



连续缠绕玻璃钢夹砂管道生产线
GRP pipe Continuous winding production line

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“奥联德制造 引领未来”

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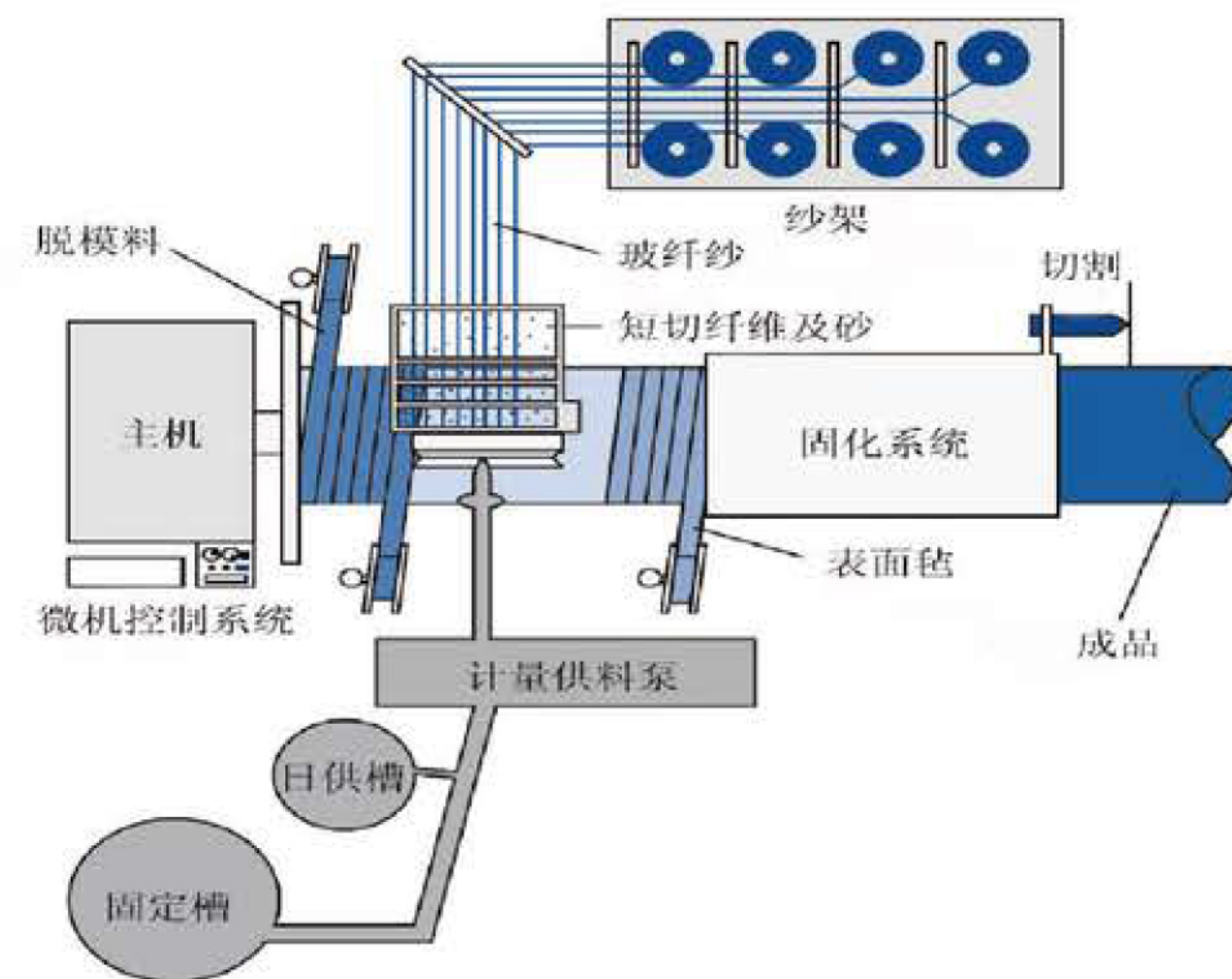
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工艺流程

The process flows



生产线基本配置

The basic production line configuration is as follows



- 缠绕主机Main Winder
- 供料系统Feeding system
- 固化系统Curing system
- 支撑系统 Holding frame system
- 防扭系统 Anti-distortion system
- 切割系统Cutting system
- 卸管台 Unloading system
- 电气控制系统Electrical control system
- 套筒接头设备Swagelok coupling winding machine
- 接头压装Swagelok installation
- 水压测试设备Hydraulic Testing system
- 钢带焊接设备 Steel band fusion system
- 除尘系统Deduster
- 离线管道修整机

供料系统

Feeding system



- 内衬层纤维切割装置
- Liner fiber chopper device
- 结构层纤维切割装置
- Structure fiber chopper device
- 内衬层和结构层加砂装置
- Sand feeding for liner and structure

- 内衬树脂搅拌罐
- Liner resin mixing tank
- 结构树脂搅拌罐
- Structure resin mixing tank
- 石英砂上料系统
- Quartz sand feeding system

固化系统

Curing system



液压升降台、防扭系统、卸管台

Anti-distortion system\Unloading system



支撑系统、防扭系统用液压升降
Hydraulic lifting for support system and torsion proof system
支撑系统、防扭系统配气动助力装置
Support system and anti-torsion system are equipped with pneumatic power assist device
支撑系统配有液压快推系统，使切断的管道与缠绕快速分离
The support system is equipped with a hydraulic fast push system to quickly separate the cut pipe from the winding
支撑系统配有可远近调节托辊，方便托举不同直径管道
The support system is equipped with a near and far adjustable roller, convenient to lift pipes of different diameters
卸管台配自动称重装置
The unloading table shall be equipped with an automatic weighing device

切割修磨系统

Cutting and trimming system

通过在线切割和微调装置，连续缠绕固化好的管道将按一定的长度自动切割，并且同时自动修磨两端。
Pipe will be automatically cut at a certain length and both ends are trimmed by online cutting and trimming devices.

切磨系统结构如下：

- 1、磨消头 1套
- 2、切割头1套
- 3、伺服电机控制磨消进退系统1套
- 4、切割伺服驱动进退系统1套
- 5、切割和整理机架 1套驱动
- 6、除尘器1套
- 7、伺服电机控制修磨车轴向行走系统 1套

The cutting and trimming system is constructed as follows:

- 1、Trimming head 1 set
- 2、Cutting head 1 set
- 3、Trimming advance and retreat system with servo motor control
- 4、Cutting advance and retreat system with Servo motor control
- 5、Car with cutting and trimming 1 set
- 6、Dust collector 1 set
- 7、Car of cutting and trimming axial walking with servo motor drive



套筒接头缠绕机

Swagelok coupling winding machine

作为生产线的主要设备，设计用于缠绕玻璃钢管套。机构构成说明如下：主要装配有管道旋转支架、液压脱管装置、缠绕小车、浸胶开口槽、电气控制系统等。

工作原理如下：首先把密封胶圈套在两个套筒模具上，缠绕已浸胶的纤维，缠绕到设计厚度停机，切断纤维纱，开始旋转固化，固化后启动液压脱模系统把套筒脱出。

As the main equipment of the production line, it is designed to wrap the FRP pipe sleeve. The composition of the mechanism is as follows: mainly equipped with pipe rotating support, hydraulic destripping device, winding trolley, rubber groove, electrical control system, etc. The working principle is as follows: first, the sealing rubber ring is covered on the two sleeve molds, winding the fiber of the rubber, winding to the design thickness, cut off the fiber yarn, and start to rotate and solidify. After curing, the hydraulic



控制系统

Control system



计算机控制系统硬件选用研华工控机、安川伺服电机、欧姆龙传感器，与国外工程师合作研发的软件，系统稳定性好；在线故障自修复；所有原材料送料系统为闭环控制，自动完成喂料、自动在线修磨，生产管道厚度均匀，成品管道性能与理论设计没有偏差；生产过程中自动方式、手动方式随意切换。

The hardware of the computer control system is industrial control machine, Yaskawa servo motor, Omron sensor, and the software developed in cooperation with foreign engineers has good system stability; online fault from repair; all raw material feeding system is closed-loop control, automatically complete feeding and automatic online grinding, uniform pipeline thickness, the performance of the finished pipeline from the theoretical design; automatic and manual switching during the production process.

接头压装

Swagelok installation



作为生产线上的主要设备，设计用于套管和管路的对接连接。机构构成及其工作原理说明如下：主要装配有套管支撑台、套管对接连接用液压推进装置、电气系统等。分别将套管连接到套管支撑台上，并将管道连接到管道支撑台上。启动液压装置，通过液压缸的作用将套管安装到管道上，从而完成套管连接。

As the main equipment in the production line, it's designed for the butt connecting of sleeve & pipe. Mechanism constitution and its working principle are stating as follows:

It is mainly assembled with sleeve and pipe support table, hydraulic propelling device for sleeve & pipe butt connecting, electrical system, etc.

Separately lay the sleeve for jointing onto the sleeve support table and the pipe onto the pipe support table. Start the hydraulic device to mount the sleeve onto the pipe with the action of hydraulic cylinder, thereby finishing the sleeve jointing.

水压测试设备

Hydraulic Testing system

作为生产线上的辅助设备，设计用于玻璃钢管道的水压试验。机构构成如下：主要由应力架、液压升降车、固定应力板、活动板、固定端密封板、活动端密封板、活动推进装置、增压系统、液压系统、电气控制及测试数据显示系统等组装。

As the auxiliary equipment in the production line, it's designed for the hydrostatic testing of GRP pipe. Mechanism constitution are stating as follows:

It is mainly assembled with stress frame, hydraulic lifting truck, fixed stress plate, movable plate, sealing plate of fixed end, sealing plate of movable end, movable propelling device, filling and forcing system, hydraulic system, electrical control and testing data display system, etc.



离线管道修整机

Technical Parameter of Offline Pipe Reconditioning Machine

作为生产线上的辅助设备，设计用于短管的切割和修整。将切割切割的管道铺设在驱动辊和固定辊上。然后启动驱动辊，使管道旋转，调节两端的定位装置。设置切磨头尺寸装置后，开始修整管。

As the auxiliary equipment in the production line, it's designed for the cutting and trimming of short pipe.

Lay the pipe for being cut and trimmed onto the driving roller and fixed roller. Then, start the driving roller to make pipe rotate and adjust the positioning device of both ends. After setting the sizing device of cutting and grinding heads, start to cut and trim the pipe.

