

制砂生产线通常由振动给料机、颚式破碎机、直通冲击式破碎机（制砂机）、振动筛、洗砂机、胶带输送机、集中电控等设备组成；设计产量一般为 50-500 吨/小时。我公司历经数年的开发研究，将具有国际先进水准的直通冲击式破碎机（制砂机）与公司其他系列产品相配套，设计出的全套制砂生产线，处于行业领先地位。下面介绍我公司制砂生产线单台设备的工作原理。

Part II

Sand making flow consists of vibrating feeder, jaw crusher, vertical shaft impact crusher (sand making machine), vibrating screen, sand washing machine, belt conveyor and centrally electric controlling system, etc. The designed capacity is from 50t/h to 500t/h. After many years' research, our company has developed an internationally advanced vertical shaft impact crusher, which can be used together with other machinery as a complete sand making flow. This design racks a leading role in the same industry.

The following is a brief introduction of the each machine's operation principle in sand making flow:

颚式破碎机

我公司生产的颚式破碎机是集国内外同类产品的成功经验，潜心研究出的一种高效，节能的破碎设备。广泛运用于矿山、冶金、建材、公路、铁路、水利和化工等多种行业。具有破碎比大，产品粒度均匀、结构简单，工作可靠，运营费用低等优点，是初级破碎最理想的选择设备。

Jaw crusher

Our jaw crusher is a high efficient and energy saving machinery which introduces successful experience of the same machines home and abroad. These series of jaw crushers are widely used in mine, metallurgy, construction, road building, railway, water conservancy and chemical industry. They feature high crushing ratio, good shape in product, simple structure, reliable performance and low operation cost. They are ideal choice for primary crushing.

颚式破碎机工作原理：

电动机驱动皮带和皮带轮，通过偏心轴使动颚上下运动，当动颚上升时肘板和动颚间夹角变大，从而推动动颚板向定颚板接近，与此同时物料被挤压、搓、碾等多重破碎；当动颚下行时，肘板和动颚间夹角变小，动颚板在拉杆、弹簧的作用下离开定颚板，此时已破碎物料从破碎腔下口排出，随着电动机连续转动破碎机动颚作周期性的压碎和排料，实现批量生产。

Operation principle of jaw crusher:

The motor drives the belt and the grooved wheel, which connect the eccentric shaft. Through the movement of eccentric shaft, the movable jaw plate moves up and down. When movable jaw plate moves up, the angle between it and toggle plate will be enlarged, so the movable jaw plate will be close to fixed jaw plate. Then, the materials will be pressed and crushed; when movable jaw plate moves down, the angle between it and toggle plate will be reduced, movable jaw plate will moves away from fixed jaw plate due to the tension rod and springs. At this moment, the crushed materials will be discharged at discharge opening. With moving of motor and periodical movement of movable jaw plate, material will be crushed and discharged gradually, so that batch production will be reached.

直通冲击式破碎机

直通冲击式破碎机是我公司专家多年研制矿山机械设备智慧和正确决策的结晶，是一种具有国际先进水平的高能低耗设备，在各种矿石细破设备中起着不可替代的作用，本产品广泛应用于各种矿石、水泥、耐火材料、铝矾土熟料、金刚砂、玻璃原料、机制建筑砂、石料及各种冶金矿渣等多种行业。结构简单合理、自击式破碎，使用费用低；运转平稳、工作噪声小、高效节能、破碎效率高；易损件损耗低，所有易损件均采用国内外优质的耐磨材料，具有使用寿命长等优点。

Vertical shaft impact crusher

VSI crusher is a product based on many professionals' wisdom and right decision in mining industry. It is internationally advanced equipment with low energy consumption. It plays a unique role in crushing equipment. VSI crusher is widely used in various materials crushing, cement, fireproof materials, bauxite, diamond, glass, construction sand, stone material and other clinker and slag in metallurgical industry. It bears the merits of simple structure, self-impact crush, low operation cost, stable operation, little noise, high efficiency,

energy saving, high reduction ratio and little erasion in spare parts. In addition, the quick-wear parts of this machine are made of choiced wear-resistance materials, which ensured its long using time.

直通冲击式破碎机(制砂机)工作原理：制砂机工作是“石打石”的工作原理，即物料由制砂机上部垂直落入高速旋转的叶轮腔内，在高速离心力的作用下，与另一部分以伞状形式分流在叶轮四周的物料产生高速撞击而破碎，物料在相互撞击后，又会在叶轮和机壳之间与物料形成涡流并产生多次的相互撞击、摩擦而粉碎，最后从下部排料口垂直排出。

Operation principle of VSI crusher:

Simply speaking, the operation principle of VSI crusher is “stone strikes stone”, that is, materials enter the impeller cavity, which is turning at high speed, at the top. With centrifugal force, the materials will impact other materials that fall around the impeller. Then, after interact striking, materials will impact on material layer between the impeller and scaleboard for many times and will be rubbed and crushed. Then they will be discharged at the bottom.

制砂生产线流程：

石料由振动给料机均匀地送到颚式破碎机进行粗破，粗破后的物料送入细颚破进行再次破碎，破碎后的物料由胶带输送机送入振动筛进行筛分，满足制砂机进料粒度的石子进制砂机进行制砂，不满足要求的返回细颚式破碎机重新破碎；从制砂机出来的物料返回到振动筛重新进行筛分，筛分出的满足要求的砂子送入洗砂机清洗，清洗后由成品输送带输出即为成品。

不满足要求的砂石混合物料送入制砂机进行再次破碎。本生产线最终形成 2 段闭路循环，根据用户的需要还可进行多种配置。

Process of sand production line:

The stone material is sent regularly by the vibrating feeder to the primary jaw crusher, the crushed material is sent to the secondary jaw crusher to be crushed again. The crushed material is sent by belt conveyor to vibrating screen to be separated. The material, whose size is suitable for the feed size of the sand making machine, can be sent to the sand making machine. The unsuitable material should be sent back to the secondary jaw crusher to be crushed again. The crushed material from the sand making machine is sent back to the vibrating screen to be separated. The suitable separated sand, which is the final product, should be sent to the sand washing machine to be cleaned, and then sent by the belt conveyor. The unsuitable separated sand should be sent back to the sand making machine to be crushed again. The producing line forms two closed cycles. The producing line can be changed according to the customers' requests.