

HBP 华油惠博普集团
CHINA OIL HBP GROUP

HBP 华油惠博普集团
CHINA OIL HBP GROUP

HBP 华油惠博普集团
CHINA OIL HBP GROUP

地址：北京市海淀区马甸东路17号金澳国际大厦12层、16层
Add: 12th&16th Floor, Jin Ao International Building,
No.17 Madian East Road, Haidian District, Beijing, China.
邮编 / Zip: 100088
电话 / Phone: 86-10-82809807
传真 / Fax: 86-10-82809807-811



www.china-hbp.com

股票代码 / Stock Code: 002554



华油惠博普集团成立于1998年，是一家国际化的油气资源开发及利用综合解决方案服务商，致力于为全球客户提供高效、清洁的能源及能源生产方式。

华油惠博普集团总部设在中国北京，共拥有41家全资及控股子公司，10家参股公司，在中东、中亚、非洲等地设有分、子公司及办事处，员工总数1300余人。

2011年2月25日，惠博普在深圳证券交易所上市，股票代码：002554。

China Oil HBP Group, founded in 1998, is an international service provider of integrated solutions for oil and gas resource development and utilization, dedicated to providing global customers with efficient, clean energy and energy production methods.

Headquartered in Beijing of China, HBP has 50 wholly-owned and holding subsidiaries, 10 joint-stock companies. HBP's subsidiaries and branch offices are spread over the Middle East, Central Asia, Africa, etc., with more than 2,000 employees totally.

On 25 February, 2011, HBP was listed on Shenzhen Stock Exchange with stock code: 002554.

惠博普三大产业基地 Three Major Industrial Bases of HBP

大庆产业基地 Daqing Industrial Base

· 油气田装备制造基地
占地70,000m²、厂房面积40,000m²
· Oil and Gas Processing Equipment
Manufacturing Base
Coverage 70,000m², Plant Area 40,000m²



天津产业基地 Tianjin Industrial Base

· 环保产业基地
负责环保项目的研发、设计、
组装、调试、人员培训等
· Environmental Protection
Industrial Base
Responsible for R&D, Design, Assembly,
Commissioning and Personnel Training of
Environmental Protection Projects



潍坊产业基地 Weifang Industrial Base

· 工业智能控制系统产业基地
负责油气田及集输系统数字化信息化
技术的项目研发和工程实施
· Industrial Intelligent Control
System Industrial Base
Responsible for Digitization, Information
Technology, R&D and Implementation
of Oil & Gas Fields and Gathering-Trans-
portation System



专注于为全球油气田开发提供创新和集成解决方案的EPCC公司

A Global EPCC Company Providing Innovative & Integrated
Solutions For Oil & Gas Development Worldwide

目 录 Contents

- 1 企业简介
About Us
- 2 企业能力
Our Capabilities
- 3 产品系列：气田处理设施
Product: Gas Processing Facilities
- 4 产品系列：油田处理设施
Product: Oil Processing Facilities
- 5 产品系列：水处理设施
Product: Water Treatment Facilities
- 6 产品系列：三次采油地面设施
Product: Surface Facilities for Tertiary Oil Recovery
- 7 产品系列：特色技术
Product: Proprietary Technologies

惠博普的产品和服务已在中国陆上和海上油气田应用，并在全球30多个产油国的近50个油田广泛应用。其中国际市场以中东、中亚、非洲、南亚为核心，在阿联酋、哈萨克斯坦、非洲设有区域管理中心。

HBP's products and services have been used in onshore and offshore oil and gas fields in China, and also widely used in nearly 50 oil fields in more than 30 oil producing countries worldwide. Among them, HBP takes the Middle East, Central Asia, Africa and South Asia as the core international markets, and regional management centers have been set up in the United Arab Emirates, Kazakhstan and Africa.



每个项目的安全、质量、可靠性、可持续性 & 运行性能始终是客户和惠博普的重中之重。惠博普坚持提升各方面的能力，并与全球客户保持紧密合作，以求提供最佳解决方案和服务。

The safety, quality, reliability, sustainability and operational performance of each project are always the top priority of customers and HBP. HBP is committed to improving its capabilities in all aspects and working closely with customers around the world to provide the best solutions and services.

国际领先、行业认可的质量管理体系

Internationally leading & industry proven quality management system

惠博普遵循国际公认的最佳实践，在所有项目中均遵守所有适用的HSE法规和其他要求。惠博普政策是确保所有员工、客户、供应商和分包商的利益、健康和安全的。

HBP is committed to internationally accepted best practices and comply with all applicable HSE legislations and other requirements in all projects, and it is HBP's policy to ensure the welfare, health and safety of all our employees, customers, suppliers and subcontractors.



整个项目阶段进行全生命周期管理，满足客户的具体要求
Full life circle management through all project phases to meet the specific requirement of Clients



在项目不同阶段，严格执行建立的项目管理系统和最佳实践，定制EPC执行计划，以确保项目成功。
The proprietary project management systems and best practices, as well as customized EPC execution plans, are strictly implemented for project success, for different project phases



具备以下设施的设计、制造和供货能力
Design, manufacturing and supply

- 模块化/撬装化油气处理设施
Modular/Skid Mounted Oil & Gas Processing Facilities
- 模块化/撬装化水处理设施
Modular/Skid Mounted Water Treatment Facilities
- 模块化/撬装化ASP(碱液/表面活性剂/聚合物)处理&注入设施
Modular/Skid Mounted ASP (Alkaline/Surfactant/Polymer) Treatment & Injection Facilities
- 压力容器
Pressure Vessels
- 换热设备
Heat Transfer Equipment
- 塔类&反应器
Columns & Reactors
- 设备结构
Equipment Structures
- 预制管廊等
Pre-fabricated Pipe rack, etc.



公司研发设计方面，拥有150多名技术人员、4个合作实验室、50多个注册专利和20多个专业软件
 In-house R&D support with 150+ technical personnel, 4 collaborative laboratories, 50+ registered patents and 20+ professional software

- ▶ 水处理/多相分离/电脱水/环境工程实验室
 Laboratories of Water Treatment / Multiphase Separation / Electrical Dehydration / Environmental Engineering
- ▶ 注册专利，包括高效分离器、换热器等
 Registered Patents, including high-efficiency separators, heat exchangers, etc.
- ▶ 专业软件，包括过程仿真、应力分析、3D工厂建模、电气/仪器设计、压力容器计算等
 Professional software, including process simulation, stress analysis, 3D plant modeling, electrical / instrument design, pressure vessel calculations, etc.



基于定量和概率的风险软件建模，开展危害评估，支持可持续的安全和业务绩效
 Risk expertise to support sustainable safety and business performance, from quantitative and probabilistic software-based risk modelling to qualitative hazard assessment

- ▶ 风险识别和评价(ENVID、HAZID、LOPA、SIL、HAZOP等)
 Hazard Identification and Evaluation (ENVID, HAZID, LOPA, SIL, HAZOP, etc.)
- ▶ 定量风险分析
 Quantitative Risk Analysis
- ▶ 制定风险容忍标准
 Risk Tolerance Criteria Development
- ▶ 火灾、爆炸和扩散建模
 Fire, Blast and Dispersion Modeling
- ▶ 可燃粉尘和化学危险性分析
 Combustible Dust and Chemical Hazard Analysis



天然气处理设施简介 Brief Introduction of Gas Processing Facilities



天然气自气井来，进入井口橇，经加热、清管后进入集输管网进入下游集气站。

集气站接收所辖区块的气井来气，经清管后分别进入计量分离器、生产分离器，计量分离器计量每口井的来气/液量，生产分离器将油气分离后，经露点控制装置，对天然气进行浅冷脱水、脱烃处理，并对处理后天然气计量、清管后经集输干线外输至下游天然气处理站。

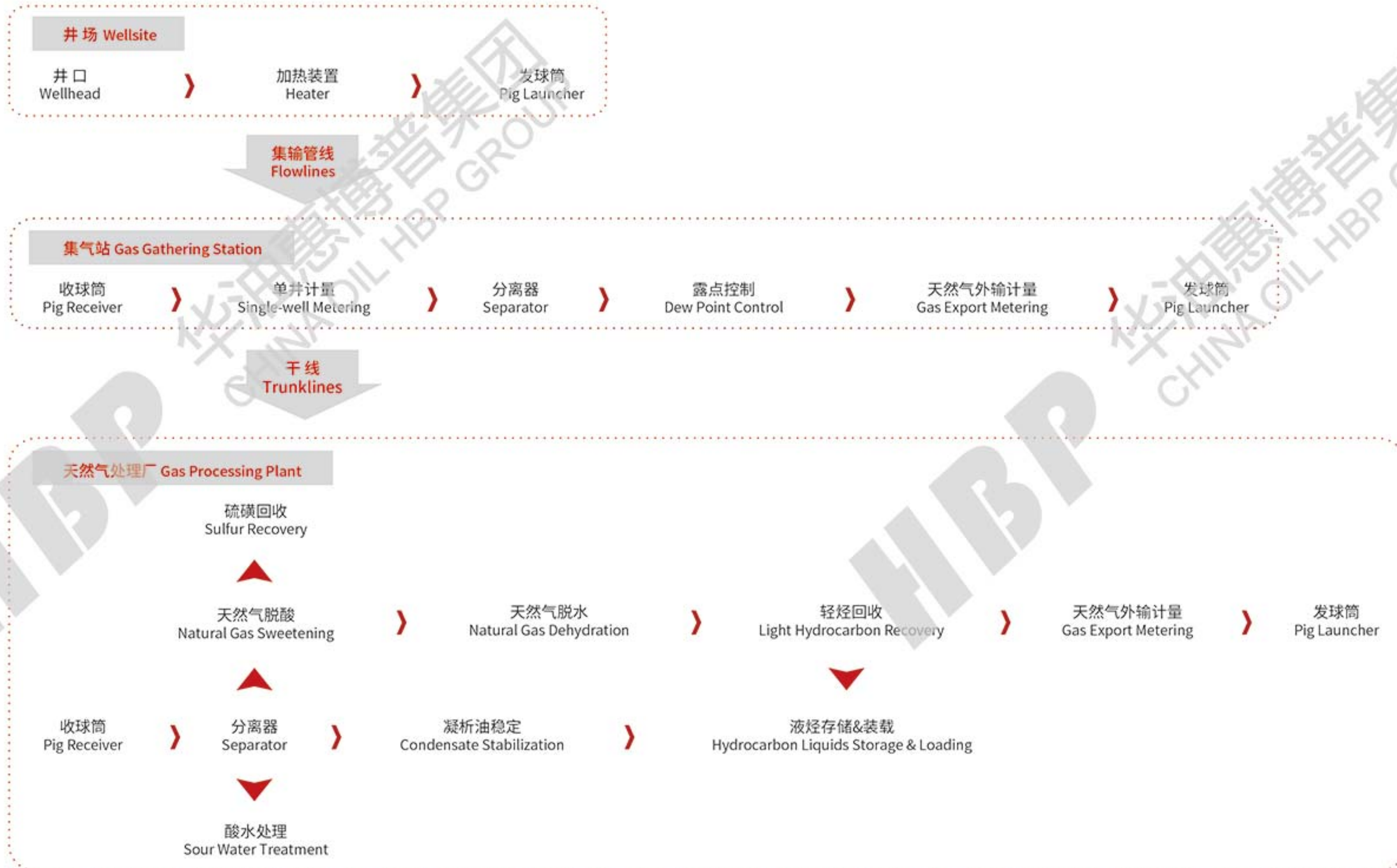
天然气处理站接收集气站和单井来的天然气，经分离后气相进入天然气脱酸装置、脱水装置、再进行轻烃回收，处理后天然气经增压、计量后外输至下游用户。净化脱除的酸气进入硫磺回收装置，回收固体硫磺。轻烃回收的C₂/C₃/LPG/稳定轻烃等液烃产品，进入储存装置，并经过装车系统外运至用户。分离器分离的凝析油相进入稳定装置，处理后气相进入脱酸装置，液相为稳定凝析油，进入储存装置，经装车系统外运至用户。分离器分离的水相进入酸水处理装置，酸气进入脱酸装置，处理后的水进入站内水处理装置。

The natural gas from the wellhead enters the wellhead skid, and enters the gathering pipeline network to the downstream gas gathering station after being heated.

The gas gathering station receives gas from wells within the block, which will enter the metering separator and the production separator. The metering separator measures the inlet gas/liquid flowrate for each well. After being separated inside the production separator, and adjusting the dew point, the gas will undergo shall-cold dehydration, dehydrocarbon process and measurement, and then is transported through the trunk line to the downstream gas processing station.

The gas processing station receives the gas from the gas gathering station and single well. After separation, the gas enters the gas sweetening unit, dehydration unit, and then recovers light hydrocarbons. After that, the processed gas will be boosted, measured and transported to downstream users. The removed acid gas will flow to the sulfur recovery unit to recover the sulfur. C₂/C₃/LPG/stabilized light hydrocarbons from light hydrocarbon will be stored and transported to user through loading system. The condensate from the separator will be introduced to stabilization unit, after which the gas flow to gas sweetening unit while the stabilized condensate will be stored and transported to downstream users through the loading system. The produced water from separator enters the sour water treatment unit, from which the sour gas goes to the sweetening unit while the processed water enters the produced water treatment unit within the station.

典型天然气处理流程 Typical Natural Gas Processing Flow Diagram



分离器模块
Separator Module



功能
Functions

- 井流物进站分离
Inlet separation of well stream
- 具有段塞流捕集功能
Capable of functioning as a slug catcher

模块类型
Module Type

- 立式气液分离器
Vertical gas-liquid separator
- 卧式气液分离器
Horizontal gas-liquid separator
- 卧式油、气、水三相分离器
Horizontal oil-gas-water separator

特点
Features

- 气相中液滴夹带 $\leq 50\text{mg/m}^3$
Liquid droplets entrained in gas phase $\leq 50\text{ mg/m}^3$
- 气相中夹带液滴直径 $\leq 10\mu\text{m}$
Liquid droplet diameter in gas phase $\leq 10\ \mu\text{m}$

模块系列
Module Series

- 处理能力 Capacity : $1.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $2.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $5.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $7.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $12.5 \times 10^4\text{Sm}^3/\text{h}$

轻烃回收模块
Light Hydrocarbon Recovery Module



功能
Functions

- 回收天然气中的LPG和凝析油 Recovering the LPG and condensate of natural gas

特点
Features

- 丙烷收率可达95%以上 Propane recovery rate can reach higher than 95%

模块系列
Module Series

- 处理能力 Capacity : $1.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $2.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $5.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $7.0 \times 10^4\text{Sm}^3/\text{h}$
- 处理能力 Capacity : $12.5 \times 10^4\text{Sm}^3/\text{h}$

加热器模块
Heater Module



功能
Functions

- 使用火焰或电加热原油、天然气、水及其混合物等介质
Using flame or electricity to heat crude oil, natural gas, water and their mixtures, etc.
- 油气田、长输管道等原油、天然气、水及其混合物等加热介质的专用设备
A special equipment for heating medium such as crude oil, natural gas, water and their mixtures used in oil and gas fields and long-distance pipelines
- 加热器系统的运行安全性高于直接加热器，中间热载体在低温、低压下运行
The operation safety of heater system is higher than direct heater and the intermediate heat carrier works under low temperature & pressure
- 广泛适用于处理站和井场
It has a wide range of applications in various Processing Station & well site
- 加热器具有多种结构类型，可以满足不同处理量的要求
The heater & heating unit has various structure types, which can meet different treating volume

特点
Features

·功率 Capacity: 120~20000kW

·加热效率 Heating efficiency $\geq 90\%$

模块类型
Module Type

- 火筒式加热炉
Fired tube heating furnace
- 管式加热炉
Tube heating furnace
- 水套式加热炉
Water jacket furnace

- 相变加热炉
Phase change heating furnace
- 有机热载体循环系统
Organic heat carrier circulation system
- 脉动燃烧加热炉
Pulsating combustion heating furnace

模块系列
Module Series

- 加热负荷 Heat Load: 150kW
- 加热负荷 Heat Load: 500kW
- 加热负荷 Heat Load: 1000kW
- 加热负荷 Heat Load: 3000kW

- 加热负荷 Heat Load: 5000kW
- 加热负荷 Heat Load: 10000kW
- 加热负荷 Heat Load: 20000kW



乙二醇(EG)再生模块
Ethylene Glycol Regeneration Module



功能
Functions

- 采用乙二醇作为防冻剂对天然气进行冷却，满足脱水脱烃要求所需温度，并抑制水合物生成，对注入的乙二醇进行再生并循环利用的装置
- Using ethylene glycol as an antifreeze to cool natural gas to meet the temperature requirement for dehydration and sour gas removal, while inhibit the formation of hydrates. The injected ethylene glycol will be regenerated and recycled

特点
Features

- 再生后乙二醇质量浓度 Ethylene glycol mass concentration after regeneration: 80%~90%

模块系列
Module Series

- 处理能力 Capacity: 0.4m³/h
- 处理能力 Capacity: 0.8m³/h
- 处理能力 Capacity: 1.2m³/h
- 处理能力 Capacity: 1.5m³/h
- 处理能力 Capacity: 2.0m³/h

计量模块
Metering Module



功能
Functions

- 天然气内部消耗计量、贸易计量 Internal gas consumption metering and custody metering

模块类型
Module Type

- 天然气计量模块 Gas metering module

模块系列
Module Series

- 处理能力 Capacity: 1.0×10⁴Sm³/h
- 处理能力 Capacity: 2.0×10⁴Sm³/h
- 处理能力 Capacity: 5.0×10⁴Sm³/h
- 处理能力 Capacity: 7.0×10⁴Sm³/h
- 处理能力 Capacity: 12.5×10⁴Sm³/h

胺法脱酸模块
Amine Sweetening Module



功能
Functions

- 采用胺溶液吸收法，脱除酸性气体中的 H_2S 、 CO_2 、RSH等酸性组分
Using amine solution absorption method to remove acidic components such as H_2S , CO_2 , RSH in sour gas

特点
Features

- 净化气中 H_2S 含量 H_2S content in purified gas $\leq 3ppmv$
- 净化气中 CO_2 含量 CO_2 content in purified gas $\leq 2.0mol\%$
- 净化气中RSH含量 RSH content in purified gas $\leq 16mg/m^3$

模块系列
Module Series

- 处理能力 Capacity : $1.0 \times 10^4 Sm^3/h$
- 处理能力 Capacity : $2.0 \times 10^4 Sm^3/h$
- 处理能力 Capacity : $5.0 \times 10^4 Sm^3/h$
- 处理能力 Capacity : $7.0 \times 10^4 Sm^3/h$
- 处理能力 Capacity : $12.5 \times 10^4 Sm^3/h$

模块组件
Module Component

- 胺液吸收塔
Amine solution absorption tower
- 富胺液闪蒸罐
Rich amine solution flash tank
- 胺液再生精馏塔
Amine solution regeneration distillation tower
- 胺液再生再沸器
Amine solution regeneration reboiler
- 胺液循环泵
Amine solution circulating pump
- 贫/富胺液浮头式换热器
Lean/rich amine solution floating head heat exchanger
- 胺液配制罐
Amine solution preparation tank
- 胺液储罐
Amine solution storage tank
- 机械过滤器
Mechanical filter
- 活性炭过滤器
Activated carbon filter
- 空气冷却器
Air cooler
- 再生塔顶回流罐
Regeneration tower top reflux tank
- 胺液回流泵
Amine solution reflux pump



分子筛脱水模块
Molecular Sieve Dehydration Module



功能
Functions

- 利用分子筛(或硅胶和活性氧化铝等)固体吸附剂,脱除天然气、合成气或煤层气中的水分(H₂O),对原料气体进行干燥,从而达到净化气体、降低气体水露点的目的,以满足下游用户对产品低含水率的要求
Using molecular sieve(or silica gel and activated alumina, etc.)solid adsorbent to remove water(H₂O)from natural gas, syngas or coalbed methane, and dry the raw material gas, so as to purify the gas and lower the gas water dew point, and meet the requirements of downstream users for low moisture content of gas product
- 按设置分子筛塔的台数,可分为:两塔、三塔、四塔和多塔流程
As per the quantity of molecular sieve towers, it can be divided into two towers, three towers, four towers and multi-tower processes
- 按分子筛塔再生方式的不同,可分为:等压再生和减压再生
According to the different regeneration methods of the molecular sieve tower, it can be divided into: equal pressure regeneration and decompression regeneration
- 按照再生气体含水情况,可分为:干气再生和湿气再生
According to the water content of the regeneration gas, it can be divided into: dry gas regeneration and wet gas re-generation

特点
Features

- 深度脱水,水含量能达到< 1ppmv
Deep dehydration, water content < 1ppmv
- 可辅助脱除RSH,可满足RSH含量 ≤ 16mg/m³
Assisting in removing RSH to achieve a specification of RSH content ≤ 16mg/m³

模块组件
Module Component

- 分子筛吸附塔
Molecular sieve adsorption tower
- 前置聚结过滤分离器
Front coalescing filter separator
- 后置过滤除尘器
Rear filter dust collector
- 再生气加热炉(或换热器)
Regeneration gas heating furnace(or heat exchanger)
- 天然气水露点分析仪、自动切换阀组、计算机自控系统等设备及满足一次装填量优选出的分子筛等
Natural gas water dew point analyzer, automatic switching valve group, computer automatic control system and other equipment, and molecular sieve meeting the requirement of one-time filling volume, etc.
- 再生气空冷器
Regenerative air cooler
- 再生气液分离器
Regeneration gas-liquid separator
- 再生气压缩机
Regeneration gas compressor

模块系列
Module Series

- 处理能力 Capacity : 1.0×10⁴Sm³/h
- 处理能力 Capacity : 2.0×10⁴Sm³/h
- 处理能力 Capacity : 5.0×10⁴Sm³/h
- 处理能力 Capacity : 7.0×10⁴Sm³/h
- 处理能力 Capacity : 12.5×10⁴Sm³/h

三甘醇(TEG)脱水模块
Triethylene Glycol Dehydration Module



功能
Functions

- 利用三甘醇溶液，吸收脱除天然气、合成气或煤层气中的水分(H₂O)，对原料气体进行干燥，从而达到净化气体、降低气体水露点的目的，以满足下游用户对产品低含水率的要求。
- Use the triethylene glycol solution to absorb and remove the moisture (H₂O) in natural gas, synthesis gas or coalbed methane, and dry the raw material gas, so as to purify the gas and lower the gas water dew point, to meet the downstream users' requirement for low water content in the gas product.

特点
Features

- 水露点降: 25~70°C
Water dew point drop: 25~70°C
- 采用常规三甘醇脱水工艺，脱水后水露点可降至-35~-5°C
Using conventional triethylene glycol dehydration process, the water dew point can be reduced to -35~-5°C after dehydration

模块组件
Module Component

- 前置聚结过滤分离器
Front coalescing filter separator
- 三甘醇吸收塔
TEG absorption tower
- 富液闪蒸罐
Rich liquid flash tank
- 机械过滤器
Mechanical filter
- 活性炭过滤器
Activated carbon filter
- 贫/富液换热器
Lean/rich liquid heat exchanger
- 再生精馏塔
Regenerative distillation tower
- 再生塔底重沸器
Reboiler at the bottom of regeneration tower
- 贫液缓冲罐
Lean liquid buffer tank
- 贫液循环泵
Lean liquid circulating pump
- 贫液/干气换热器
Lean liquid/dry gas heat exchanger
- 燃料气缓冲罐
Fuel gas buffer tank

模块系列
Module Series

- 处理能力 Capacity: 1.0×10⁴Sm³/h
- 处理能力 Capacity: 2.0×10⁴Sm³/h
- 处理能力 Capacity: 5.0×10⁴Sm³/h
- 处理能力 Capacity: 7.0×10⁴Sm³/h
- 处理能力 Capacity: 12.5×10⁴Sm³/h



凝析油稳定模块
Condensate Stabilization Module



功能
Functions

- 稳定凝析油，满足储存要求
Stabilize condensate oil to meet storage requirements
- 稳定工艺主要有加热闪蒸法、降压闪蒸法、精馏法等
Stabilizing processes mainly including heating flash evaporation, pressure reduction flash evaporation, and distillation, etc.

特点
Features

- 储存温度下，凝析油的饱和蒸汽压小于0.7倍当地大气压
Under storage temperature, the saturated vapor pressure of condensate is less than 0.7 times the local atmospheric pressure

模块系列
Module Series

- 处理能力 Capacity : $0.5 \times 10^3 \text{kg/h}$
- 处理能力 Capacity : $2.0 \times 10^3 \text{kg/h}$
- 处理能力 Capacity : $5.0 \times 10^3 \text{kg/h}$
- 处理能力 Capacity : $10.0 \times 10^3 \text{kg/h}$
- 处理能力 Capacity : $15.0 \times 10^3 \text{kg/h}$



液化天然气(LNG)模块
Liquefied Natural Gas(LNG)Module



功能
Functions

- 脱除天然气中酸性组分
Remove acid from natural gas
- 脱除天然气中水和汞
Remove water and mercury from natural gas
- 完成天然气液化
Complete the liquefaction process of natural gas

模块系列
Module Series

- 处理能力 Capacity : $3.0 \times 10^4 \text{Sm}^3/\text{d}$
- 处理能力 Capacity : $5.0 \times 10^4 \text{Sm}^3/\text{d}$
- 处理能力 Capacity : $10.0 \times 10^4 \text{Sm}^3/\text{d}$
- 处理能力 Capacity : $30.0 \times 10^4 \text{Sm}^3/\text{d}$
- 处理能力 Capacity : $50.0 \times 10^4 \text{Sm}^3/\text{d}$

特点
Features

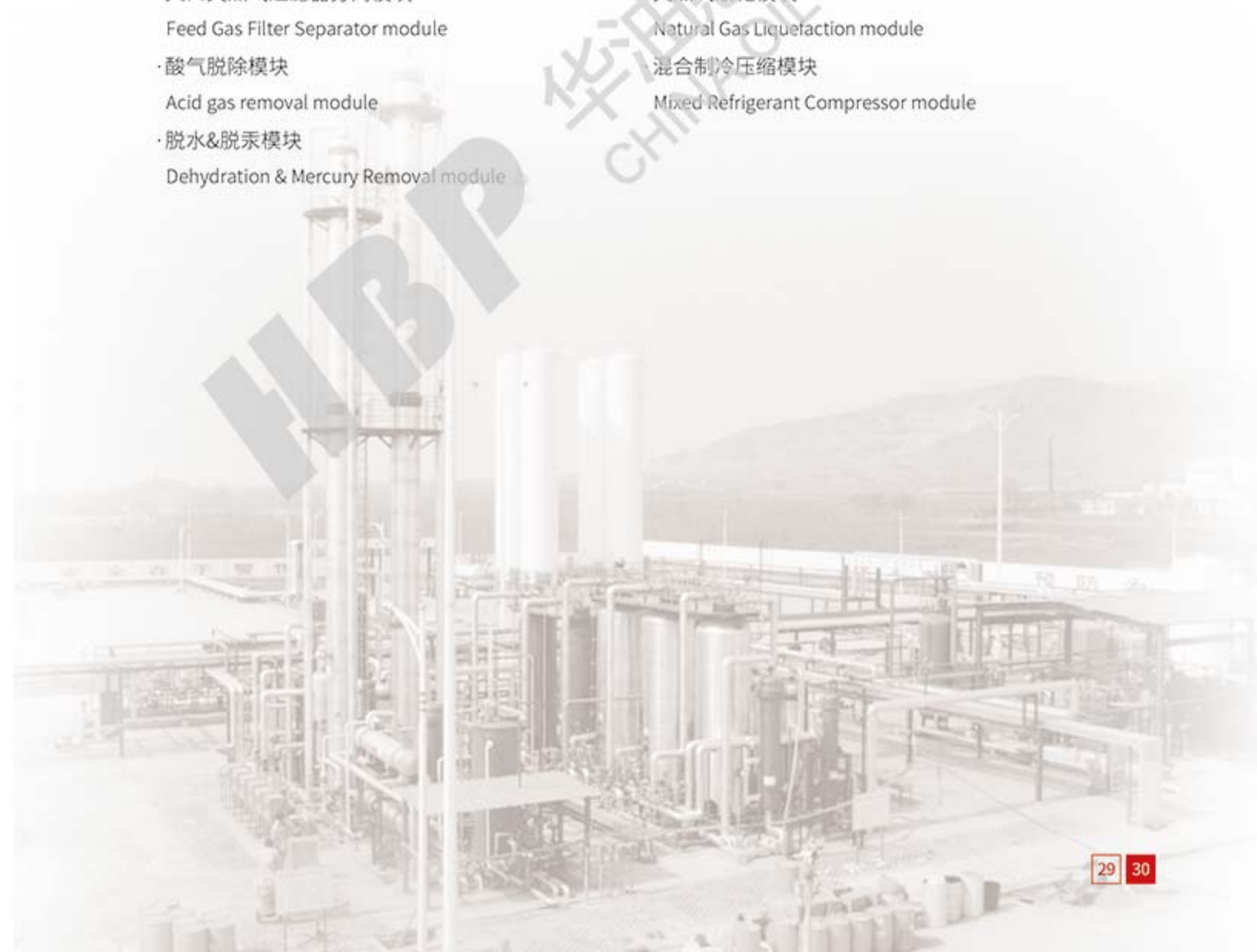
- 工厂预制, 具备完整功能
Plant prefabrication & fully functional
- LNG产品在压力下以较低的BOG闪蒸容量存储
LNG products are stored under pressure with low BOG flash capacity

- 天然气处理指标 Sweet natural gas
 $\text{CO}_2 \leq 50 \text{ppmv}$, $\text{H}_2\text{S} \leq 3 \text{ppmv}$
- 干气指标 Dry gas
 $\text{H}_2\text{O} \leq 1 \text{ppmv}$

模块组件
Module Component

- 入口天然气过滤器分离模块
Feed Gas Filter Separator module
- 酸气脱除模块
Acid gas removal module
- 脱水&脱汞模块
Dehydration & Mercury Removal module

- 天然气液化模块
Natural Gas Liquefaction module
- 混合制冷压缩模块
Mixed Refrigerant Compressor module



典型应用：天然气处理厂
Typical Applications: Gas Processing Plant



功能 Functions

- 天然气集中处理，进行净化、脱水、轻烃回收、凝析油稳定等处理后，给用户合格天然气、LPG、稳定轻烃、稳定凝析油以及其他产品
- Centralized natural gas treatment: after purification, dehydration, light hydrocarbon recovery, and condensate stabilization, etc., qualified natural gas, LPG, stable light hydrocarbons, stable condensate oil and other products are provided to downstream users

特点 Features

- 降低现场安装的技术要求和费用
Reducing the technical requirements and cost of field installation
- 实现就地控制、远程自动控制、加药手动/自动控制切换
Realizing local control, remote automatic control, manual and automatic switching of dosing

模块组件 Module Component

- | | |
|--|---|
| · 分离器撬
Separator skid | · LPG、稳定轻烃、稳定凝析油储存、装车模块
LPG, stable light hydrocarbon, stable condensate storage, loading module |
| · 天然气脱酸模块
Natural gas sweetening module | · 天然气增压模块
Natural gas booster module |
| · 天然气分子筛脱水模块
Natural gas molecular sieve dehydration module | · 贫液缓冲罐
Lean liquid buffer tank |
| · 辅助制冷模块
Auxiliary cooling module | · 天然气计量模块
Natural gas metering module |
| · 天然气轻烃回收模块
Natural gas light hydrocarbon recovery module | · 酸性水处理模块
Sour water treatment module |
| · 凝析油稳定模块
Condensate oil stabilization module | |

模块系列 Module Series

- | | |
|---|---|
| · 处理能力 Capacity: 30.0×10 ⁴ Sm ³ /d | · 处理能力 Capacity: 150.0×10 ⁴ Sm ³ /d |
| · 处理能力 Capacity: 50.0×10 ⁴ Sm ³ /d | · 处理能力 Capacity: 200.0×10 ⁴ Sm ³ /d |
| · 处理能力 Capacity: 100.0×10 ⁴ Sm ³ /d | · 处理能力 Capacity: 300.0×10 ⁴ Sm ³ /d |

油田处理设施简介 Brief Introduction of Oil Processing Facilities



原油自油井来，进入井口橇，经加热、清管后进入集输管网进入下游集油站。

集油站接收所辖区块的井流物，经加热、增压后计量，外输至下游处理站。

处理站接收集油站和单井来的井流物，经段塞流捕集器分离后的伴生气进入天然气处理装置，分离后的油水混合物加热、分离后，气相进入天然气处理装置，水相进入水处理装置，油相进行脱水、脱盐处理，再进入稳定装置进行原油稳定及脱酸。处理后稳定原油进入储存、外输装置。

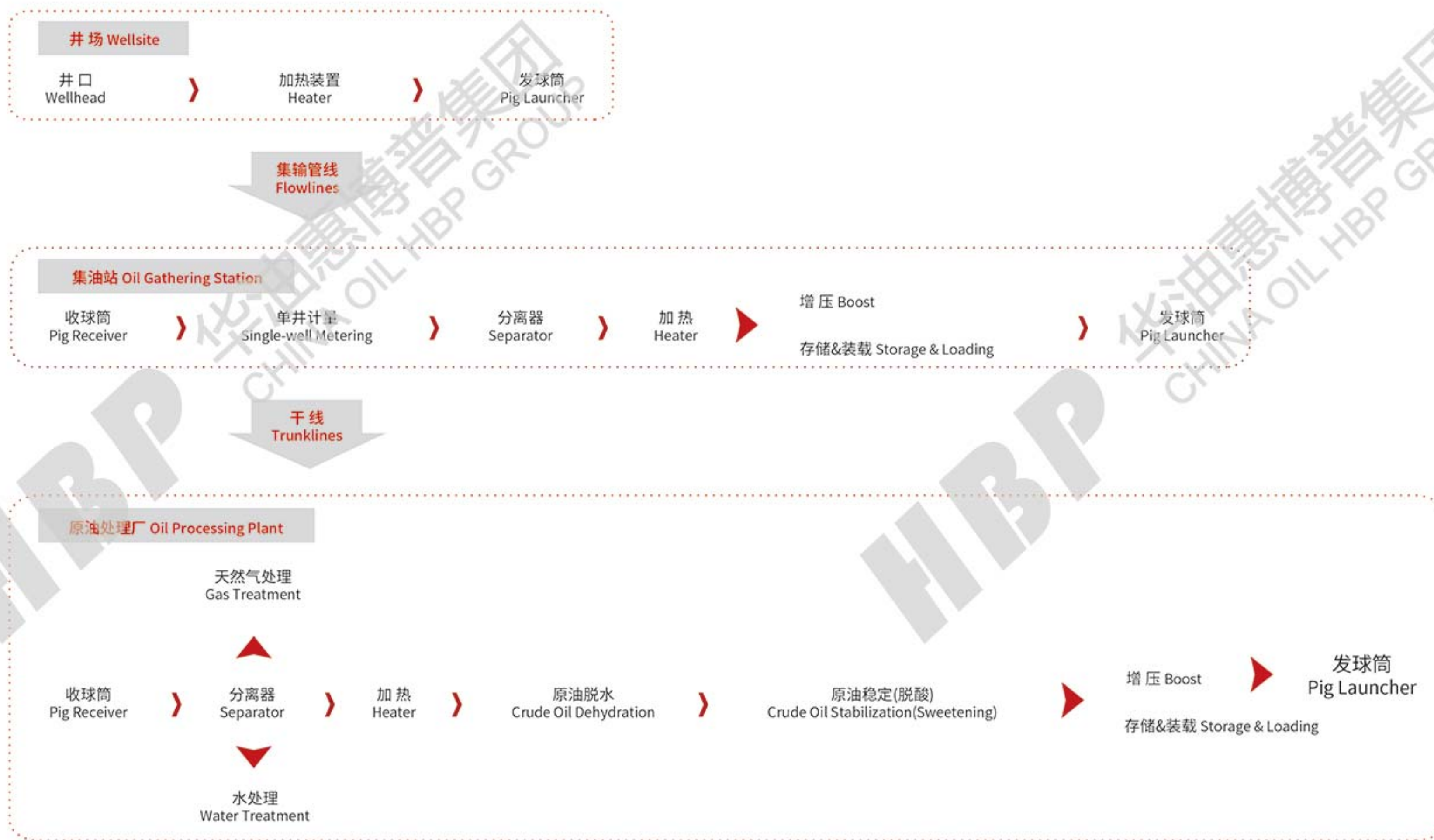
The crude oil from the oil well enters the wellhead skid, heater if required, and then the gathering pipeline network to the downstream gathering station.

The oil gathering station receives the wellstream fluid within block, and then transported to the downstream processing station after being heated, boosted and metered.

The processing station receives the fluid from the oil gathering station and single well, and the associated gas from the slug catcher enters the natural gas processing facilities. After the separated oil-water mixture is heated and separated, the gas enters the natural gas processing unit, the water to the water treatment unit, while the oil will undergo dehydration and desalting process, and then enters the stabilization unit for crude oil stabilization and sweetening. After being processed, the stabilized crude oil will be stored and transported to downstream.

典型原油处理流程

Typical Crude Oil Processing Flow Diagram



阀组模块
Valve Group Module



功能
Functions

- 进站阀组模块，由汇管与阀组组成
Valve Group Module, consisting of manifolds and valve groups

特点
Features

- 减少现场的安装工作量
Reducing onsite installation workload
- 方便现场操作
Facilitating onsite operations

模块系列
Module Series

- 5 井槽 尺寸 Slots Size: 6×3.5×2.5m
- 7 井槽 尺寸 Slots Size: 8×3.5×2.5m
- 10 井槽 尺寸 Slots Size: 10×3.5×2.5m
- 15 井槽 尺寸 Slots Size: 14×3.5×2.5m

发球/收球模块
Pig Launcher/Receiver Module



功能
Functions

- 用于集输管道和长输管道清管 Pigging for gathering pipe and long-distance pipeline

模块类型
Module Type

- 发球筒/收球筒槽 Pig Launcher/Receiver Skid

模块系列
Module Series

- 尺寸 Size: 2"
- 尺寸 Size: 3"
- 尺寸 Size: 4"
- 尺寸 Size: 6"
- 尺寸 Size: 8"
- 尺寸 Size: 10"
- 尺寸 Size: 12"
- 尺寸 Size: 14"

分离器模块
Separator Module



功能
Functions

·井流物进站分离
Inlet separation of well stream

·具有段塞流捕集功能
Capable of functioning as a slug catcher

特点
Features

·气相中液滴夹带 $\leq 50\text{mg}/\text{m}^3$
Liquid droplets entrained in gas phase $\leq 50\text{ mg}/\text{m}^3$
·油中含水率 $\leq 30\%$
Water cut in oil $\leq 30\%$

·气相中夹带液滴直径 $\leq 10\mu\text{m}$
Liquid droplet diameter in gas phase $\leq 10\ \mu\text{m}$
·水中含油指标 $\leq 1000\text{mg}/\text{L}$
Oil content in water $\leq 1000\text{mg}/\text{L}$

模块类型
Module Type

·立式气液分离器
Vertical gas-liquid separator
·卧式气液分离器
Horizontal gas-liquid separator

·卧式油、气、水三相分离器
Horizontal oil-gas-water separator

模块系列
Module Series

·尺寸 Size: 2200mm(ID)×5000mm(T/T)
·尺寸 Size: 2200mm(ID)×8000mm(T/T)
·尺寸 Size: 2600mm(ID)×5000mm(T/T)
·尺寸 Size: 2600mm(ID)×8000mm(T/T)
·尺寸 Size: 2600mm(ID)×11000mm(T/T)
·尺寸 Size: 3000mm(ID)×8000mm(T/T)
·尺寸 Size: 3000mm(ID)×11000mm(T/T)
·尺寸 Size: 3000mm(ID)×14000mm(T/T)

·尺寸 Size: 3000mm(ID)×17000mm(T/T)
·尺寸 Size: 3600mm(ID)×11000mm(T/T)
·尺寸 Size: 3600mm(ID)×14000mm(T/T)
·尺寸 Size: 3600mm(ID)×17000mm(T/T)
·尺寸 Size: 3600mm(ID)×20000mm(T/T)
·尺寸 Size: 4000mm(ID)×17000mm(T/T)
·尺寸 Size: 4000mm(ID)×20000mm(T/T)
·尺寸 Size: 4000mm(ID)×23000mm(T/T)



电脱水&脱盐模块
Electric Dehydration & Desalter Module



功能
Functions

- 利用电场力作用下经破乳、聚结、沉降使原油与水分离
Separation of crude oil and water through demulsification, coalescence and sedimentation under the action of electric field force

特点
Features

- 轻质原油，油中含水率 $\leq 0.5\text{wt}\%$
Light oil, water cut in oil $\leq 0.5\text{wt}\%$
- 中质原油，油中含水率 $\leq 1.0\text{wt}\%$
Medium oil, water cut in oil $\leq 1.0\text{wt}\%$
- 重质原油，油中含水率 $\leq 2.0\text{wt}\%$
Heavy oil, water cut in oil $\leq 2.0\text{wt}\%$
- 水中含油指标 $\leq 1000\text{mg/L}$
Oil content in water $\leq 1000\text{mg/L}$

模块类型
Module Type

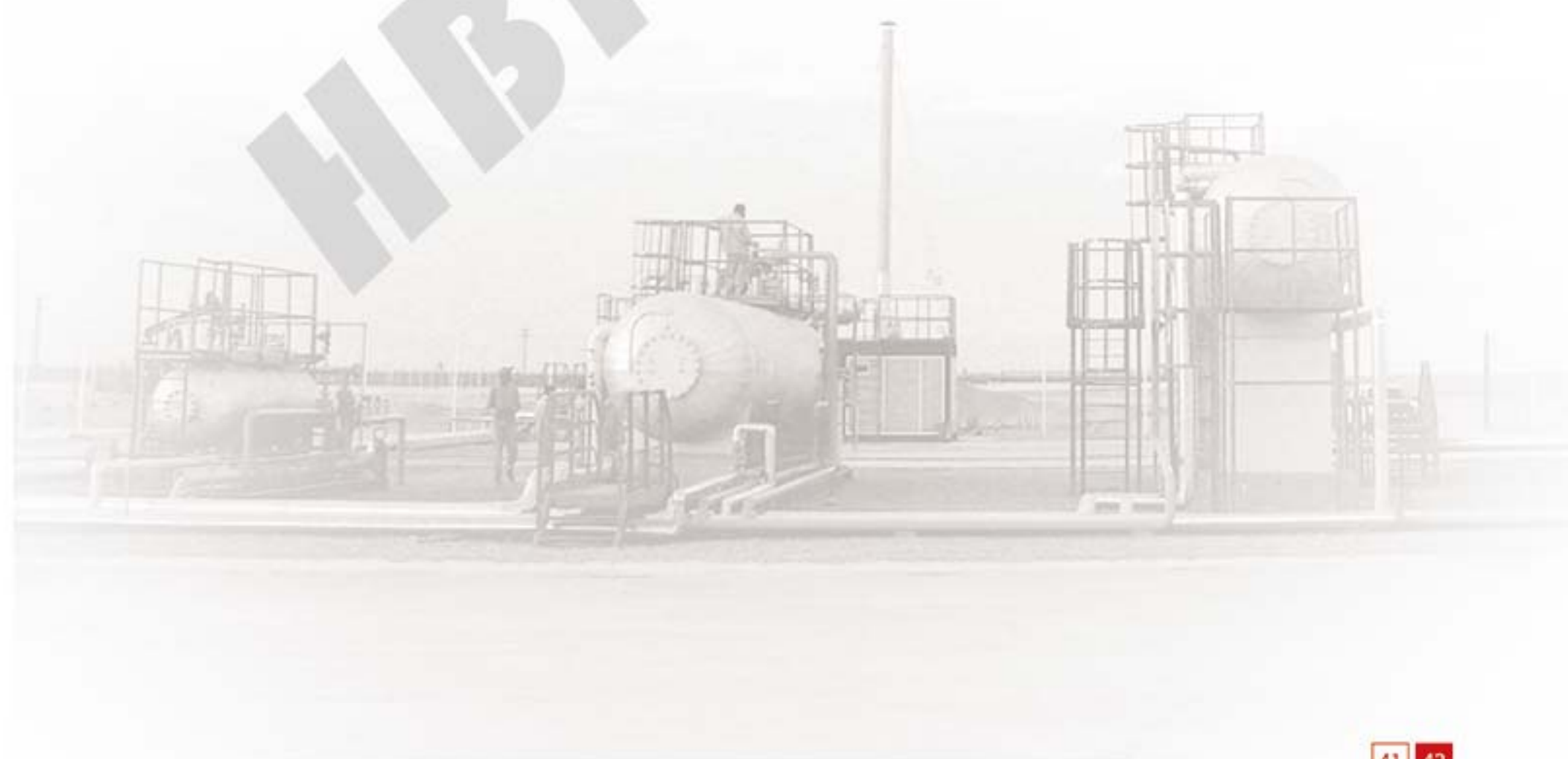
- 原油电脱水/脱盐器
Crude oil dehydrator/desalter
- 增压泵
Boosting pump

- 混合器
Mixer

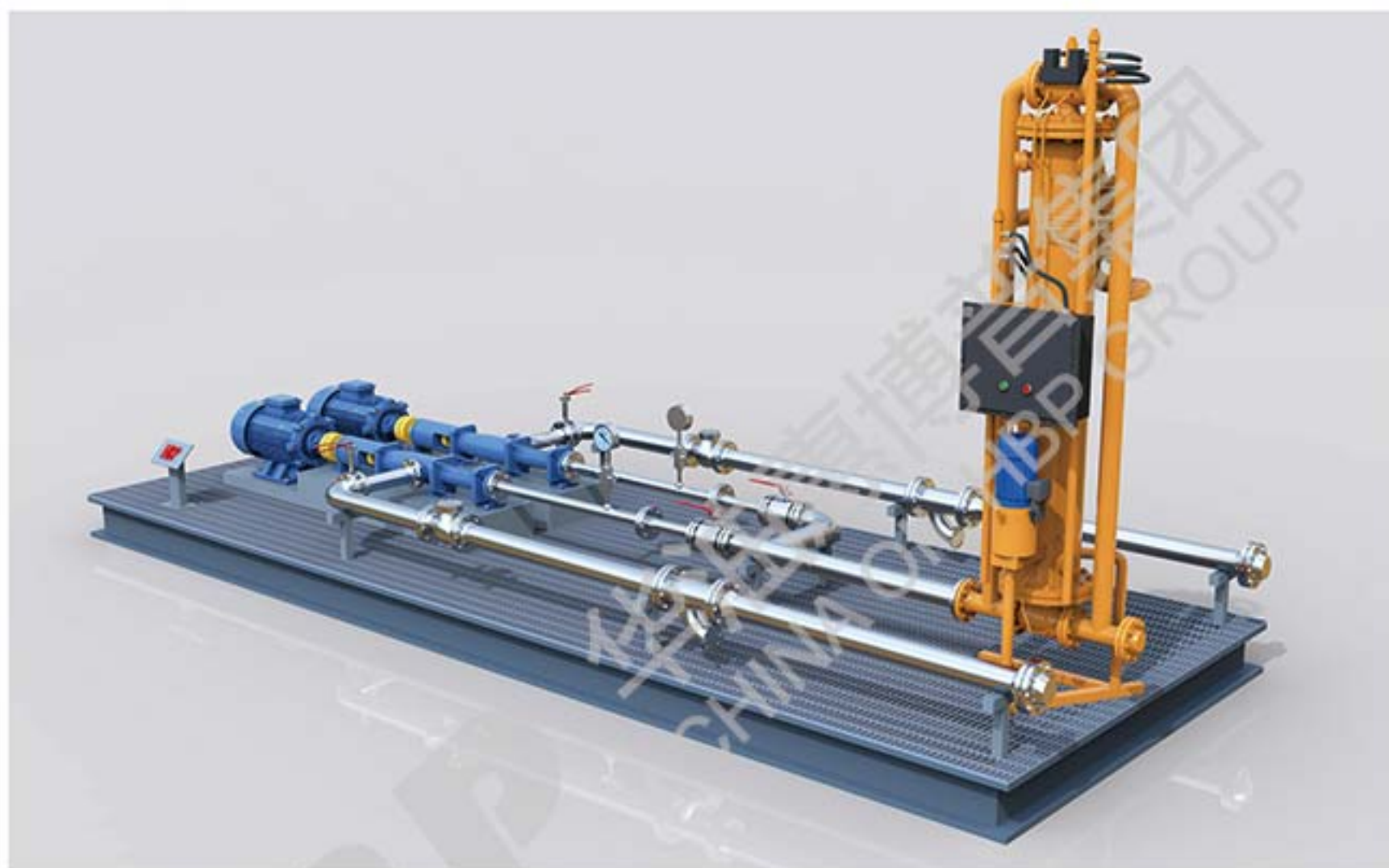
模块系列
Module Series

- 尺寸 Size: 2600mm(ID)×5000mm(T/T)
- 尺寸 Size: 2600mm(ID)×8000mm(T/T)
- 尺寸 Size: 2600mm(ID)×11000mm(T/T)
- 尺寸 Size: 3000mm(ID)×8000mm(T/T)
- 尺寸 Size: 3000mm(ID)×11000mm(T/T)
- 尺寸 Size: 3000mm(ID)×14000mm(T/T)
- 尺寸 Size: 3000mm(ID)×17000mm(T/T)

- 尺寸 Size: 3600mm(ID)×11000mm(T/T)
- 尺寸 Size: 3600mm(ID)×14000mm(T/T)
- 尺寸 Size: 3600mm(ID)×17000mm(T/T)
- 尺寸 Size: 3600mm(ID)×20000mm(T/T)
- 尺寸 Size: 4000mm(ID)×17000mm(T/T)
- 尺寸 Size: 4000mm(ID)×20000mm(T/T)
- 尺寸 Size: 4000mm(ID)×23000mm(T/T)



计量模块
Metering Module



功能
Functions

·原油外输贸易计量
Crude oil custody metering

·集油站或计量站单井计量
Single-well metering in oil gathering station or metering station

特点
Features

·成品原油外输贸易计量
Custody metering of produced crude oil

·成品原油外输贸易计量
Custody metering of produced crude oil

模块类型
Module Type

·计量撬 Metering skid

模块系列
Module Series

·单井原油计量范围 Single well oil capacity
(GOR: 40~150m³/m³): 5~25t/d

·成品油计量范围 Product crude oil Capacity: 150t/d

·成品油计量范围 Product crude oil Capacity: 400t/d

·成品油计量范围 Product crude oil Capacity: 600t/d

·成品油计量范围 Product crude oil Capacity: 800t/d

·成品油计量范围 Product crude oil Capacity: 1000t/d

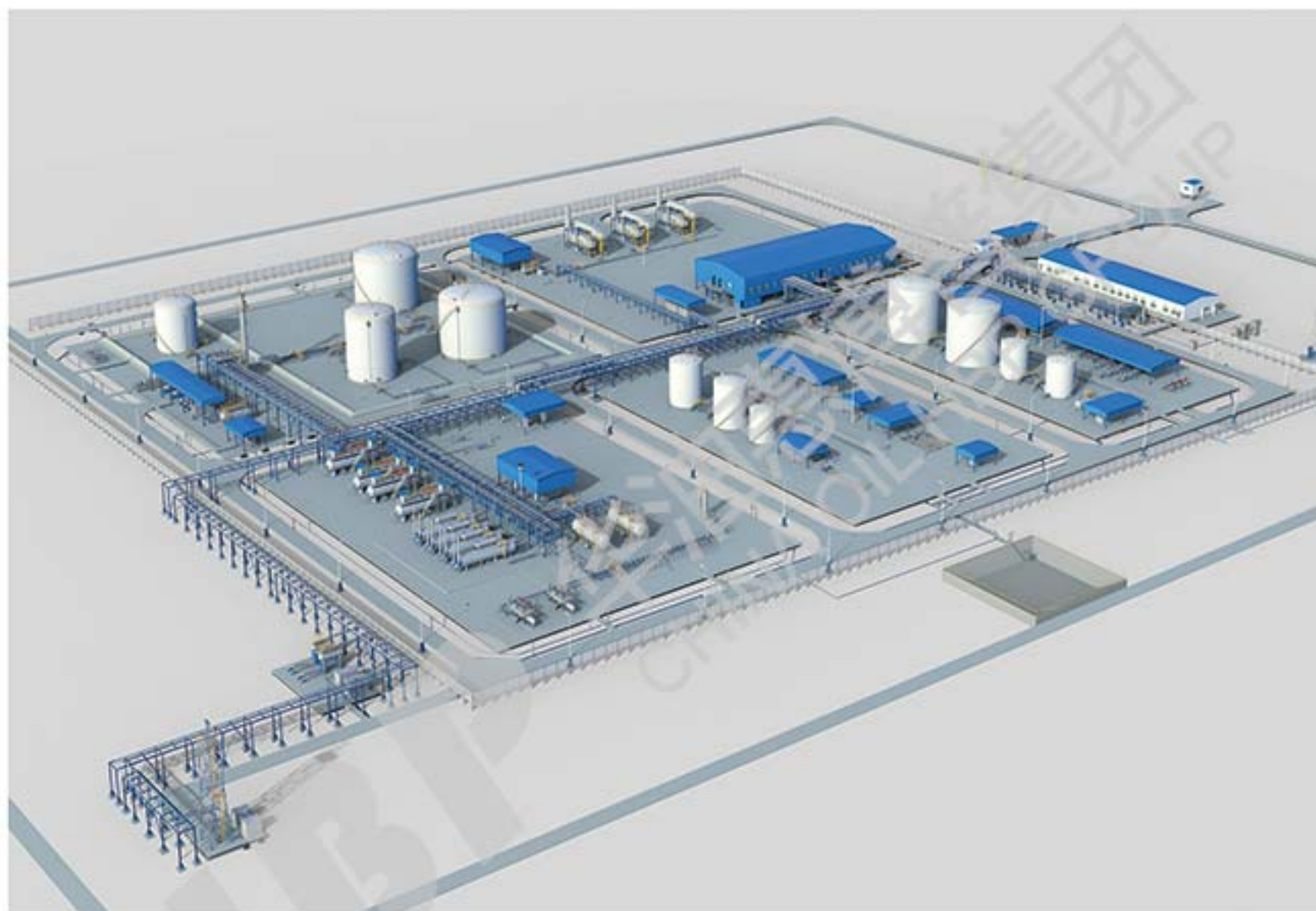
·成品油计量范围 Product crude oil Capacity: 1200t/d

·成品油计量范围 Product crude oil Capacity: 1500t/d

·成品油计量范围 Product crude oil Capacity: 2000t/d



典型应用：原油处理站
Typical Applications : Oil Processing Station



功能 Functions

·集中处理油区的井流物，为用户提供加工后的产品原油、产品天然气以及其他石化产品
Centrally processing wellstream, to provide product crude oil, natural gas and other products through processing

模块组件 Module Component

- 计量分离器
Test separator
- 生产分离器
Production separator
- 加热炉
Heater
- 原油脱水
Crude oil dehydration
- 原油稳定(脱酸)
Crude oil stabilization (sweetening)
- 天然气脱酸
Natural gas sweetening
- 天然气脱水
Natural gas dehydration
- 天然气轻烃回收
Natural gas light hydrocarbon recovery
- 原油增压外输
Crude oil boosting for export
- 天然气增压外输
Natural gas boosting for export
- 原油及天然气计量
Metering of crude oil and natural gas
- 原油及液体产品的储存、装车
Storage and loading of crude oil and liquid products

模块系列 Module Series

- 原油处理能力 Crude oil Capacity: 250 t/d
- 原油处理能力 Crude oil Capacity: 500 t/d
- 原油处理能力 Crude oil Capacity: 750 t/d
- 原油处理能力 Crude oil Capacity: 1000 t/d
- 原油处理能力 Crude oil Capacity: 1500 t/d
- 原油处理能力 Crude oil Capacity: 2000 t/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 10 \times 10^4$ Sm³/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 20 \times 10^4$ Sm³/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 20 \times 10^4$ Sm³/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 30 \times 10^4$ Sm³/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 30 \times 10^4$ Sm³/d
- 天然气处理能力 Gas Capacity: $5 \times 10^4 \sim 50 \times 10^4$ Sm³/d

水处理设施简介

Brief Introduction of Water Treatment Facilities



惠博普在全球各地设有100多名员工，可以响应客户的任何需求，并提供强大且经济高效的解决方案。我司已开发出预先设计的标准化水处理模块和橇，可满足客户在油田中快速、低成本地实施水处理的需求。针对采出水处理，新鲜水处理和注水，各种类型的模块和橇包括：

- 采出水处理模块($\leq 100\text{m}^3/\text{h}$)
- 新鲜水处理模块($\leq 100\text{m}^3/\text{h}$)
- 注水模块($\leq 100\text{m}^3/\text{h}$)
- 软化水模块
- 各种水处理橇
- 各种过滤器橇
- 化学注入橇

With more than 100 people, based in various locations worldwide, HBP can respond to any demand from client and provide robust and cost-effective solutions. HBP has developed pre-engineered standardized water treatment modules and skids that will match clients' needs to implement quickly and at minimum cost water treatment in the oilfield. There will be the various types of modules and skids from produced water treatment and fresh water treatment and water injection as described below:

- Produced Water Treatment Module($\leq 100\text{m}^3/\text{h}$)
- Fresh Water Treatment Module($\leq 100\text{m}^3/\text{h}$)
- Water Injection Module($\leq 100\text{m}^3/\text{h}$)
- Demineralization Water Module
- Various Water Treatment Skids
- Various Filter Skids
- Chemical Injection Skid

采出水处理模块($\leq 100\text{m}^3/\text{h}$)
Produced Water Treatment Module ($\leq 100\text{m}^3/\text{h}$)



功能 Functions

- 脱除水中含油
Removing oil in water
- 脱除水中杂质和悬浮颗粒物
Removing impurities and TSS in water

- 采出水准确计量
Accurate metering of produced water

特点 Features

- 油 $\leq 5\text{ mg/L}$, 悬浮物 $\leq 5\text{ mg/L}$
Oil $\leq 5\text{ mg/L}$, TSS $\leq 5\text{ mg/L}$
- 无人操作
Unmanned operation

- 运行自动控制
Automatic control of operation
- 手动/自动操作切换
Manual and automatic switching of operation

模块组件 Module Component

- 水增压撬
Water Boosting Skid
- 聚集油分离器撬
Coalescing oil separator skid
- 斜板除油器撬
Corrugated Plate Interceptor Skid
- 核桃壳过滤器撬
Walnut Shell Filter Skid
- 滤芯式过滤器撬
Cartridge Filter Skid

模块系列 Module Series

- PWT-10 Q=10 m^3/h 尺寸 Size: 6m(L) \times 3m(W) \times 6m(H)
- PWT-25 Q=24 m^3/h 尺寸 Size: 8m(L) \times 4m(W) \times 9m(H)
- PWT-50 Q=50 m^3/h 尺寸 Size: 8m(L) \times 6m(W) \times 9m(H)
- PWT-75 Q=75 m^3/h 尺寸 Size: 10m(L) \times 6m(W) \times 9m(H)
- PWT-100 Q=100 m^3/h 尺寸 Size: 10m(L) \times 9m(W) \times 9m(H)



清水处理模块($\leq 100\text{m}^3/\text{h}$)
Fresh Water Treatment Module ($100\text{m}^3/\text{h}$)



功能 Functions

- 脱水水中悬浮物
Removing TSS in water
- 脱除水中矿物质
Removing mineral substances in water

- 清水准确计量
Accurate metering of fresh water

模块组件 Module Component

- 水增压泵撬
Water pumping skid
- 净化水撬
Water purification skid
- 水缓冲罐撬
Water buffer skid

- 精细过滤撬
Water fine filter skid
- 软化水模块
Demineralization water module

特点 Features

- 清水 Fresh Water:
悬浮物 $\leq 5\text{ mg/L}$, 最大颗粒物直径 $\leq 4\ \mu\text{m}$
TSS $\leq 5\text{ mg/L}$, Max. Particle Size $\leq 4\ \mu\text{m}$
- 软化水 Demineralization Water:
硬度(CaCO_3) $\approx 0\text{ mg/L}$, 电导率 $< 50\ \text{us}$,
悬浮物 $\approx 0\text{ mg/L}$
Hardness(CaCO_3) $\approx 0\text{ mg/L}$,
Electrical Conductivity $< 50\ \text{us}$, TSS $\approx 0\text{ mg/L}$
- 无人操作
Unmanned operation
- 运行自动控制
Automatic control of operation
- 操作手动/自动切换
Manual and automatic switching of operation

模块系列 Module Series

- PWT-10 Q= $10\text{m}^3/\text{h}$ 尺寸 Size: $8\text{m(L)}\times 4\text{m(W)}\times 9\text{m(H)}$
- PWT-25 Q= $24\text{m}^3/\text{h}$ 尺寸 Size: $8\text{m(L)}\times 5\text{m(W)}\times 9\text{m(H)}$
- PWT-50 Q= $50\text{m}^3/\text{h}$ 尺寸 Size: $10\text{m(L)}\times 5\text{m(W)}\times 8\text{m(H)}$
- PWT-75 Q= $75\text{m}^3/\text{h}$ 尺寸 Size: $12\text{m(L)}\times 6\text{m(W)}\times 8\text{m(H)}$
- PWT-100 Q= $100\text{m}^3/\text{h}$ 尺寸 Size: $16\text{m(L)}\times 6\text{m(W)}\times 8\text{m(H)}$



双滤料过滤器撬
Dual Media Filter Skid



F 功能
Functions

- 脱除水中含油
Removing oil in water
- 脱除水中悬浮物
Removing TSS in water

S 撬块系列
Skid Series

- DMF-100 Q=100m³/h 尺寸 Size: 15m(L)×3.6m(W)×3.8m(H)
- DMF-150 Q=150m³/h 尺寸 Size: 16m(L)×4.3m(W)×4.2m(H)
- DMF-200 Q=200m³/h 尺寸 Size: 19m(L)×4.0m(W)×4.2m(H)
- DMF-250 Q=250m³/h 尺寸 Size: 20m(L)×4.3m(W)×4.2m(H)
- DMF-500 Q=500m³/h 尺寸 Size: 28m(L)×4.5m(W)×4.2m(H)

F 特点
Features

- 油≤5 mg/L, 悬浮物≤5 mg/L
Oil≤5 mg/L, TSS≤5 mg/L
- 无人操作
Unmanned operation
- 运行自动控制
Automatic control of operation
- 运行手动/自动切换
Manual and automatic switching of operation

滤芯式过滤器撬
Cartridge Filter Skid



F 功能
Functions

- 脱除水中含油
Removing oil in water
- 脱除水中悬浮物
Removing TSS in water

S 撬块系列
Skid Series

- CF-100 Q=100m³/h 尺寸 Size: 6m(L)×3m(W)×4.2m(H)
- CF-150 Q=150m³/h 尺寸 Size: 7m(L)×3m(W)×4.0m(H)
- CF-200 Q=200m³/h 尺寸 Size: 8m(L)×3m(W)×4.2m(H)
- CF-250 Q=250m³/h 尺寸 Size: 8m(L)×3m(W)×4.5m(H)
- CF-500 Q=500m³/h 尺寸 Size: 10m(L)×3m(W)×4.5m(H)

F 特点
Features

- 油≤5 mg/L, 悬浮物≤5 mg/L
Oil≤5 mg/L, TSS≤5 mg/L
- 运行自动控制
Automatic control of operation
- 无人操作
Unmanned operation

污油回收槽
Slop Oil Recovery Skid



功能
Functions

- 水处理系统中的污油回收
Recovery of slop oil collected in water treatment system

特点
Features

- 无人操作
Unmanned operation
- 运行自动控制
Automatic control of operation
- 运行手动/自动切换
Manual and automatic switching of operation

槽块系列
Skid Series

- SOR-5 Q=5m³/h 尺寸 Size: 2.8m(ID)×8m(L)
- SOR-10 Q=10m³/h 尺寸 Size: 3m(ID)×10m(L)
- SOR-20 Q=20m³/h 尺寸 Size: 3.2m(ID)×12m(L)
- SOR-30 Q=30m³/h 尺寸 Size: 3.6m(ID)×15m(L)

化学药剂注入槽
Chemicals Injection Skid



功能
Functions

- 化学药剂溶液存储
Storage of chemical solution
- 化学药剂溶液准确计量
Accurate metering of chemical solution

特点
Features

- 适用于不同化学药剂
Used for various kinds of chemicals
- 运行手动/自动切换
Manual and automatic switching of operation
- 每种化学药剂的自动控制和调节
Automatic control and adjustment of every chemical

槽块系列
Skid Series

- 3 井槽 尺寸 Slots Size: 6m(L)×2.4m(W)×2.6m(H)
- 6 井槽 尺寸 Slots Size: 6m(L)×2.4m(W)×2.6m(H)
- 9 井槽 尺寸 Slots Size: 12m(L)×2.35m(W)×2.7m(H)
- 12 井槽 尺寸 Slots Size: 12m(L)×2.35m(W)×2.7m(H)

软化水模块
Demineralization Water Module



功能
Functions

· 脱除水中矿物质
Removing mineral substances in water

· 通过变频恒压供水
Supplying water by variable frequency constant pressure

特点
Features

· 硬度(CaCO₃)≈0mg/L, 电导率<50us,
悬浮物≈0mg/L
Hardness (CaCO₃)≈0mg/L,
Electrical Conductivity<50us, TSS≈0 mg/L

· 无人操作
Unmanned operation
· 水量自动控制和调节
Automatic control and adjustment of water flow

模块组件
Module Component

软化水模块 Demineralization Water Module

· 水处理量 Water Production ≤4t/h

水过滤模块 Water Filtering Module

· 水处理量 Water Production: 5-10t/h

· 水处理量 Water Production: 10-15t/h

水罐模块 Water Tank Module

· 水处理量 Water Production: 10-15t/h

水处理RO模块 Water RO Module

· 水处理量 Water Production: 5-10t/h

· 水处理量 Water Production: 10-15t/h

模块系列
Module Series

软化水模块 Demineralization Water Module

· DWS-1/2/3/4 Q=1-4t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

水罐模块 Water Tank Module

· WTS-11/12/13/14/15 Q=11-15t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

水过滤模块 Water Filtering Module

· WFS-5/6/7/8/9/10 Q=5-10t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

· WFS-11/12/13/14/15 Q=11-15t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

水处理RO模块 Water RO Module

· ROS-5/6/7/8/9/10 Q=5-10t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

· ROS-11/12/13/14/15 Q=11-15t/h 尺寸 Size: 12m(L)×2.35m(W)×2.7m(H)

纤维球过滤器
Fiber Ball Filter Skid



功能
Functions

- 脱除水中悬浮物
Removing TSS in water

特点
Features

- 悬浮物 $\leq 5\text{mg/L}$, 最大颗粒直径 $\leq 4\mu\text{m}$
TSS $\leq 5\text{mg/L}$, Max. Particle Size $\leq 4\mu\text{m}$
- 无人操作
Unmanned operation
- 运行自动控制
Automatic control of operation
- 运行手动/自动切换
Manual and automatic switching of operation

模块系列
Skid Series

- FBF-100 Q=100m³/h 尺寸 Size: 7.5m(L)×3.0m(W)×3.6m(H)
- FBF-150 Q=150m³/h 尺寸 Size: 8.5m(L)×2.6m(W)×3.4m(H)
- FBF-200 Q=200m³/h 尺寸 Size: 10m(L)×3.0m(W)×3.6m(H)
- FBF-250 Q=250m³/h 尺寸 Size: 13.5m(L)×3.8m(W)×4.0m(H)
- FBF-500 Q=500m³/h 尺寸 Size: 18m(L)×3.8m(W)×4.0m(H)



典型应用：采出水处理厂
Typical Applications : Produced Water Treatment Plant



功能 Functions

- 采出水处理，进行除油、除悬浮物处理后，给下游注水单元提供合格的注水水源
Produced water treatment: after removing oil and suspended solids, the qualified treated water is provided to downstream water injection station

特点 Features

- 降低现场安装的技术要求和费用
Reducing the technical requirements and cost of field installation
- 实现就地控制、远程自控控制、加药手动/自动控制切换
Realizing local control, remote automatic control, manual and automatic switching of dosing

模块组件 Module Component

- 撇油模块
Skimming Oil Module
- 波纹板分离撬
Corrugated Plate Interceptor (CPI) SKID
- 射流气浮撬
Induced Gas Floatation (IGF) SKID
- 气提脱硫模块
Gas Stripping Module
- 核桃壳过滤模块
Nutshell Filtration Module
- 双滤料过滤模块
Dual-Media Filtration Module
- 滤芯式过滤撬
Cartridge Filtration Skid
- 污油回收模块
Slop Oil Recovery Module
- 化学注入模块
Chemical Dosing Module
- 污泥干化模块
Oil Sludge Drying Module

模块系列 Module Series

- 处理能力 Capacity: 500m³/d
- 处理能力 Capacity: 1000m³/d
- 处理能力 Capacity: 2000m³/d
- 处理能力 Capacity: 5000m³/d
- 处理能力 Capacity: 10000m³/d

典型应用：清水处理厂
Typical Applications : Fresh Water Treatment Plant



功能 Functions

- 清水处理，通过除悬浮物、脱盐、脱氧处理后，进行分质供水，为下游用户提供合格的服务水
Fresh water treatment: after removing suspended solids, demineralization and deoxygenation, the qualified service water supply is provided downstream users by according to the different requirements of water quality

特点 Features

- 降低现场安装的技术要求和费用
Reducing the technical requirements and cost of field installation
- 实现就地控制、远程自控控制、加药手动/自动控制切换
Realizing local control, remote automatic control, manual and automatic switching of dosing

模块组件 Module Component

- 原水沉降模块
Raw Water Settling Module
- 水质净化模块
Water Purification Module
- 恒压供水撬
Constant Pressure Water Supply Skid
- 水缓冲模块
Water Buffering Module
- 精细过滤模块
Water Fine Filtration Module
- 脱氧水模块
Deoxygenation Water Module
- 脱盐水模块
Demineralization Water Module
- 化学注入模块
Chemical Dosing Module

模块系列 Module Series

- 处理能力 Capacity: 500m³/d
- 处理能力 Capacity: 1000m³/d
- 处理能力 Capacity: 2000m³/d
- 处理能力 Capacity: 5000m³/d
- 处理能力 Capacity: 10000m³/d

聚合物注入设施简介
Brief Introduction of Polymer Injection Facilities



惠博普已开发出预先设计好的标准化聚合物注入模块和橇，可以满足客户在油田中以最低成本快速实施聚合物驱的需求。针对聚合物的储存、制备和注入，开发出以下各类模块和橇，包括：

- 配置水预处理模块
- 聚合物制备模块
- 聚合物注入模块
- 聚合物稀释橇
- 流量调节橇

A series of standardized polymer injection modules and skids have been developed to match clients' needs to implement quickly and at minimum cost polymer flooding in the oilfield. Various types of modules and skids for storage, preparation and injection of polymer solution are described as below

- Configure Water Pretreatment Module
- Polymer Preparation Module
- Polymer Injection Module
- Polymer Dilution Skid
- Flow Regulating Skid

配置水处理模块
Configure Water Treatment Module



功能
Functions

- 脱除水中有害物质
Removing harmful substances in water
- 脱除水中杂质和悬浮物
Removing impurities and TSS in water

- 新鲜水的准确计量
Accurate metering of fresh water

特点
Features

- 悬浮物 $\leq 10\text{mg/L}$, $S^{2-} \leq 0.5\text{mg/L}$, $\text{Fe}^{2+} \leq 0.5\text{mg/L}$
 $\text{TSS} \leq 10\text{mg/L}$, $S^{2-} \leq 0.5\text{mg/L}$, $\text{Fe}^{2+} \leq 0.5\text{mg/L}$
- 无人操作
Unmanned operation

- 新鲜水自动控制和调节
Automatic control and adjustment of fresh water flow

模块组件
Module Component

- 水处理模块
Water treatment module
- 水过滤和增压模块
Water filtering and boosting module

模块系列
Module Series

WPU-20 (20m³/h) 模块 Module

- 水处理模块 尺寸 Water treatment module Size: 12m(L)×2.35m(W)×2.7m(H)
- 水过滤和增压模块 尺寸 Water filtering and boosting module Size: 12m(L)×2.35m(W)×2.7m(H)

WPU-40 (40m³/h) 模块 Module

- 水处理模块(A/B) 2套 尺寸 Water treatment module(A/B) 2Sets Size: 12m(L)×2.35m(W)×2.7m(H)
- 水过滤和增压模块 尺寸 Water filtering and boosting module Size: 12m(L)×2.35m(W)×2.7m(H)
- 水缓冲罐模块 尺寸 Water buffer tank module Size: 12m(L)×2.35m(W)×2.7m(H)

WPU-80 (80m³/h) 模块 Module

- 水处理模块(A/B/C/D) 4套 尺寸 Water treatment module(A/B/C/D) 4Sets Size: 12m(L)×2.35m(W)×2.7m(H)
- 水过滤和增压模块 尺寸 Water filtering and boosting module Size: 12m(L)×2.35m(W)×2.7m(H)
- 水缓冲罐模块(A/B) 2套 尺寸 Water buffer tank module(A/B) 2Sets Size: 12m(L)×2.35m(W)×2.7m(H)

聚合物配置模块
Polymer Preparation Module



功能
Functions

- 配置聚合物母液
Prepare polymer mother solution
- 聚合物母液熟化
Polymer mother solution maturation
- 聚合物干粉、新鲜水和聚合物稀释液的准确计量
Accurate metering of polymer powder, fresh water and polymer dilution solution

特点
Features

- 自动进料
Automatic feeding
- 母液浓度配置的自动控制和调节
Automatic control and adjustment of prepare mother solution concentration
- 无人操作
Unmanned operation
- 连续熟化
Continuous maturating

模块组件
Module Component

- 聚合物储存与装卸模块
Polymer storage and unloading module
- 聚合物配置模块
Polymer preparation module
- 聚合物熟化模块
Polymer maturation module

模块系列
Module Series

PPU-50 (50m³/h) 模块 Module

- 聚合物储存与装卸模块 尺寸 Polymer storage and unloading module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物配置和熟化模块 尺寸 Polymer preparation & maturation module Size: 12m(L)×2.35m(W)×2.7m(H)

PPU-150 (150m³/h) 模块 Module

- 聚合物储存与装卸模块 尺寸 Polymer storage and unloading module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物配置和熟化模块 尺寸 Polymer preparation & maturation module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物熟化计量模块 尺寸 Polymer maturation metering module Size: 12m(L)×2.35m(W)×2.7m(H)

PPU-300 (300m³/h) 模块 Module

- 聚合物储存与装卸模块 尺寸 Polymer storage and unloading module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物配置模块 尺寸 Polymer preparation module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物熟化模块 尺寸 Polymer maturation module Size: 12m(L)×2.35m(W)×2.7m(H)

PPU-600 (600m³/h) 模块 Module

- 聚合物储存与装卸模块 尺寸 Polymer storage and unloading module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物干粉筒仓 尺寸 Polymer powder silo Size: 3m(ID)×7m(H)
- 聚合物配置模块 尺寸 Polymer preparation module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物熟化模块 尺寸 Polymer maturation module Size: 12m(L)×2.35m(W)×2.7m(H)
- 聚合物熟化计量模块 尺寸 Polymer maturation metering module Size: 12m(L)×2.35m(W)×2.7m(H)

聚合物注入模块
Polymer Injection Module



功能
Functions

- 聚合物母液、新鲜水和聚合物稀释液的准确计量
Accurate metering of polymer mother solution, fresh water and polymer dilution solution
- 聚合物单井注入
Polymer injection to single well

特点
Features

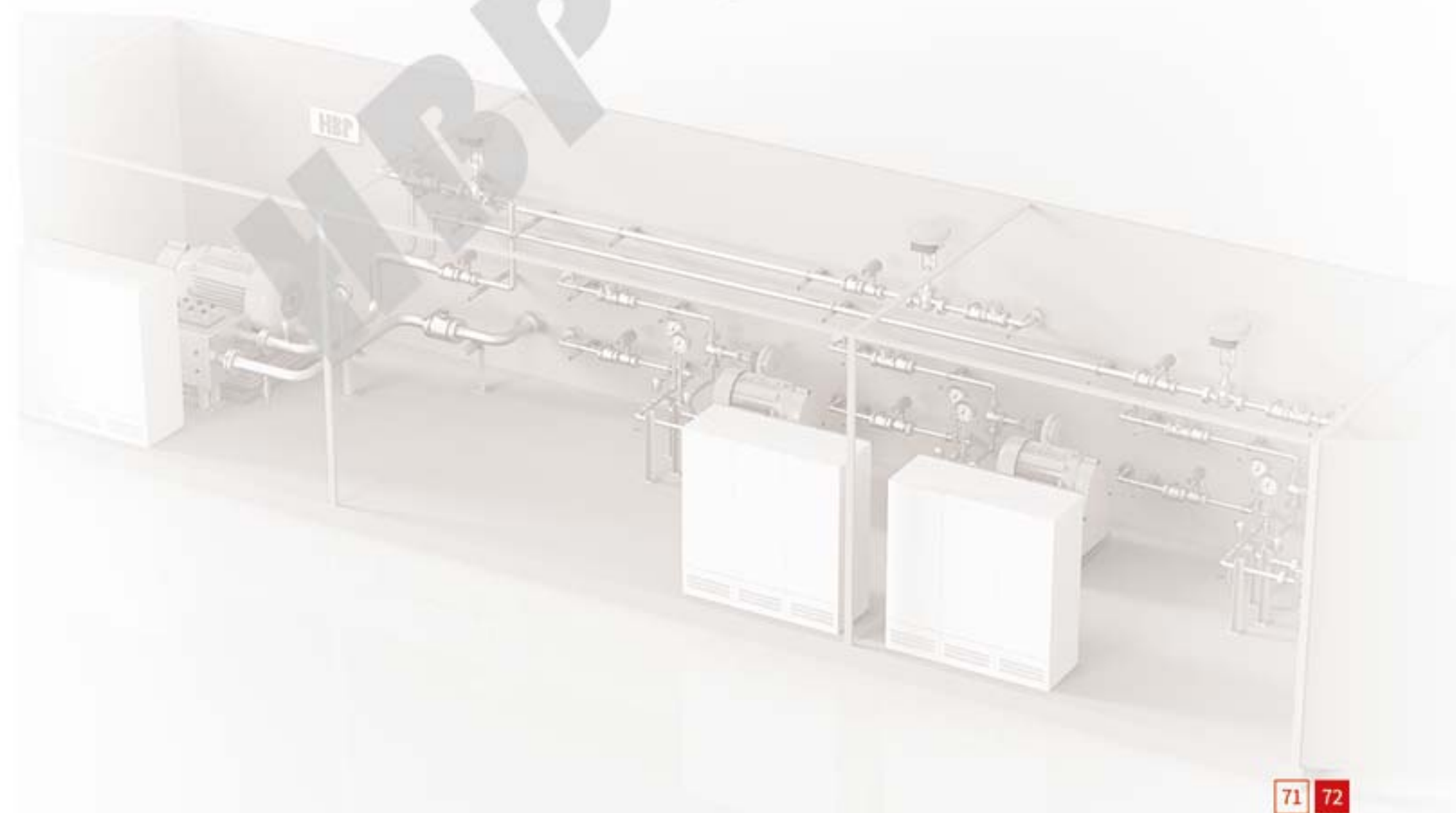
- 单井-单井聚合物注入
Single pump to single well of polymer injection
- 高压混合和注入
High pressure mixing and injection
- 无人操作
Unmanned operation
- 单井自动控制和调节
Automatic control and adjustment for single well
- 适合于不同数量的注入井
Adaptation to different number of polymer injection wells

模块类型
Module Type

- 高压聚合物稀释&注入模块(1/2/3井点)
HP polymer dilution & injection module (1, 2, 3 slots)
- 水增压泵模块(6井点)
Water pump module (6 slots)
- 聚合物注入模块(6井点)
Polymer injection module (6 slots)

模块系列
Module Series

- PIU-1 1井点 尺寸 Slots Size: 6m(L)×2.4m(W)×2.6m(H)
- PIU-2 2井点 尺寸 Slots Size: 6m(L)×2.4m(W)×2.6m(H)
- PIU-3 3井点 尺寸 Slots Size: 12m(L)×2.35m(W)×2.7m(H)
- PIU-6 6井点:
水增压泵模块 尺寸 Water pump module Size: 12m(L)×2.35m(W)×2.7m(H)
聚合物注入模块 尺寸 Polymer injection module Size: 12m(L)×2.35m(W)×2.7m(H)



聚合物稀释橇
Polymer Dilution Skid



功能
Functions

- 制备不同比例的稀释液
Prepared dilution for different proportions
- 聚合物母液和清水的准确计量
Removing TSS in water

橇块系列
Skid Series

- PDU-300 Q=50-300m³/d 尺寸 Size: 6×3.5×2.5m
- PDU-500 Q=100-500m³/d 尺寸 Size: 6×3.5×2.5m
- PDU-1000 Q=300-1000m³/d 尺寸 Size: 6×3.5×2.5m

特点
Features

- 聚合物母液和清水的准确计量
Low pressure mixing and dilution
- 大流量稀释
Large overflowing dilution
- 无人操作
Unmanned operation
- 自动控制和调节
Automatic control and adjustment
- 适合于不同数量的注入井
Adaptation to different number of polymer injection wells

流量调节橇
Flow Regulation Skid



功能
Functions

- 聚合物溶液的调节和注入
Regulation and injection for polymer solution
- 聚合物注入溶液的准确计量
Accurate metering of polymer injection solution

特点
Features

- 高压调节 High pressure regulation
- 无人操作 Unmanned operation
- 聚合物溶液出口流量的自动控制
Automatic control outlet flow of polymer solution
- 适合于不同数量的注入井
Adaptation to different number of polymer injection wells

橇块系列
Skid Series

- FR-5 (5m³/h) 橇块 Skid
 - 3 井点 尺寸 Slots Size: 6×3.5×2.5m
 - 5 井点 尺寸 Slots Size: 8×3.5×2.5m
 - 7 井点 尺寸 Slots Size: 10×3.5×2.5m
 - 10 井点 尺寸 Slots Size: 14×3.5×2.5m
- FR-10 (10m³/h) 橇块 Skid
 - 3 井点 尺寸 Slots Size: 6×3.5×2.5m
 - 5 井点 尺寸 Slots Size: 8×3.5×2.5m
 - 7 井点 尺寸 Slots Size: 10×3.5×2.5m
 - 10 井点 尺寸 Slots Size: 14×3.5×2.5m

特色技术简介

Brief Introduction of Proprietary Technologies



公司成立二十多年来，除了聚焦于油气田地面生产设施外，还针对油气行业全产业链中的各种问题，陆续开发了多项特色技术，以更好满足油气行业绿色、低碳和可持续发展的要求，主要包括：

For the past over 20 years, besides focusing on surface production facilities in oil and gas fields, HBP has also developed a number of characteristic technologies to handle various issues in the entire industrial chain of the oil and gas industry, to better meet the needs of green, low-carbon and sustainable oil and gas industry. The proprietary technologies mainly include:

④ 含油废弃物处理技术 Oily Waste Treatment Technology

包括石油勘探开发、运输、炼制及含油污水处理工程中所产生的含油固体废弃物处理技术，解决了从石油开发至成品油外输过程中含油固体废弃物的处理难题，为石油生产全产业链的环保工作及资源再利用工作做出了贡献。

HBP oily waste treatment technology includes the treatment of oily waste generated from the oil exploration and development, transportation, refining process, and oily water treatment project, which aims to solve the oily waste treatment issues from the oil exploration to the commercial oil transportation, and makes great contributions to environmental protection and resource recycling in the oil industry.

④ 含油污泥处理技术 Oily Sludge Treatment Technology

整套系统包括污泥上料装置、污泥流化预处理装置、污泥调质装置、离心处理装置、加药装置、配电及电气控制系统、站内自动化控制系统，技术成熟、自动化水平高，可实现模块化、橇装化设计，占地面积小、场地适应性好，机动灵活性强、便于异地运输。

The system includes sludge feeding unit, sludge fluidization pretreatment unit, sludge conditioning unit, centrifugal treatment unit, dosing unit, power and electrical control unit, and automatic control system within the station. With mature technology and high level of automation, the system can be modularized and skid-mounted, and possesses the advantages of small footprint, good site adaptability, as well as strong mobility & flexibility, and convenient for remote transportation.

④ 硫磺精制技术 Sulfur Refining Technology

硫磺精制工艺通过硫磺造浆、硫融、分离、造粒等环节，实现硫磺脱水及部分杂质去除，使得硫磺产品能够达到商品硫磺指标要求，尤其适合于老化硫磺处理，具有消耗少、效益高等特点，可显著减少二氧化硫排放量，提高硫磺产品纯度和产品质量，增加产品附加值。

The sulfur refining process realizes sulfur dehydration and partial removal of impurities through sulfur pulping, sulfur melting, separation, granulation and other links, so that sulfur products can meet the requirements of commercial sulfur indicators. It is especially suitable for aging sulfur treatment, with low consumption and high efficiency. , Can significantly reduce sulfur dioxide emissions, improve the purity and quality of sulfur products, and increase the added value of products.

移动井口测试模块
Mobile Well Testing Module



功能
Functions

- 井口测试的多相分离，主要测量压力、温度、流量等参数
Preliminary multiphase phase separation for well testing, mainly measuring parameters such as pressure, temperature, and flowrate, etc.
- 有助于对油藏、气藏进行综合分析和评价
Assisting in comprehensive analysis and evaluation of oil & gas reservoir

模块系列
Module Series

- 3井槽尺寸 Slots Size: 6×3.5×2.5m
- 5井槽尺寸 Slots Size: 8×3.5×2.5m
- 7井槽尺寸 Slots Size: 10×3.5×2.5m
- 10井槽尺寸 Slots Size: 14×3.5×2.5m

特点
Features

- 适用于陆上和海上油气田
Applicable for both onshore and offshore oil & gas fields
- 模块化设计，便于工厂制造和现场操作，尤其适用于沙漠和偏远地区的油气田
Modular design to facilitate prefabrication and onsite connection & disconnection, especially applicable for oil & gas fields in deserts and remote areas
- 能够测试高含硫的油气井测试作业
Capable of testing oil & gas wells with high sulfur content



含油污泥处理模块
Oily Sludge Treatment Module



功能
Functions

- 装置高效、安全和可靠，满足油气田含油污泥的处理要求
Highly efficient, safe and reliable onsite treatment to meet environmental requirements for oily sludge in oil and gas fields

模块系列
Module Series

- 处理能力 Sludge Capacity: M=3 t/h
- 处理能力 Sludge Capacity: M=5 t/h
- 处理能力 Sludge Capacity: M=10 t/h
- 处理能力 Sludge Capacity: M=15 t/h

特点
Features

- 适合于地处偏远和环境恶劣的油气田
Applicable to oil and gas fields in remote and harsh areas
- 经过处理后，污泥中含油量 $\leq 2\%$ ，油中含水量 $\leq 2\%$ ，水中含油量 ≤ 1000 mg/L
After treatment, oil content in sludge $\leq 2\%$, water content in oil $\leq 2\%$, and oil content in water ≤ 1000 mg/L

硫磺精制模块
Sulfur Refining Module



功能
Functions

- 生产出合格的高纯度硫磺，增加附加值，降低二氧化硫排量以保护环境
Producing high-purity qualified sulfur to increase the added value and protect the environment by reducing emission of sulfur dioxide

模块系列
Module Series

- 处理能力 Sludge Capacity: 20t/d
- 处理能力 Sludge Capacity: 40t/d
- 处理能力 Sludge Capacity: 60t/d
- 处理能力 Sludge Capacity: 80t/d
- 处理能力 Sludge Capacity: 100t/d

特点
Features

- 硫磺精制模块在生产高纯度硫磺作业中高效、安全和可靠
The sulfur refining module is highly efficient, safe and reliable in producing high purity sulfur
- 可对存储时间较长的老化硫磺进行有效处理
Capable of treating aging sulfur that has been stored for quite a long period
- 经过处理后，硫磺纯度可高达99.8%
After treatment, the sulfur purity can be as high as 99.8%