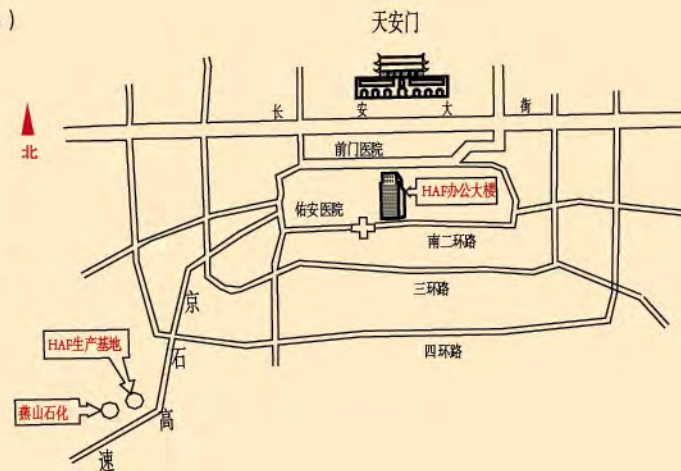


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分离 净化 回收
油气田设备

Separation Purification Recovery
Oil/Gas Fields Equipments/Systems



北京华昌丰机电技术研究开发中心
Huachangfeng Equipment Inc.(HAF)

公司简介

北京华昌丰机电技术研究开发中心 (HAF) 位于北京石化新材料科技产业基地, 在美国费城设有分支机构, 是集研发、设计、试验、制造、专业工程承包为一体的专业化公司, HAF以中国北京为中心, 产品远销韩国, 美国, 中东等多地, 迄今已出口260000件产品无一投诉, 拥有丰富的业绩, 资质及专利, 拥有ISO9001, ISO45001, ISO14001等认证, HAF主要经营范围:

- 过滤、聚结、分离、净化设备以及系统;
- 废气治理及VOC处理系统;
- 温室气体 (GHG) 测控及减排;
- 新一代洁料器和独特的洁粒技术;
- 压裂机组、压裂设备及先进的燃气轮机驱动技术;
- 直燃式蒸汽发生器;
- 海水处理;
- 石油钻井设备;
- 螺杆泵、高速泵及压缩机;
- 自控回流阀、安全阀及特种阀;
- 热能工程产品。

HAF是中国通用机械 (工业) 协会会员, 也是中国石化、中国石油、中国海洋石油、台塑集团、大唐集团等企业供应商, 为行业内大量的瓶颈问题提供了有效的解决方案。

HAF本着“精湛快捷、创新图强”的企业精神, “用先进可靠的技术和及时周到的服务, 让顾客满意”的服务方针, 与用户真诚合作, 谋求共同发展, 实现新的跨越。

Company Profile

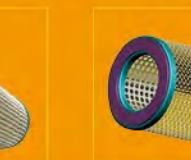
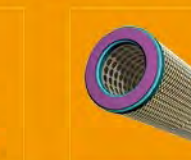
Huachangfeng Equipment Inc.(HAF) is located in Beijing Petrochemical New Material High-tech Industry Base, with branch office in Philadelphia, U.S.A., and distributors in Canada, Mexico, Ecuador, Italy, Germany, Pakistan, Kazakhstan, Azerbaijan, Australia, Nigeria, USA, Russia and many other countries and regions in the middle east. HAF is a professional company focusing on the R & D, design, test, production, and EPC. With Beijing as the headquarters, HAF has exported over 250,000 sets/pieces of products worldwide without any product returns. The company owns many patents, qualifications, experience, and many international certifications like ISO 9001, ISO/TS 29001, OSH 18000, API etc.

HAF provides a broad range of products and services as follows:

- Filtration, coalescence, separation and purification systems;
- Waste gas and VOC treatment systems;
- Greenhouse gas (GHG) monitoring and emission reduction;
- New generation of pellet cleaning technology and equipment
- Frac pump, frac unit and innovative Turbine PowerGen technology;
- Hydroflame-down hole steam generator (DHSG);
- Seawater treatment;
- Oilfield/Gasfield drilling equipments;
- Screw pumps, high speed pumps & compressors;
- Automatic recirculation valve, safety valve and special valve;
- Thermal engineering products.

As a member of the China General Machinery Industry Association(CGMA), and a main supplier of China Petroleum and Chemical Corporation(SINOPEC), China National Petroleum Corporation(CNPC), China National Offshore Oil Corporation(CNOOC), Formosa Plastic Group, China Datang Corporation(CDT) etc. HAF provide many effective solutions for the bottlenecks problems in the mentioned industries. With the company spirit “Quality, Efficiency, Innovation and Dedication “ and service guideline “Satisfying the Customers with superb and reliable technology and timely service “, HAF will sincerely cooperate with our customers for common development.

HAF资质证书 HAF Certificates



主要产品和服务 Products and Services

一、过滤器

1. 列管式反冲洗过滤器
2. 筒式自清洗过滤器
3. 板刷自清洗过滤器
4. 自动脉冲袋式过滤器
5. 高效纤维球过滤器
6. 自动纤维反冲洗过滤器
7. 活性炭过滤器
8. 气体过滤器
9. 油品过滤器
10. 母液过滤器
11. 刚性过滤器
12. 贫富液过滤器
13. 膜过滤系统
14. 其它过滤器
 - 多级过滤器
 - 脱液机
 - 水质过滤器
 - 砂滤器
 - 干燥器
 - 中效过滤器
 - 管道过滤器
 - 航煤过滤器
 - 粗效过滤器
 - 烟气除尘
 - 精密过滤器
 - 烟气脱氮过滤器
 - 空气净化器
 - 烟气脱硫过滤器
 - 车用四滤（机油，汽油，空气，净化过滤器）
 - 船舶用过滤器（柴油，气体，油水净化过滤器）
 - 天然气过滤器
 - 各类医药过滤器
 - 饮料脱渣过滤器
 - 篮式过滤器

二、聚结分离器

1. 除雾器
2. 叶片分离器
3. 旋风分离器
4. 筒式聚结器

三、油气回收

1. 加油站油气回收
2. 油库栈台油气回收

四、废气治理

1. 火炬气有机气体回收系统
2. 尾气中氢气回收系统
3. 合成氨弛放气中氢气回收
4. 石油化工及炼厂气中的氢回收
5. 甲醇弛放气中的氢回收
6. 制氢厂的氢气回收
7. 焦炉煤气中氢气的回收
8. 烟气除尘脱硫脱氮系统
9. 混合气体中有机气体分离系统

五、气体净化

1. 天然气净化脱液系统
2. 室内空气除尘、脱味、杀菌

六、气体提纯

1. 膜法富氧系统
2. 膜法富氮系统

七、油田气田设备

八、除尘器

九、水质处理

十、各种滤芯

十一、洁料器

十二、洁粒系统

十三、温室气体的测控减排

十四、透平压裂机组及泵组

十五、透平发电及氮气发生器十

六、双化热压采油技术

十七、井下电磁微波采油技术十

八、石油钻井设备

十九、螺杆泵、高速泵及压缩机二

十、自控回流阀、安全阀及特种阀

二十一、热能工程产品

二十二、专用设备EPC

二十三、设备的检修和维护

I .Filters

1. Shell and tube back-flush filter
2. Self-cleaning cartridge filter
3. Scraper filter
4. Auto-pulse pocket filter
5. High efficiency fiber ball filter
6. Automatic back-flush fiber filter
7. Carbon filter
8. Gas filter
9. Fuel filter
10. Mother liquid filter
11. Rigid filter
12. Lean/Rich solution filter
13. Membrane filtration system
14. Other filters
 - Multi-stage filter
 - Liquid expeller
 - Water filter
 - Sand filter
 - Desiccator
 - Medium filter
 - Pipe strainer
 - Aviation kerosene filter
 - Coarse filter
 - Flue gas dust filter
 - Precision filter
 - Flue gas denitrifying filter
 - Air purifier
 - Flue gas desulfurizer
 - The four filters for cars(motor oil, petrol, air filters and the purifying filter)
 - Filters for ships(diesel,gas,oil and water filters)

II .Coalescing Separation Unit

1. Demister
2. Vane separator
3. Cyclone separator
4. Cartridge coalescer

III .Vapor Recovery

1. Vapor recovery at filling station
2. Vapor recovery on the loading platform at oil depot

IV. Exhaust Gas Treatment

1. Organic flare gas recovery system
2. Systems recovering hydrogen from tail gas

主要产品和服务 Products and Services

3. Recovering hydrogen from synthetic ammonia purge gas
4. Recovering hydrogen from refinery gases and petrochemical industrial gas
5. Recovering hydrogen from methanol purge gas
6. Hydrogen recovery in hydrogen plants
7. Hydrogen recovery from coke oven gas
8. Flue gas dedust,desulfurization and denitrification system
9. Organic gas separation system for mixed gas

V. Gas Cleaning

1. Natural gas purification and dehydration system
2. Indoor de-dusting,deodorization,disinfection and air-cleaning

VI. Gas Purification

1. Membrane Systems for oxygen enrichment
2. Membrane nitrogen-enrichment system

VII. Oil&Gas Fields Equipments/Systems

VIII. Dust Collector

IX. Water Purification

X. All Types of Filter Elements

XI. Spotless

XII. Spotless System

XIII. Greenhouse Gas Emission Monitoring and Reduction

XIV. Turbine Frac and Pump Units

XV. Turbine Power Generator and Nitrogen Generator

XVI. Two Chemicals Thermal-pressure Oil Recovery

XVII. Electromagnetic Microwave Downhole Oil Recovery

XVIII. Oilfield/Gasfield Drilling Equipments

XIX. Screw Pumps, High Speed Pumps & Compressors

XX. Automatic Recirculation Valve, Safety Valve and Special Valve

XXI. Thermal Engineering Products

XXII. EPC for HAF's Equipments and Systems

XXIII. Equipment/System Overhaul and Maintenance





液-固分离(分离过滤器) L-S Separation(Separating filter)

液固分离是指将离散的固体颗粒从液体中分离出来的机械方法。

基本机理是，根据生产工艺及工况的要求，选择适合工艺要求的分离设备及过滤介质，当物料经过具有一定的过滤精度的过滤介质时，那些对工艺生产无用或者有害的固体颗粒被过滤介质截留并排除，从而实现物料的交流及分离。当然，这结果离不开一个特定的分离环境。

HAF在液固分离设备及技术已相当成熟，其产品包括箱式、离心式、转鼓式、刮刀式、板式、三足式等形式。还有筒式过滤器，它包括自清洗式和非自清洗式，压力和真空式，其它过滤元件所采用的过滤介质有透膜、金属纤维毡、布、金属丝网、金属粉末烧结毡；非金属纤维毡、棉、丝网、纤维布、陶瓷；以及其它无机物、纤维、棉、麻、布等等。其过滤精度从0.01微米到几十目、几百目、甚至几公分不等。HAF所生产的液固分离机械主要用于石油化工、环保、制药、冶金、食品饮料、矿山、航空航天、科研、制漆等领域。

HAF公司制作生产的反洗式芯过滤介质有：金属粉末烧结毡、金属烧结纤维、金属丝网、金属滤布、金属孔板及非金属（包括有机和无机）滤网和滤布。它适合于固体含量较大的场合和那些不能经常拆换的场合应用。可以满足不同过滤精度和不同工况的要求场合。其纳污能力强、强度好、并具有很高的孔隙率和较小的压力降。滤芯可以反复清洗重复利用，它可以用液体也可以用气体或超声波等方法清洗。这样设备维护周期长、成本低、提高了劳动生产率。

一次性过滤芯的过滤介质有：各种有机聚合物纤维、无机滤纸、玻璃纤维布、无纺棉、毡、布等等。它适合于固体浓度较低的场合，可以有效而经济的把固体从液体中分离，是提高产品品质的最好途径，更适合于工厂最终产品和过程液体中微量固体的滤除。它纳污能力强大，使用寿命长、强度高、经久耐用、具有很好的化学和热相容慢、维护操作方便、安全可靠。

L-S Separation aims to remove the solid from liquid. Working principle: when the mixture goes through the filter elements, the impurities/contaminants will be trapped and separated from the mixture. The separation results is related to the given separation condition.

HAF has proven technology and manufacture capability in this field, our products include box-type, centrifuge, drum, scarper; plate, three-leg type etc, as well as cartridge type. The cartridge filters are divided into pressure/vacuum type, self-cleaning and non self-cleaning. The material of the filter elements includes fiber; cloth, metallic wire mesh, sintered metallic powder felt, non-metallic fiber felt, cotton, wire mesh, fiber cloth, ceramic etc The size of particles can be removed from 0.01 micron to hundreds of microns. HAF L-S filters are widely used in many industries, such as peroleum and petrochemical, metallurgy paints production, pharmaceutical, aviation, food and beverage, environment protection, wastewater treatments, useful material recycling and so on.

The materials of the back washing filter elements include: metallic powder, metallic fiber metallic wire mesh, metallic filter cloth, metallic orifice plate, non-metallic wire mesh and filter cloth (include organic and inorganic). They are widely used in the applications with high dust level or where dismantling and replacement is difficult. It may be used in different applications with various filtration rating. With good dirt holding capacity high strength, high porocity and lower pressure drop, the filter elements may be reused and washed repeatedly by liquid, gas or with ultrasonic. This will increase productivity with longer interval and lower cost for maintenance.

The material of construction for the disposable filter elements includes: various organic polymer fiber; inorganic filter paper; fiber glass cloth, nonwoven cotton, felt, doth etc. It is suitable for the applications with high solids level, and the solids in the liquid will be separated and removed economically with high efficiency. It is the best solution for enhancing product quality it is most suitable to be used for the filtration and removal of trace impurities from the end products and the process fluids. The product highlights includes high dirt holding capacity, longer service life, high strength, durable, good chemical and thermal compatibility easy maintenance, safe and reliable.

气-固分离(分离过滤器) G-S Separation(Separating filter)

气固分离系统中的核心元件是过滤元件，它一般是由金属烧结纤维、烧结粉末、金属丝网、布、陶瓷、以及有机聚合物制成的布、网、毡、纤维，还有无机的纤维、毡等。HAF所设计的气固分离系统的设备有箱式、袋式、离心式、旋风式、筒式分离器等。

该系统广泛应用于冶金、环保、石油化工、电子、微电子、医学科研、航空航天及其它领域。



对于气固分离系统中固体含量较高的场合,HAF设计生产

了内置旋风分离器袋式过滤器。这样的组合更趋于合理和经济。因为这样能够反复利用反复清洗，而且系统压力较小，纳污能力高，过渡精度高。而对于系统中固体含量较低的场合，HAF专门生产了一次性过滤芯，成本低，且实用性很强，纳污能力更强，化学相容性也好，维护方便，系统工作稳定。

The key component of the G-S Separation system is filter element, the material of construction generally includes: sintered fiber metal, sintered metallic powder, metallic wire mesh, cloth, ceramic, as well as the doth, mesh, felt and fiber made of organic polymer, inorganic fiber, felt etc. The types of HAF G-S separating equipment include: box-type, bag, centrifuge, cartridge and so on. This system is mainly used in metallurgy, environment protection, petrochemical, electronic, microelectronic, pharmaceutical research, aviation and other industries.

HAF also designs and manufactures cyclone bag filter for the dust laden application. This design is more reasonable and economical, as it can be used and cleaned repeatedly. The features of this filter include: lower system pressure, higher dirt holding capacity and higher filtration precision. HAF also developed a disposable filter element, its characteristics include lower cost, higher performance, better chemical compatibility; easier maintenance and more stable operation.



气-液分离(聚结分离器) G-L Separation(Coalescing separator)



在生产生活中，对于那些用气设备来说，当气体中含有液体或有 害液体时，会造成设备的损害和生产的浪费，这是工艺过程和设备运转 所不允许的。那么就得采用一种方法将其除去，而实现这一方法的设备 就是聚结器。它是把小的液滴聚结成大的液滴，在气体压力的作用下随 气体一道穿过几层过滤介质，每一层的平均孔径渐增，呈倒三角形，那 么当液体向出口方向流动时，它们就越聚越大。通过连续不断的聚结过 程，直到使液滴不断聚结得更大并靠其重力进入液体收集区，从而被排 出系统，得到纯洁干净的可用气体。根据工况工艺的不同有多种形式，但其工作原理基本一样。像除雾器、叶片分离器、旋风分离器、筒式聚 结器等都是实现这一功能的设备。

实现气液分离的过滤介质和设备有：疏水性或疏油性的络合物、聚合物、玻璃纤维以及其他涂有聚合物的金属纤维、陶瓷材料等。分离 聚结元件的过滤面积大、分离效果好，其精度可达到0.5 ppm。

HAF气液聚结器及旋流式油水分离机广泛应用于石油化工、机械 设备、科研、航空航天、环保以及化工业。

具体介绍详见HAF《高效聚结分离器》样本

The gas mixed with liquid or even harmful liquid will damage the facility and that's strictly forbidden in the process and the equipment operation. To avoid this problem, coalescer is required. Working principle: Firstly it coalesces the smaller liquid drops into bigger ones, then under the pressure of the gas, the liquid with gas will go through several layers of filter media (the hole size increasing) until the drops grow big enough and enter the liquid accumulating area, and finally drained. A clean and usable gas is obtained.

In order to realize the gas liquid separation, HAF supplies several types of coalescers, such as mist eliminators, cartridge coalescers. Their processes are different, but the working principles are the same. Filter elements used include: polymer, glass fiber, ceramic, and metallic fiber with polymer coating. The larger the filtration area, the better the separation efficiency. The precision may reach up to 0.5 ppm.

The G-L separation is widely used in many fields, such as petroleum and petrochemical, mechanical machinery scientific research, aviation and environment protection.

For detail description of G-L separation, please refer to HAF's Coalescer brochure.



液-液分离(聚结分离器) L-L Separation (Coalescing separator)

随着科技进步，动力装置对其消耗的液体燃料品质要求越来越高，全球环境的日益恶化，环保也要求各类排放物的排放标准逐步提高。为解决此类问题，就出现了聚结器。其作用机理是利用特定过滤介质的极性和非极性基团，使那些物流中对使用效果有明显副作用的小液滴逐步形成大液滴，在液体压力作用下，越聚越大，最终被收集在一起排除出去，获得高品质的流体。

实现液液分离的过滤介质及设备有很多种，传统聚结器，静电捕集器、各类膜、沉降槽等等。介质不外乎有机聚合物及涂有聚合物膜的金属滤材、非金属滤材、无机滤材。这些过滤介质适应性强，不受其它物料存在与否的影响，并且分离精度达0.5ppm以下，寿命长，安全可靠，维护简便，具有很好的化学相容性。

液液分离技术广泛应用于各类油品中水的去除。或者水中油的去除，液化石油气中胺的去除等等。因而广泛应用于石油化工、冶金印染、机械、电力、航空、交通动力、环保等行业。

With the development of technology, the quality requirements of the liquid fuel consumed by power equipments is becoming higher and higher. Besides, as the deterioration of the global environment, the more strict emission standards are issued as well under the pressure of environment protection. In order to solve this problem, L-L separation equipments(Coalescers) are developed. The working principle of coalescer: this separation depends on the polar group and nonpolar group of the filtration media, the smaller drops in the mixed liquid that have negative effect for the application will be gathered into bigger ones, and the drop will become bigger and bigger under the pressure of the liquid, once the drop grows big enough, it will be drain out finally. Those left are the desired high quality fluid.

Many filter elements and equipments can be used for L-L separation, equipments like traditional coalescer, static catcher, membrane and settlers etc.; Filter elements like metallic and non-metallic filter elements, inorganic elements etc. With the advantages of long service life, high reliability, easy maintenance, good chemical compatibility, the mentioned media will not be affected by other materials and the precision can reach well below 0. 5 ppm.

This type of equipment is mainly used in removing water from oil products, removing oil from water; or removing amine from liquefied petroleum gas. It is widely used for the industries of petroleum and petrochemical, metallurgy, printing and dyeing, power plant, aviation, transportation and power, environment protection and so on.



气-气分离 G-G Separation

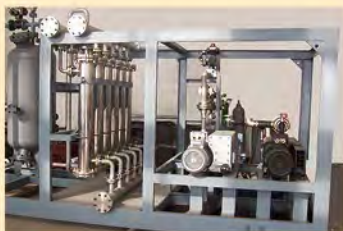
气气分离是从两种或两种以上气体混合物中提取某种纯气体，或将混合物中各种气体组份完全分离开来。它能够将排放的混合废气进行回收利用。利用该设备还能达到净化、脱液、除尘、除味和杀菌的作用，并且还能从各种混合气及工业废气中回收提纯氧气、一氧化碳、二氧化碳、甲烷、脱除天然气中C₂+烃、脱硫、利用空气制富氧、纯氮等。

膜过滤 Membrane Filtration

膜分离技术是对液液、气气、液固、气固体系中不同组分进行分离、纯化与富集的一门多学科交叉的新兴边缘科学技术。膜分离技术是用半透膜作为选择障碍层，在膜的两侧存在一定量的能量差作为动力，允许某些组分透过而保留混合物中其他组分，各组分透过膜的迁移率不同，从而达到分离目的。

膜分离技术的核心是膜，膜是具有选择性功能的材料。利用膜的选择性分离实现料液不同组分的分离、纯化、浓缩的过程称作膜分离。它与传统过滤的不同在于，膜可以在分子范围内进行分离，并且这是一种物理过程，不需发生相的变化和添加助剂。膜的孔径一般为微米级，依据其孔径的不同（或称为截留分子量），可将膜分为微混膜、超滤膜、纳滤膜和反渗透膜，根据材料的不同，可分为无机膜和有机膜，无机膜目前只有微滤级别的膜，主要是陶瓷膜和金属膜。有机膜是由高分子材料做成的，如醋酸纤维素、芳香族聚酰胺、聚醚砜、聚氟聚合物等等。其分子、离子级的过滤精度，可以用于：

- A. 饮用水无菌净化
- B. 空气无菌净化
- C. 油水分离
- D. 海水、苦咸水淡化
- E. 药物提纯
- F. 酒、饮料的澄清
- G. 血液、乳制品的浓缩
- H. 氮气等制取
- I. 气体提纯
- J. 污水处理



Gas-Gas separation aims to extract one or more gas components from the gas mixture (at least two kinds of gases). This equipment could recover and reuse the effluent waste gas, it may also be used for gas cleaning, dedusting, Membrane Filtration deodorization, disinfection; Recovering and purifying the H₂, CO, CO₂, methane from various gas mixture, removing the C₂+Hydrocaron from natural gas.



Membrane separation technology is an interdisciplinary novel technology, which aims to separate, purify and enrich different components in the mixtures, the separation includes liquid to liquid, gas to gas, gas to solid, and liquid to gas separation. The working principle is: the equipments adopt the semi-permeable membrane as the filtration layer. The driving force comes from the energy difference at both sides of the membrane; With different passing rate of each composition, the membrane will let some compositions pass while retaining other components.

The key component of the membrane technology is the selective permeable membrane. Membrane separation is a process where different compositions of the fluid products are selectively separated, purified and condensated. The membrane filter differs from the traditional filter in that the membrane filter could realize the molecule level physical separation. It does not need any phase change or chemical additives. The membrane pore size is measured by micron. It can be divided into four types based on the different pore size: MF, UF, NF and RO membranes, it can also be divided into inorganic and organic membrane based on the material of construction. Inorganic membranes are MF level ceramic and metallic membrane. Organic membranes are made of high polymer materials, such as cellulose acetate, aromatic polyamide, PES, Fluoropolymer PTFE and so on.

If filtration precision reach to molecule or ion level, it may be widely used in drinking water sanitation, air sanitation, oil-water separation, seawater/saltwater desalination, medicine extraction, wine and beverage fining, blood and dairy products inspissations, nitrogen generation, gas purification, wastewater treatment, waste gas treatment and so on.

固-固分离 S-S Separation

According to the process application requirements, solid -solid separation aims to separate the particles/fines based on the different size and density by different size of mesh screens(small, medium or large), or separate the fines/ particles using the air/ liquid stream as auxiliary. The S-S Separation is widely used in all the fields of fines and particles separation.

HAF's S-S separation products include the following types: Vibrating screen, power screen, centrifuge screen, pneumatic separating screen, cyclone, mechanical centrifuge etc. The filter precision can reach a wide range from several microns to dozens or hundreds of millimeters. S-S separation is widely used in various application: mining, food processing, petrochemical, pharmaceutical, construction, metallurgy, scientific research, agriculture and so on.

固固分离是根据工艺工况需求，将大小不同，密度不同的某种或某些物糊野斗或粉料，用细筛、粗筛筛分或借用气流、水流作为辅助手段将固体与固体分离，固固分离适用于各行各业中的粉状和颗粒状物料的分离。

HAF公司的固固分离产品有：振动筛、机械筛、离心筛、风力分选筛、筛器、机械离，海等。分离精度从微米到几毫米、十几毫米、几百毫米不等。

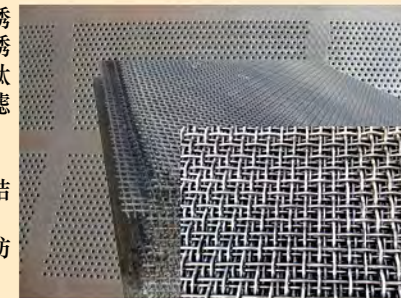
固固分离广泛用于矿山、食品加工、石油化工、制药、建筑冶金、科研、农业等行业。



HAF提供各种各样滤芯，过滤精度从0.05毫米到几百毫米不等。

主要滤芯有：

折叠式熔体滤芯、PP溶喷滤芯、陶瓷烧结滤芯、不锈钢烧结滤芯、纤维烧结滤芯、金属烧结滤芯、活性炭滤芯、线缠绕滤芯、微孔折叠滤芯、空气呼吸器滤芯、钛滤芯、全焊式烧丝筛管、油气分离滤芯、油水分离滤芯、盘式滤芯、单丝编绕滤芯、不锈钢折叠滤芯、不锈钢烧结滤芯、不锈钢烧结滤片、不锈钢烧结网滤芯、钛烧结滤芯、陶瓷滤芯、青铜烧结滤芯、铜粉烧结滤芯、玻璃纤维烧结滤芯、PE烧结滤芯、纸滤芯、无纺布滤芯、玻纤滤芯、聚结滤芯等。

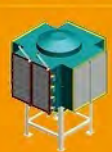


滤芯 Filter Elements

HAF provides all kinds of elements. The filtration rating ranges from 0.05 micron to hundreds of microns.

The main filter elements are as follows:

Pleated melt filter elements, PP filter elements, sintered ceramic filter elements, sintered SS filter elements, sintered fiber elements, sintered metallic filter elements, active carbon filter elements, thread wound spiral filter elements, pleated millipore filter elements, filter elements for air breathing apparatus, titanium filter elements, all welded sintered screen tube, oil-gas separating filter elements, oil-water separating filter elements, plate filter element, single wired winding filter elements; pleated SS filter elements, sintered SS filter elements, sintered SS filter plate, sintered SS mesh filter elements, sintered titanium filter elements, ceramic filter elements, sintered bronze filter elements, sintered copper powder filter elements, sintered fiber glass filter elements, sintered PE filter elements, paper filter elements, non-woven fabric filter elements, glass fiber filter elements, coalescer filter elements etc.



水质处理
Water Purification

H/TZGQ管道透平自洁过滤器
TZGQ Self-cleaning Turbine Filter

在过滤分离行业，过滤和堵是一对矛盾，过滤就要将流体中的颗粒拦截，而拦截住的颗粒必然要堵塞流体的流动，一旦压降超过一定值，流体的流动就会受阻，使过滤分离设备降效或失效。如何低成本而有效地解决这个矛盾，显然成为业界的一大难题。

- HAF针对
- 海水净化淡化
 - 压舱水处理
 - 江河水处理
 - 污水处理
 - 原水净化
 - 循环水净化
 - 特殊环境流体过滤分离等等
- 独创了全新的设计理论，并将此定义为HAFRID系列“自控定位反洗过滤器Gapwash™”，其两项专利号分别为：
- 201010601552.X
 - 201010601554.9

- 该系列过滤器与普通自动反洗过滤器相比具有以下特点：
- 反洗效果显著提高，反洗不需要压缩气体
 - 过滤精度高，可用于去除过滤1微米以下的杂质
 - 互换性强，较易更改不同精度的滤芯
 - 流量大，单台过滤器的处理量可达9000立方米/小时
 - 流体消耗小,是传统自动反洗消耗量的15%
 - 操作弹性大,对流体杂质的颗粒度要求低（适应水质能力强）
 - 设备可用于高温、高压下
 - 设备投资小，维修简单，费用少

- 供用户可选项如下：
- 根据工况，可选配不锈钢、钛等多种滤芯
 - 占用空间小，并有立式、卧式可选
 - 防爆、防护可选
 - PLC可选及4-20mA,1-5可选
 - 控制方式、仪表指示可选
 - 供电电压、频率可选
 - 按流体性质过滤材料可选
- 如：海水，壳体可选双相钢，滤芯选钛。

Filtration and block is a pair of contradiction in the filtration and separation field. Filtration aims to intercept the particles from the fluid, and the fluid flow will be blocked by the trapped particles inevitably. When the pressure drop exceeds a set value, the flow will be blocked by the particles, the efficiency of the filtration/separation equipment will be reduced or even deactivated. It becomes a bottleneck to solve the problems effectively with low expense.

HAF especially develops a new design on the filters for the below applications:

- Sea Water Purification and Desalination
- Ballast Water Treatment
- River Water Purification
- Waste Water Purification
- Raw Water Purification
- Circulating Water Purification
- Fluid Filtration in special environment, etc.

HAF defines the above patented filters as HAFRID series "Gapwash™—Automatic Intermittent Back Flushing Filter". The invention patent numbers are 201010601552.X and 201010601554.9

Why the new patent filters are more efficient than the traditional automatic back flushing filters:

- Significant improvement on back flushing function, and no compressed gas is needed for back flushing;
- Higher filtration accuracy(<1 micron);
- Higher interchangeability, the filter element can be easily replaced by the ones with different filtration accuracy;
- The filter is suitable for high flow rate with up to 9000 m³/hr per single filter;
- Lower consumption for the back flushing fluid, (15% of traditional automatic back flushing consumption)
- Flexible operation; lower requirements on the granularity of the impurities in the fluid. (Higher adaptability to various water quality);
- Filter may operate under high temperature and high pressure conditions;
- Lower investment, easy maintenance with less cost.

Customized requirements:

- According to different applications, the material of the filter element can be selected as stainless steel, titanium etc.;
- Small footprint, available in vertical or horizontal orientation;
- The ranges of PLC are 4-20mA, 1-5V (Options);
- Control methods and indicating instruments (Options);
- Power voltage/frequency (Options);
- Different fluid properties with different materials.

H/TZGQ管道透平自洁过滤器型号及(设计)选型参数表
Model and Design Sizing Datasheet of H/TZGQ Self-cleaning Turbine Filter

注：H(华昌丰) TZGQ (透平自洁过滤器) -T (形式) A (管口尺寸) -X (标准过滤精度-目)

Note: H (HAF) TZGQ(Self-cleaning Turbine Filter) -T (Type) A (Nozzle size) -X (Standard Filter rating-mesh)

规格设备 型号 Specification & Model	适用 介质 Applicable Media	管口(流速 1.5-3m/s) Nozzle (velocity 1.5-3 m/s)		有效过滤面积与 管口截面积倍数n Effective filtration area to Nozzle cross section area ratio, n	设备外型尺寸(mm) Outline Dimension (mm)						
		N1/N2	N3		Ø	H	C	L	备注 Remarks		
									滤芯数量Element Qty	法兰标准 Flange Standard	压力等级 Pressure Rating
H/TZGQ-T1-40	L	1" (DN50)	1/2"	1.5	89	185	160	85	1	通用 General	低中高L.M.H.
H/TZGQ-T2-40	L	2" (DN50)	1/2"	1.5	114	310	285	150	1	通用 General	低中高L.M.H.
H/TZGQ-T3-40	L	3" (DN80)	1/2"	1.5	159	460	420	220	1	通用 General	低中高L.M.H.
H/TZGQ-T4-40	L	4" (DN100)	1/2"	1.5	219	590	540	285	1	通用 General	低中高L.M.H.
H/TZGQ-T6-40	L	6" (DN150)	3/4"	1.5	273	865	795	420	1	通用 General	低中高L.M.H.
H/TZGQ-T8-40	L	8" (DN200)	1"	1.5	355	1130	1050	545	1	通用 General	低中高L.M.H.
H/TZGQ-T10-40	L	10" (DN250)	1"	1.5	457	1410	1290	680	1	通用 General	低中高L.M.H.
H/TZGQ-T12-40	L	12" (DN300)	1-1/2"	1.5	525	1675	1535	805	1	通用 General	低中高L.M.H.
H/TZGQ-T14-40	L	14" (DN350)	1-3/4"	1.5	610	1835	1680	885	1	通用 General	低中高L.M.H.
H/TZGQ-T16-40	L	16" (DN400)	2"	2.5	660	2010	1920	1010	1	通用 General	低中高L.M.H.
H/TZGQ-T18-40	L	18" (DN450)	2"	2.5	762	2356	2160	1135	1	通用 General	低中高L.M.H.
H/TZGQ-T2040	L	20" (DN500)	3"	3.5	863	2620	2400	1260	3	通用 General	低中高L.M.H.
H/TZGQ-T22-40	L	22" (DN550)	3"	3	914	2885	2640	1385	3	通用 General	低中高L.M.H.
H/TZGQ-T24-40	L	24" (DN600)	3"	3	1016	3145	2880	1510	3	通用 General	低中高L.M.H.
H/TZGQ-T26-40	L	26" (DN650)	3"	3	1066	3405	3115	1635	3	通用 General	低中高L.M.H.
H/TZGQ-T28-40	L	28" (DN700)	3"	3	1168	3665	3355	1765	3	通用 General	低中高L.M.H.
H/TZGQ-T30-40	L	30" (DN750)	3"	3	1270	3930	3600	1890	3	通用 General	低中高L.M.H.

注：

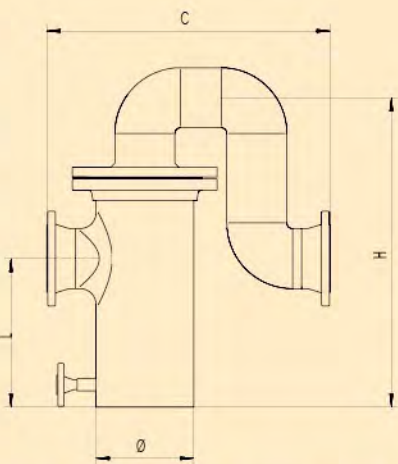
1.以上选型数据仅适用于液体的品质净化、标准过滤精度40-80目的管道过浓题的选型，高于80目的选型与厂家联系确认其型号；

2.气体选型数据参照气体管道透平自洁过滤器的造型样本。

Note:

1.The above data are only used for the sizing of filter with 40 to 80 mesh rating, which are suitable for liquid purification. For the filter sizing above 80 mesh, please consult HAF;

2.Please refer to the Self-cleaning Turbine Filter Sizing brochure for gas sizing data.



具体详细介绍参见HAF «Gapwash» 样本

For example: sea water may select duplex steel for housing and titanium for filter element.

HMGXG脉冲刚性气体过滤设备
HMGXG Pulse Air Rigid Filter

HMGXG脉冲刚性气体过滤设备
HMGXG Pulse Air Rigid Filter

公司简介
Company Profile

HAF资质证书
HAF Certificates

产品和服务
Products and Services

产品介绍
Products Introduction

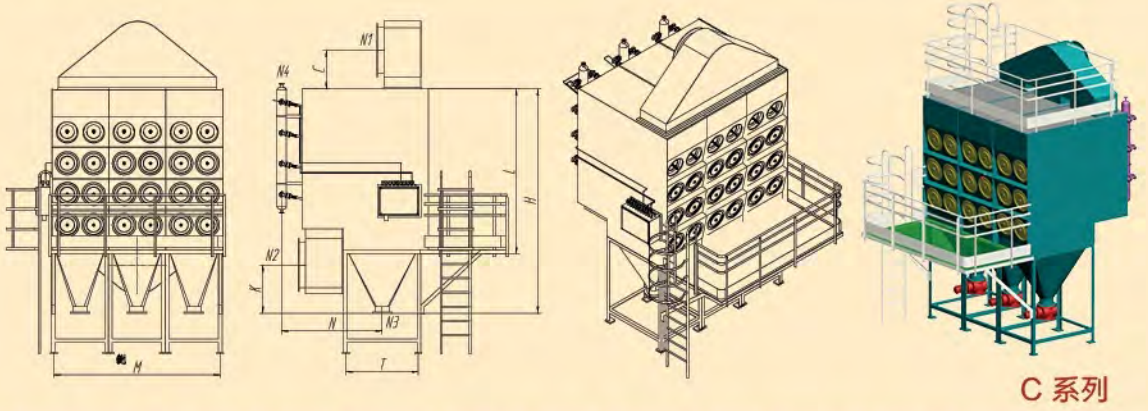
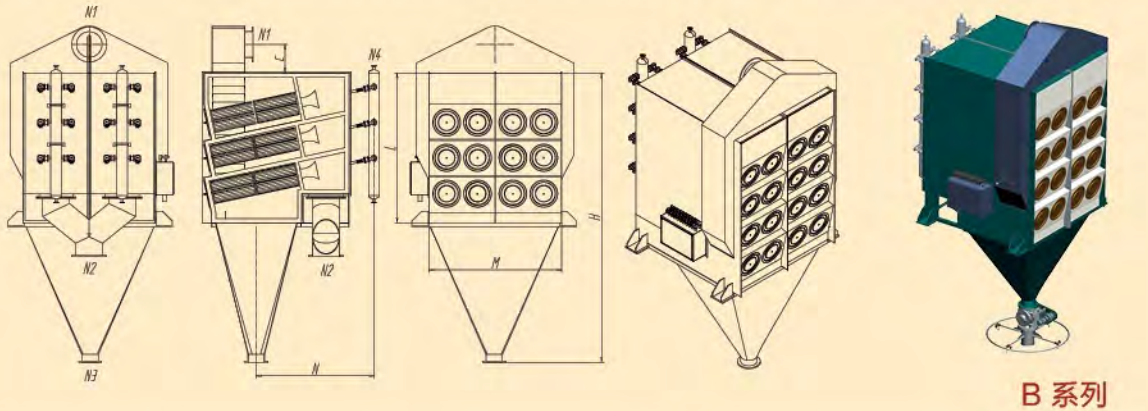
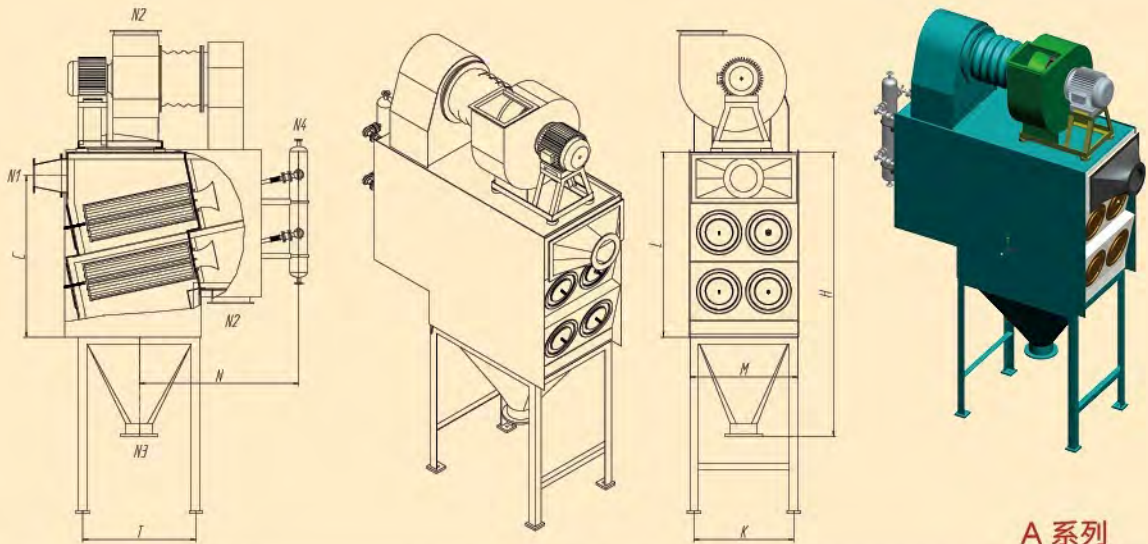
产品应用
Product Application

HMGXG脉冲刚性气体过滤设备型号及(设计)选型参数表
Specification of HMGXG Pulse Air Rigid Filter

规格型号:HMGXG-A231-5 /(a x b)-n
注: H(华昌丰)MGXG(脉冲刚性过滤器)ABCD(型式)231(结构布局)-5(过滤精度微米)(a x b)(滤芯规格)-n(滤芯数量)
Model: HMGXG-A231-5 /(a x b)-n
Note: H(HAF) MGXG(pulse air)ABCD(type)231(Configuration)5(filter rating,micron)(a x b)(Specification)-n(No. of element)

Table with 15 columns: 设备型号 Model, 流量 Flow rate, 脉冲阀规格/数量 Pulse valve Spec/Qty, 风机运行状态 (静压) opeccond. of fan (Static), 过滤面积 m² Filtration area, m², 配用功率 KW Power KW, 设备外形尺寸(mm) Outline dimension (mm), 管口 (25m/s) Nozzle(25m/s), 重量kg Weight kg. Rows include models like HMGXG-A221-5, HMGXG-A231-5, HMGXG-A232-5, HMGXG-B431-5, etc.

注:
1. 以上选型数据仅适用于粉尘大于200mg/m3的气体净化,空气净化应选用其对应面积的一半,管口及功率不变;
2. 以上设备重量不包括风机及其附件。
Note:
1. The above data are suitable for the gas purification with dust contents larger than 200mg/m3, for air purification, half of the corresponding filtration area shall be used, the nozzle and power remain the same;
2. Fans and other auxiliaries are not included in the above equipments.



天然气(伴生气)干燥器 Natural Gas(Associated gas) Filter Dryer

天然器（伴生气）的干燥有很多办法，这里介绍的是一种适合于炉前天然气（伴生气）干化的设备。

主要功能：

- 去除天然气中的，1）微小雾状物及机杂；
2）低聚物；
3）重烃，等。

主要目的：

使天然气更纯净和干燥，以确保燃烧炉的“长，满，优”运行。

主要特点：

- 1）多级处理，效果好；
2）技术经济性好；
3）操作简单；
4）维修量小；
5）安全，可靠等等。



There are many solutions for Natural gas (Associated gas) drying in the world, here we introduce a solution which is suitable for Natural gas (Associated gas) drying before driving them into the furnace.

Key functions:

removal of

- 1) mist or mechanical impurities;
2) oligomer;
3) heavy Hydrocarbons etc.

Main purpose:

To obtain more purified and dryer Natural gas to guarantee the long term, full load and stable operation of the furnace. Main features:

- 1) Multi-stage treatment with satisfactory results;
2) Economical good technology;
3) Easy operation;
4) Less maintenance work;
5) Safe and reliable operation, etc.

油/煤田伴生气回收 Associated gas recovery in the oil& coal fields

油/煤田伴生气回收的方案有：

- 1) 压缩、管输；
2) 压缩液化；
3) 就地燃气轮机发电；
4) 就地制甲醇。

将伴生气制成甲醇，国内尚无，是HAF的美国合作者的新技术。甲醇是液态的较稳定安全，储存和运输比较便利。

主要设备构成是：

蒸馏塔，闪蒸罐，涤气器，反应器，换热器，压缩机等。
主要原料可以是：伴生气，煤层气，沼气，天然气等等。

特点是：

- 1) 可以小型化，成小型移动撬装；
2) 无需催化剂；
3) 不消耗水；
4) 对原料，如伴生气，要求不高；
5) 操作简单，等等。



车载式的现场照片
Trailer Test unit



可移撬装式照片
Portable (Mini)

Technologies for associated gas recovery in the oil/coal fields include:

- 1) Compression, pipeline transportation;
2) Compression and liquefaction;
3) On site power generation with turbine;
4) Convert gas into methanol on site.

Presently there is no technology available in China to convert associated gas into methanol, it is HAF partner's new technology from the U.S.A..

Methanol is a stable and safe chemical in liquid phase, it is convenient for storage and transportation.

The equipments consist of: Distillation tower, Flash tank, Scrubber Reactor, Heat exchanger, Compressor etc.

Main features include:

- 1) Small footprint, transportable and mobile skid;
2) No catalyst required;
3) No water consumption;
4) Less requirement on the raw material, such as the associated gas;
5) Simplicity of operation/reliable, etc.

二相分离器（单级或二级或多级）

HA提供各种类型的二相分离器。根据不同组分密度不同的原理，从混合物中分离两种组分。过滤/分离效率高达99.999%。

三相分离器

HAF三相分离器处理气量高达100百万标准立方英尺/天，液体流量高达200000桶/天，并满足从采出水中分离气体和油所需的必要的条件，分离效率高达99.9%。15年来，HAF推进概念试验，设计和生产三相分离器，着重客户满意。通过整合分离效率，无需维护设计以及耐用性。

干气过滤器

HAF提供高效干气过滤器，在相对低的压降下从天然气中有效去除粉尘和其他固体。俄日保护下游设备，干气过滤器用于从天然气中去除固体颗粒，如金属锈，尘土和管垢。过滤器分为立式或卧式。HA也开式干气过滤器便于检修港芯。

旋流器

HAF提供的旋流器可以处理大范围流量的液体。旋流分离是一种从空气，气体或液体流中去除颗粒的方法，通过涡流分离而无需使用过滤器。分离固体和流体混合物时需要用到涡轮效应和重力。此方法也可用于从气流中分出细微液珠。有时候，旋流器可以替换立式二相分离器。

脱水/甜化装置

从井内开采出来的天然气都含有水蒸气。伴随天然气还可能产生游离水或液态水。当气体沿着井口向上到达表面时，会因减压以及低温的地层热传导而冷却。当气体温度降低时，气体保持水蒸气的能力降低，因此当天然气达到地面时几乎总是与水蒸气饱和。饱和气过度冷却会造成水冷却。如果气体进一步冷却，会形成水合物（固体，结晶水/烧化合物）。

详见HAF《油田气田分离净化设备》样本

油田气田分离净化设备 Filtration, Separations Purification Systems in the Oil/Gas Field

Two Phase Separator (single stage or two or more stages)

HAF supplies different types of two phase separators aims to separate two components from the mixture based on the different component densities. The filtration/separation efficiency can reach up to 99.999%.

Three Phase Separator

For professional of all fields, HAF three phase separators handles gas flow rate upto 100 MMSCFD and liquid flow rate upto 200000BBL/D and fulfill all of the prerequisites necessary for separation of gas and total liquid from a production stream, the separation efficiency could reach to 99.9%. For more than fifteen years, HAF has been advancing these concepts, engineering and manufacturing three phase separators that emphasize complete customer satisfaction. HAF got the API 12J(oil and gas separator) in 2010. With their combination of removal efficiency, maintenance free design and durability,.

Dry Gas Filter

HAF dry gas filters offer high efficient and effective removal of dust and other solids from natural gas at relatively low pressure drop. It is designed to remove solid particulate such as rust, dirt, and pipe scale from nature gas to protect downstream equipment. The filters are manufactured either in a vertical shell or in horizontal shell. HAF dry gas filter with flanged of quick opening closure to facilitate the access to the filter element.

Cyclone

HAF offers the cyclones with a wide range of capacity. Cyclonic separation is a method of removing particulates from an air; gas or liquid stream, without the use of filters, through vortex separation. Rotational effects and gravity are used to separate mixtures of solids and fluids. The method can also be used to separate fine droplets of liquid from a gaseous stream. Sometimes, the cyclone could replace the vertical two phase separator.

Gas Dehydration/Sweetening System

All natural gas well streams contain water vapor as they leave the reservoir. Free or liquid water may also be produced with the natural gas. As the gas travels up the well bore to the surface, it cools due to pressure reduction and heat conduction to cooler formations. The ability of gas to hold water vapor decreases as the gas temperature decreases, so natural gas is nearly always saturated with water vapor when it reaches the surface. Additional cooling of saturated gas causes condensation of water. If the gas is further cooled, hydrates (solid, crystallized water/hydrocarbon compounds) can form.

Detail information please refers to Filtration, Separations Purification systems in the Oil/Gas Filed

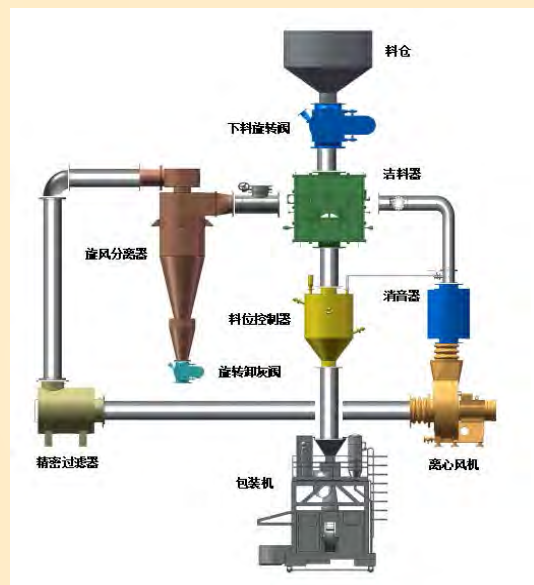


SpotLesser洁料器洁粒系统 Spotless System

塑料粒料中的粉尘，会对塑料加工业带来诸多问题。粉尘含量高，会降低粒料品质影响价格，粉尘会吸收水分，破坏粒料长分子结构，缩短粒料使用寿命。粒料在加工的过程中，粉尘发飞散的空气中造成空气污染，粉尘还会粘附传送螺杆，造成堵塞并减少设备使用寿命。粉尘携带静电容易吸附灰尘，会使注塑成品表面粗糙影响玩具等产品的美观和质感，使塑料薄膜出现瑕疵透明度不理想等质量问题，粉尘甚至会影响内部结构，破坏阻燃防火塑料的安全性能。

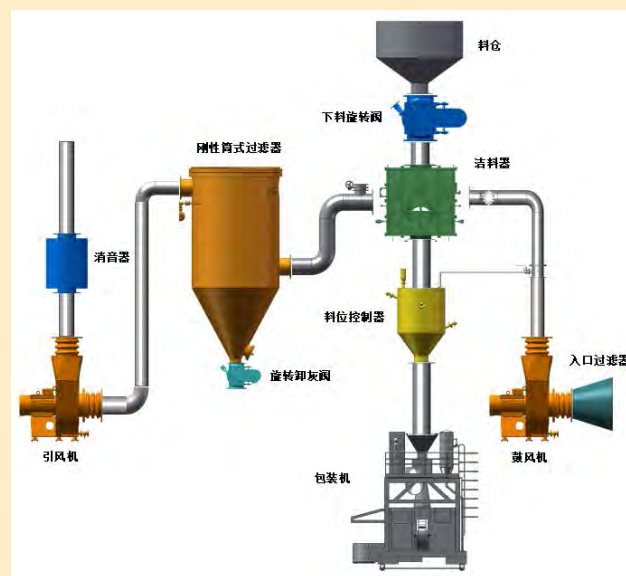
SpotLesser洁料器是专门用于清洁颗粒类物料的成套设备，具有多级分离洁粒单元，洁粒层级高达19级，针对黏结态粉尘特性，通过气流、震动波、磁力等多种手段消除粉尘与颗粒间的引力（静电力等4种引力），并针对难处理丝带进行多重拦截，通过对空间的特殊设计，使洁料器空间内任何一点都有4-6种处理手段，对粒料进行全方位立体式的反复净化理，有效清除颗粒料里的粉尘、碎屑、绒毛、丝带等杂质，洁粒精度 ≤ 8 ppm，丝带脱除率： $>99.9\%$ 。

SpotLesser洁料器本质安全，不会因为使用洁粒系统而影响正常下料。



Some dust, streamer and other contaminants occur during the production, processing and transportation of natural or fabricated resins, the impurities is a threat to the health of operators and could cause product quality problem and threaten the safety of the downstream processing equipments.

SpotLesser is specially designed for cleaning granular materials, with multi-stage separation and cleaning unit, the purification stage up to 19 phases, for the characteristics of the sticky dust, through airflow, wave, magnetic and other means to eliminate the attraction force between dust and granular (force like electrostatic force etc.), and for streamers that are difficult to deal with, multiple interception is realized through the ingenious design of space, so that the SpotLesser has 4-6 treatment measures at any point, which can purify the granule material repeatedly in a comprehensive three-dimensional way, effectively removing the dust, debris, fluff, streamer and other impurities in the granule material, Pellet Cleaning Precision ≤ 8 ppm, streamer removal rate: $>99.9\%$. SpotLesser is intrinsically safe, the application of pellet cleaning system would not affect the normal operation of material flow.



具体介绍详见《SpotLesser洁料器及洁料系统》样本

Please refer to the SpotLesser Brochure for details

GHG温室气体测控及减排 Greenhouse gas (GHG) monitoring and emission reduction

气候变化是当今国际社会普遍关注的全球性问题，也是人类面临的最为严峻的全球环境问题。气候变化的主要原因是由于人类活动向大气中排放过量的二氧化碳（CO₂）、甲烷（CH₄）和氧化亚氮（N₂O）等温室气体而引起的。因此解决气候变化的根本措施也就是减少人为温室气体排放或增加对大气中温室气体的吸收。温室气体大多来源于世界重工业排放，温室气体一旦超出大气标准，便会造成温室效应，使全球气温上升，威胁人类生存。因此，控制温室气体排放已成为全人类面临的一个主要问题。减少温室气体排放，达到经济社会发展与生态环境保护双赢的一种低碳经济发展形态。HAF有效控制温室气体排放的新技术，它涉及电力、交通、建筑、冶金、化工、石化、汽车等多个产业部门。

收益：

- 通过降低产品损失增加收入
- 降低VOC排放
- 减少温室气体排放
- 确保排放符合标准，使批准许可简单化
- 产生温室气体排放信用额度
- 为可持续发展做出贡献



Climate change is a global issue drawing more and more international attention nowadays, it is one of the most severe environmental problems we human being are facing. Human activities result in excessive emission of greenhouse gas such as CO₂, CH₄, N₂O etc. into the atmosphere, this is the main cause of the climate change. The basic measure to solve this problem is to reduce the greenhouse gas or increase the amount of greenhouse gas absorbed. A great part of the greenhouse gas are generated from heavy industry emission around the world. Once the greenhouse gas exceeds the standard level in the atmosphere, the global climate warming will occur as a result of greenhouse effect, which will further threaten the life of all human beings. So the control of greenhouse gas emission is a major issue all human beings need to face now. The reduction of greenhouse gas emission will achieve a win-win low carbon development model with the social economy developed and the environment protected. HAF emission control technology may be applied in the electricity, transportation, construction, metallurgy, chemical, petrochemical, automobile industries etc.

Benefits:

Adds additional revenue by reducing product loss
Reduces volatile organic compounds (VOC) emissions
Reduces greenhouse gas emissions
Ensures compliance and simplifies permitting
Generates greenhouse gas emission credits
Contributes to sustainable development



透平压裂机组及泵组 Turbine Frac and Pump Units

MTT公司的优势一向无与伦比的。作为油田服务技术合作伙伴中的佼佼者，M17公司设计开发出了第一套完全一体化的“压裂机组”。这些压裂机组采用3850马力的透平驱动一台功率为2000到大于2700水马力的泵。MTT压裂机组由分轴式透平发动机驱动，流体速度可以调节。jetPUMP™装置性能卓越。不像那些柴油驱动的同类产品（它们依靠齿轮减速来提供足够的动力，以克服增压），分轴透平不会造成泵的流量损失。

此撬装外形紧凑，重量轻，无论是陆地还是离岸应用，MTT公司都可以定制任意类型的压裂配置。

为了满足化工和普通行业对高浓度泵送能力的要求，MTT公司生产了 MTT透平双泵车，它的特点是在一台拖车上，两个功

率为1400HP的透平驱动两个1000HHP的五重泵。同时安装一台功率为420Hp的透平来驱动液压系统。



透平发电及氮气发生器 Turbine Power Generator and Nitrogen Generator

在偏远区域的工况下，供电商搭建配电基础设施的成本会高于油田预期开发期限内的投资回报。在这样的情况下，采油生产就需要现场发电。

为辅助压裂设备以及其他的高端氮气应用，MTT公司开发出首台透平驱动的移动式制氮设备：MTT透平NitroGen,可以现场制备氮气。

现场发电经济上受限于燃料成本，设备以及安装成本。对于液态燃油发电机，燃油运输与存储成本也是考虑因素之一。

采出天然气可以用作发电的燃料。在一些工况下，相比于天然气放空或火炬气这样的传统做法，产出气的净成本是零。

从产品物料流中引出的天然气与液体燃料相比，MTT公司的透平驱动其成本是最小的。



MTT's momentum has remained unmatched. As head of technology for our oilfield service partners, MTT designed and built the first fully integrated "Frac Stack Pack",. These frac units use a 3,850 HP turbine to drive a 2,000 to 2,700+ HHP pump. The MTT Frac Stack Pack is powered by a split-shaft turbine engine with varying speeds for the fluid end. The jetPUMP™ has realized outstanding performance results. Unlike its diesel counterpart (which depends on gear reduction to provide enough power to overcome pressure increases), split-shaft turbines do not sacrifice pump rate.

Due to its small size and weight, MTT can customize any type of frac configuration whether for land-based or offshore use.

In response to the industry's need for high-density capacity in chemical and general pumping, MTT has produced the MTT Turbine Double Pumper featuring dual 1,400 HP turbines driving dual 1,000 HHP quintiplex pumps on a single trailer. A 420 HP turbine is installed to drive the hydraulic system.

In remote applications, the cost to install electrical power distribution infrastructure can exceed the return to the electricity provider for the expected life of the field. In these instances, production requires on-site electrical power generation.

To support fracing equipment along with other high-use nitrogen applications, MTT is developing the first turbine- powered mobile nitrogen generator: the MTT Turbine NitroGen, generating gaseous nitrogen on site.

On-site power generation is economically limited by fuel costs as well as equipment and installation costs. For liquid fueled generators, fuel transportation and storage costs are also a consideration.

Produced natural gas can be used to fuel electrical power generation. In some cases, produced gas can have a zero-dollar net cost when used for fuel versus the customary practice of venting or flaring. When drawn from a product stream, the cost of produced natural gas is minimal compared to liquid fuel.

双化热压采油技术 Two Chemicals Thermal-pressure Oil Recovery

介绍

双化热压采油技术（简称：双化）的基本原理是通过向井下输送两种化学品，在井下接触后产生化学放热反应，以降低油层中现存油量的粘度，并且利用产生的气体作为溶剂清理地下剩余可采石油的技术。

双化技术可以严格控制产生的温度。产生的压力与控制温度相结合可以生成临界条件，油和水在该临界点可以互为溶剂，其黏度系数可降低10倍之多。黏度的实际变化与井和地层的具体情况密切相关。以上工艺几乎适用于所有油层。经济效益主要由产油层的油水比例及油层深度决定。

双化技术具有以下优势：

1. 生产油层的清洁效果佳（清洁石蜡，同时由从岩石和砂层中分离出来）；
2. 由于温度升高，油水更好的混合，加之反应后生成的CO₂、NO₂融入到油/水中，使流动性更好；
3. 增加储层压力；
4. 潜在压皱效果。

Overview

The underlying principle of the Two Chemicals Thermal-pressure Oil Recovery is to lower the viscosity of the oil in place through heat generation and to have the resulting gases act as a solvent to sweep out the remaining oil in place.

The temperature created can be tightly controlled, this, in combination with the pressure created, can create critical conditions, at which point water and oil become mutual solvents and the viscosity is lowered by a factor of up to 10 times. The actual change in viscosity depends on the well and formation specifications. The above process works in nearly all oil formations, whereby the economics are determined mostly by the oil / water mix in the payzone and depth of the formation.

The technology advantages includes:

1. Cleaning effect in the productive zone (paraffin cleaning, but also oil is further separated from rock and sand formations);
2. Better mixing of oil and water and therefore better recoverability because of temperature increase and mixing of solvent gases from the reaction (CO₂, NO) with oil/water;
3. Increase in Reservoir pressure;
4. Potentially fracking effect.

井下电磁微波采油技术 Electromagnetic Micro wave Downhole Oil Recovery

介绍

专用井下电磁发射系统包括一套微波发生器系统和专用控制软件，软件设置可以直接在产油层改变油的黏度，并在一定程度上改变油的API比或。此技术通过变频脉冲系统在预定功率下发射微波，甚至可以开采高黏度重油。开采过程中没有污染排放，因此井下电磁微波采油技术是完全环保的。

系统地上占地面积小，因此井下电磁微波采油技术几乎可以应用于陆地和海上的所有重油层，无论是水平井还是垂直井。如果油井是裸井，井下电磁微波采油技术可以直接应用。

系统无需瞬基础设施，基础设施的占地仅限于电力。

应用

- API比重低于15的重油；
- 产油层厚度：无限制，越大越好；
- 地层厚度无限制，当然随着电缆的增长，效率会有所减弱；
- 陆地和海上应用；
- 对于重油API比重为15或更低，产油层厚度大于20 米的重油油田，我们建议采用带专用水平电磁发射器的水平支腿。

Overview

The dedicated down hole electromagnetic emitter system consists of a suitable microwave generator system and a dedicated control software setup that enables to change the viscosity and to a certain extent also the API-gravity of the oil directly in the payzone. Even very heavy oil can be explored this way as through the emitting of the microwaves at an adjustable frequency with a special pulse system at pre-defined Kw-rates. There are no emissions as part of the exploration process, this technology can be considered as fully environmental-friendly.

Little surface footprint, thus Electromagnetic Microwave Downhole Oil Recovery can be applied in nearly all heavy oil formation, onshore and offshore; horizontal and vertical. It can be immediately applied on open hole wells. No special infrastructure requirements: infrastructure footprint is limited to electrical energy.

Application:

- Heavy oil with below 15 API;
- Payzone thickness: no limitation, the bigger the better;
- No restriction on formation depth, although reduction of efficiency through length of power cables;
- Onshore and offshore;
- On heavy oil fields with API 15 or less and payzones at more than 20 m thickness we strongly suggest horizontal legs (open hole) with dedicated horizontal electromagnetic emitter.

HAF钻井测控

HAF Drilling Measure and Control Systems

Vertical Drilling System

Vertical drilling system guarantees the vertical downward drilling of the hole trajectory, it also helps enhance the drilling speed, (deviation control and speed enhancement)

Technical features:

1. Compact structure, modularized plug-in design, easy for assembly testing and maintenance;
2. Vector control algorithm;
3. Contactless power transmission and telecommunication;
4. High wear resistant material for shaft to enhance the reliability of down hole operation;
5. All in precise sealing to increase the service life of the tools in the mud environment.

Rotary Steering Drilling System

The rotary steering drilling system control the hole trajectory of drilling with high flexibility, it is generally used for horizontal drilling, and it significantly enhance the drill efficiency.(drilling with high precision with steering function) Features:(compared with the original system)

- 1 Parameter download through mud;
- 2 The data download period may be selected;
- 3 Available drilling modes : steering drilling, angle holding drilling, reaming drilling and vertical drilling.

Mud Generator

Mud generator is a down hole equipment converting the kinetic energy of mud to generate power.

Features:

The Generator consists of wheels, Magnetic coupling device and generator. Mud is fed to the generator from the intake channel and generates the thrust to blow against a series of vanes and wheels and transfers the mechanical power to shaft through magnetic coupling device, then convert the mud kinetic energy to electric energy. The generator provides high power(max.800W) to the down hole equipments.

Features: High power, stable electric energy, High versatility, safety and reliable.

Electrical connection: HT & HP inserting pin

Mechanical connection: plug-in type connected with drilling tools

Flux-gate inclinometer

Flux-gate inclinometers measure the according angle of hole deviation while drilling anywhere; the direction of the drilling bit can be detected by geomagnetic field when drilling operation is stopped.

Technical features:

- 1 Supporting two common communication methods in industry: CAN and RS232
- 2 The vector closed loop control strategy is adopted with high control precision;
- 3 Storage space up to 9MB
- 4 Temperature resistance: 125℃(working)
- 5 Built-in calendar and clock chip, the date and time parameter may be provided.

Detail information please refer to HAF brochures of HAF Drilling systems

产品应用

Product Application



我公司产品以其卓越的品质被广泛应用于电厂、食品、医药、石油、化工、钢厂、冶金、采矿、环境保护以及工业环保水处理等工程……

Our products are widely used in the petrochemical and petroleum, food, pharmaceutical, metallurgy and mining industries, power plant, environment protection, industrial water treatment etc.

