly as per ISO9001 Quality System, KEMEIDA mould has won the recognition from many large steel enterprises at home and abroad with its good and reliable quality and service.

结晶器产品型号说明 Model Designation of Mould



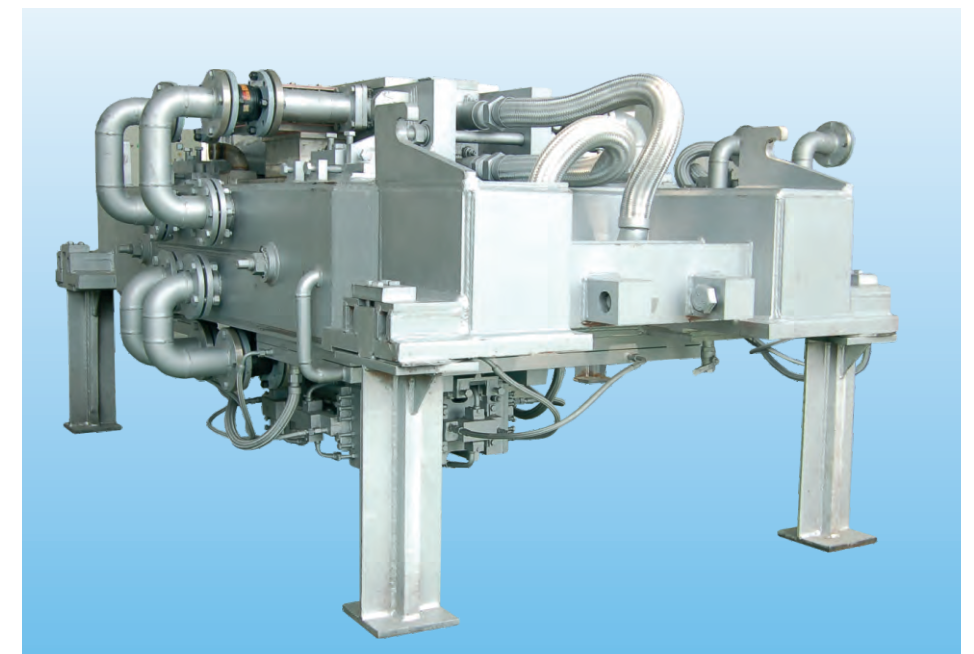
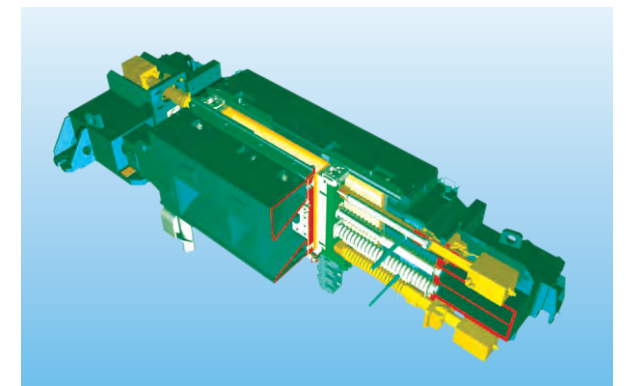
大矩形坯结晶器
Mould for Bloom圆坯结晶器
Mould for Round方坯结晶器
Mould for Billet板坯结晶器
Mould for Slab

板坯结晶器是连铸机的核心设备之一，其作用是通过水冷铜壁强制冷却作用将连续不断注入其内腔的钢液热量导出，使之逐渐凝固成为具有所要求的断面形状和一定坯壳厚度的铸坯，并使这种芯部仍为液相的铸坯连续不断地从结晶器下口拉出，为其在以后的二冷区域内完全凝固创造条件。

板坯结晶器由框架与水箱（活动侧、固定侧）、铜板、调宽装置、窄边夹紧装置、足辊、漏钢预报装置、冷却水配管和润滑配管等构成。

Mould for Slab is one of the key parts of con-caster, which is used to output the heat of steel liquid that continuously pours into the mould through water-cooling the copper wall compulsively, so to solidify it into required section shape and shell thickness. And the slab, still in liquid state inside, shall be continuously drawn out from the below opening of the mould to prepare for the later complete solidification at secondary cooling area.

Mould for Slab consists of frame and water tank (movable side, fixing side), copper plate, width adjustable device, narrow rim clamping device, foot roll, pre-alarm device for breakdown, cooling water piping, lubrication piping, etc.



概述
General

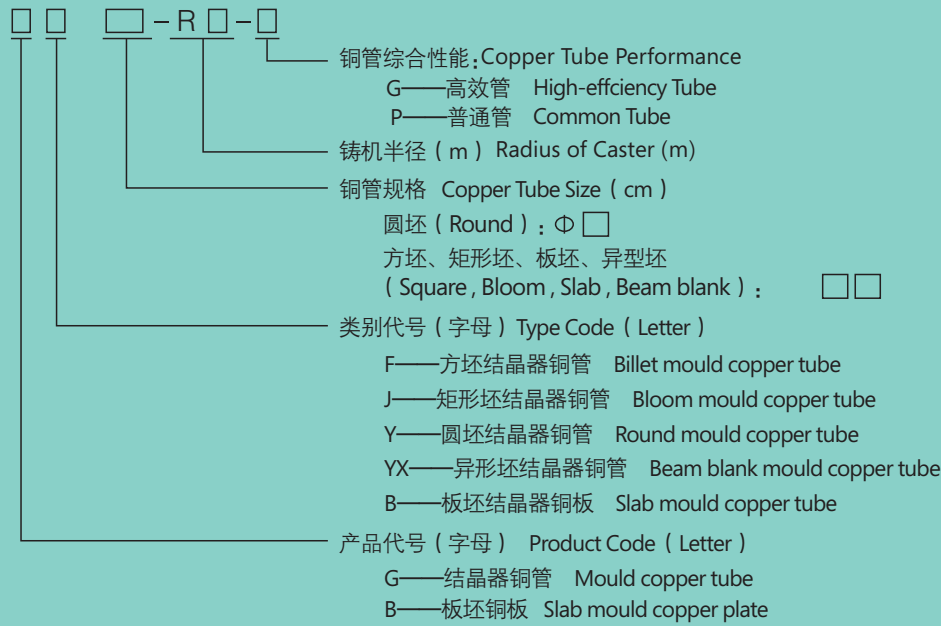
结晶器铜管材料采用导热性良好的磷脱氧铜、银铜或铬锆铜合金，经拉伸、退火、机加等工序完成铜管的成型，其基础强度大，再结晶温度高，钢性优良；为了补偿凝固成坯壳时液态钢的收缩，根据不同的钢种铜管内表面由成型芯杆拉制成抛物线型、钻石型、双锥及单锥连续锥度的倒锥度表面。

铜管内表面采用先进的复合镀技术和环保代铬纳米合金镀层，表面硬度已达到HV=1150，具有良好的耐磨性,与镀铬结晶器铜管相比寿命提高了2－3倍。

The copper tube adopts phosphorus deoxidized copper, silver copper or copper alloy of chromium and zirconium of good heat-transfer as materials, formed and finished though extension, anneal, machining, etc., which has great basic strength, high recrystallization temperature and high rigidity. In order to compensate the shrinkage of liquid steel when it solidifies into bloom shell, contoured core bar is used to draw the inside surface of copper in line with different types of steel grade into parabola type, diamond type, and back taper surface of double-cone and single-cone with continuous taper.

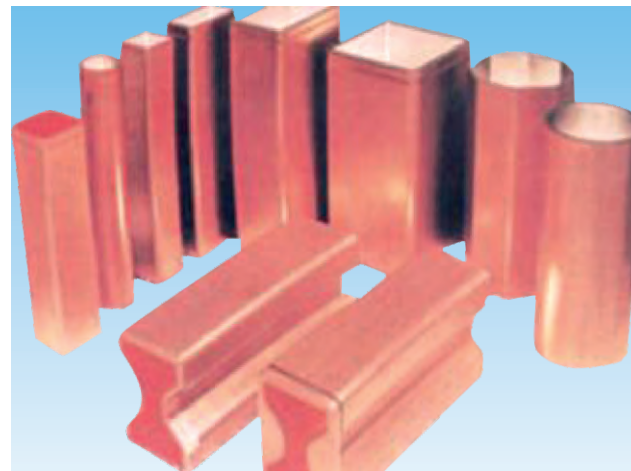
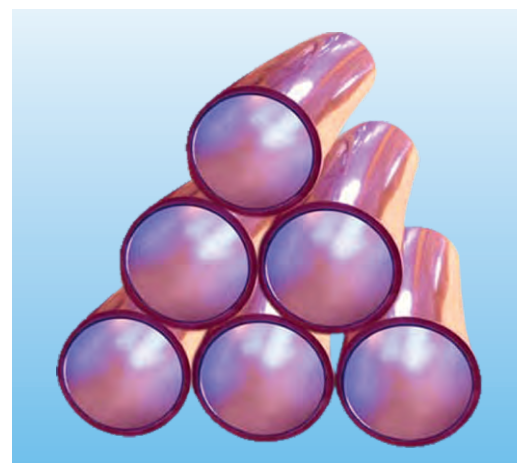
Composite plating and environment-protection chrome-replacement nano alloy plating are adopted in inner surface of copper with hardness HV=1150. Compared with chromium-plating mould copper tube, with good wearing quality, the service life has been increased by 2-3 times.

结晶器铜管型号说明
Model & Specification of Mould Copper Tube



结晶器铜管类型及规格
Model & Specification of Copper Tube

类 型 Model	规 格 Specification (mm)
圆 坯 Round	$\Phi 100\sim 1200$
板 坯 Slab	250×2150、180×2100、250×1750、180×1500、230×2050、320×2300
方 坯 Billet	70×70~300×300
异型坯 Beam Blank	根据用户要求 As per the user' s requirement
矩型坯 Bloom	100×180、120×400、130×480、135×470、140×150、150×425、160×280、180×430、360×450
长 度 Length	704 ~ 1000mm
弧 度 Radius	R4000 ~ R15000
锥 度 Taper	单锥、双锥、三锥、多锥、抛物线、双曲线、钻石 Single taper, double-taper, tri-taper, multi-taper, parabola, hyperbola and diamond
材 料 Material	银铜、磷脱氧铜、铬锆铜 silver copper, phosphorus deoxidized copper, chromium zirconium copper
镀 层 Plating	常规硬铬层、复合镀层、环保代铬纳米合金镀层 General hard chrome plating, composite plating, environment-protection chrome-replacement nano alloy plating
铬层硬度 Hardness of Chrome Plating	常规HV=900、新技术镀层HV=900~1150 Generally HV=900; new type plating HV=900~1150

各种型号的结晶器铜管
Different types
of mould copper tube方坯结晶器铜管
Billet mould copper tube圆坯结晶器铜管
Round mould copper tube矩形坯结晶器铜管
Bloom mould copper tube板坯结晶器铜板
Slab mould copper plate

板坯结晶器铜板，材质采用铬-锆-铜合金（Cr-Zr-Cu），该合金不仅具有较高的强度和硬度，而且还具有良好的导热性、耐磨性和耐蚀性，机械加工性能良好。为确保均匀强化冷却，结晶器铜板结构设计了冷却水槽，以满足高效能冷却强度。工作表面采用镀镍铁、镍钴，具有高硬度、高耐磨性表面，以获得高过钢量的使用要求。

Slab mould copper plate is made of Cr-Zr-Cu alloy which not only has high rigidity and hardness, but also good heat-transfer, abrasion & corrosion resistance, and good machining performance. In order to ensure the compulsive cooling equalized, the mould copper plate is designed with cooling trough to meet the requirement of high-efficiency cooling intensity. The working surface is made of nickel-plated iron and nickel-cobalt, which has high hardness and abrasion resistance, to meet the requirement of high rolling amount.

