



洁粒器&洁料系统

19层级洁粒技术/层层技术机理各异

洁粒精度突破5ppm

远远高于全球的行业优异值45ppm

PELLET CLEANING TECHNOLOGY WITH 19 PHASES,
A GROUNDBREAKING PELLET CLEANING PRECISION OF
5 PPM, WHICH EXCELS THE GLOBAL INDUSTRY'S
OUTSTANDING VALUE OF 45 PPM.



SpotLesser
洁粒器

A NEW PARAMOUNT HEIGHT FOR
DUST AND STREAMER REMOVAL.

企业简介

COMPANY PROFILE

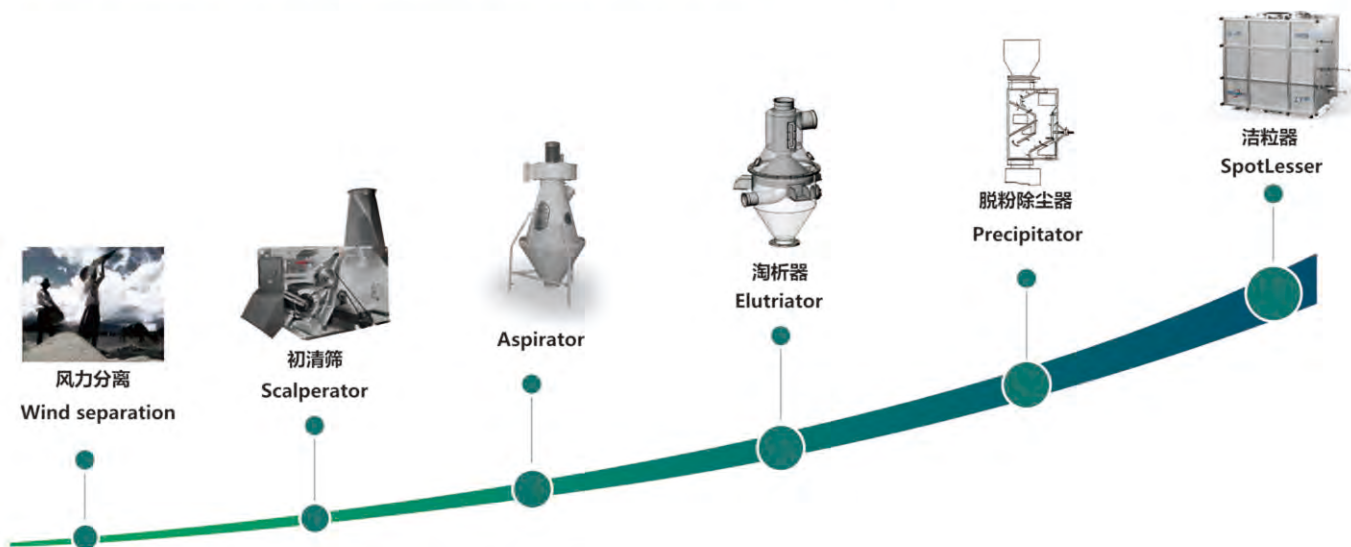
公司成立于2000年，是一家集设计、研发、贸易为一体的专业化公司。位于北京工业文化底蕴深厚的房山区。经过二十余年的探索研究，过滤与分离产品已发展成四大系列，品种达几百个。并已成功地应用于石油化工、冶金、制药、环保、制漆和食品饮料等行业。公司自2007年致力于SpotLesser洁粒技术、洁粒器、洁料系统及系统配套部件的研发。已获得美国、英国、法国、德国、意大利、西班牙、瑞士、奥地利、比利时、丹麦、荷兰、葡萄牙、瑞典、卢森堡、沙特、日本等24个国家的发明专利，处于国际先进水平。



Established in 2000, we are professional company focusing on the R & D, design and trading. Company is located in Beijing Fangshan Industrial Park. After decades of development, the filtration and separation products have evolved into four ranges, with hundreds of types and models, which are widely used in industries like petrochemical, metallurgy, pharmaceutical, environmental protection, food and beverage etc. The company started its activity with SpotLesser, pellet cleaning technology, system and auxiliary parts as early as 2007. The company has obtained invention patents in 24 countries including the United States, the United Kingdom, France, Germany, Italy, Spain, Switzerland, Austria, Belgium, Denmark, the Netherlands, Portugal, Sweden, Luxembourg, Saudi Arabia, and Japan, and ranks at an internationally advanced level.

颗粒除尘净化发展历程

THE DEVELOPMENT OF PELLET CLEANING AND DUST REMOVAL

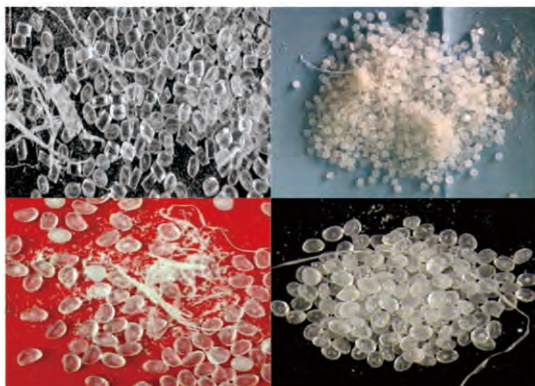


人们对物料净化的要求是提高促进分离技术的发展驱动力。很早前，人类仅用简单的风力从谷物中分离尘土，但近几个世纪，随着人们对分离要求和除尘效率要求的日益增加，公司开始注意到粒料中粉尘产生的原因以及粉尘带来的危害，并不遗余力寻找解决方案，经过数十年的研究，自主研发了SpotLesser洁粒器。

The requirement for clean product is the driving force for the development of separation technology. In ancient times, people simply use wind to separate dust from grain. With the increasing higher separation requirements and dust removal efficiency in modern days, Company realizing the cause of dust generation in pellets and the harm of dust, devoted to providing a solution, after decades of research and development, the SpotLesser is finally developed.

颗粒料中的总污染物含量 (TCC)

TOTAL CONTAMINATION CONTENT(TCC)IN PELLET



颗粒类聚合类物料中包含的粉尘、丝带、丝绒、丝团、碎屑、液态成分、气态成分等，我们将其统称为TCC，通常用ppm作为量纲。

The dust, streamers, fluff, angel's hair, fines, liquid components, and gaseous components contained in granular and aggregated materials are collectively referred to as TCC, which is usually measured in ppm.

TCC产生的主要原因

MAIN SOURCE OF TCC GENERATION

①切粒过程和脱水干燥过程

挤出和切粒环节最容易产生拖尾颗粒甚至是拉丝料、皮料、拖尾料、絮状料。模头温度、颗粒水温度不合适、挤压机转速和切刀转速不匹配，都会增加颗粒料中粉绒及丝杂质的含量。

Pelletizing and Drying Processes

The extrusion and pellet cutting stages are most prone to generating tailings(including streamer, skin formation, trailing materials, and fibrous residues). Improper temperatures at the die head or pellet cooling water, along with mismatched extruder and cutter speeds, will significantly increase TCC content (dust, fluff, and fibrous contaminants).

③掺混过程

若掺混时间不够，导致颗粒混合不均匀；若掺混时间过长，会使颗粒在料仓内反复摩擦，形成粉尘。

Mixing process

Insufficient mixing duration results in non-homogeneous pellet distribution, while excessive mixing causes pellet abrasion within the silo, generating secondary fines.



②输送过程

气力输送过程也是产生粉尘的主要原因，稀相输送，输送风速为18~35m/s，颗粒在管道中处于悬浮状态，与管壁摩擦大量出现粉料及毛絮料。

Conveying process

Pneumatic conveying is also a primary source of dust generation. With conveying velocities of 18-35 m/s, particles remain suspended in the pipeline, causing intense friction against the pipe wall. This results in substantial production of dust and fluff.

④运输过程

运输途中，车辆行驶过程中的颠簸和震动，会使包装袋内的粒料不断相互碰撞、摩擦，进一步加剧粉尘的产生。

Transportation process

During transportation, the bumps and vibrations of the vehicle will cause the pellet materials inside the packaging to collide and rub against each other continuously, further increasing the generation of dust.

粒料在造粒，倒仓，掺混，运输的过程中都会产生TCC，尤其在管道输送中速度越高产生的杂质越多。

在管线输送的弯头处也会因摩擦力大，壁温更高，产生更多的TCC。

The pellets will generate TCC during the pelletizing, silo transfer, mixing, transportation and conveying process, the higher the conveying velocity, the more contaminant it generates.

The temperature of elbow will rise during conveying, generating more TCC.

TCC带来的危害

HARM CAUSED BY TCC

TCC造成HSE危害

TCC dust can cause HSE harm in production ;



引起料仓粉尘云爆炸

It could cause the dust cloud explosion in the silo

粉尘散发造成环境污染

Dust emission causes environmental pollution

在粒料成品加工过程中，TCC碳化粘附送料螺杆造成碳化和堵塞，给加工带来不利因素；

During processing, carbonized TCC dust adhering to the feed screw causes carbonization and blockages, which adversely affects the process ;



TCC还会影响诸多产品的成品质量：

TCC dust also affects the quality of many finished products.



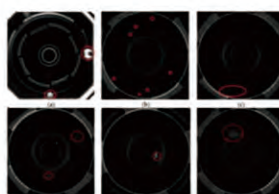
塑料薄膜出现晶点，鱼眼等，导致薄膜极易碎裂。

The appearance of gel particles/fish eyes in the plastic film results in brittleness and fragility.



塑料成品表面出现云雾状，碳化物黑点。

Cloudiness and carbon deposits appear on the surface of the plastic products.



树脂镜片，光学镜头，汽车灯罩等产品出现点状瑕疵降低透光率。

The presence of point defects/ inclusions in optical lenses, resin lenses, car light shields results in reduced light transmittance.



电缆绝缘层中的杂质会导致电场场强畸变，出现树状裂纹、蝴蝶结形裂纹，杂质还会被电场击穿造成碳化和气化，造成空洞、凸起、开裂，导致绝缘击穿、起火等故障问题。

Impurities within the cable insulation distort the electric field, inducing electrical treeing and bow-tie treeing. Furthermore, these impurities can undergo dielectric breakdown due to the field, leading to carbonization, gasification, voids, bulges, and cracks. This ultimately causes insulation failure, fire hazards, and related faults.

前沿的洁粒技术 —— SpotLesser洁粒器

THE MOST ADVANCED PELLET CLEANING



SpotLesser洁粒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、**P/N波**、**S/N波**、稀土新材料除静电单元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，使洁粒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处理，有效清除颗粒料里的粉尘、碎屑、绒毛、丝带等杂质，洁粒精度**≤ 5 ppm**，丝带脱除率**>99.99%**。

SpotLesser洁粒器已获得内/外除静电防爆认证。

料仓不会因为使用洁料系统而影响正常下料，全面符合HSE标准。

The SpotLesser is a complete set of equipment specially designed for cleaning granular materials. It is equipped with multi-stage separation and pellet cleaning units, with the number of pellet cleaning stages reaching up to **19**. Aiming at the characteristics of sticky dust, it eliminates the attractive forces (4 types of forces including electrostatic force) between dust and granules through multiple means such as airflow, **P/N waves**, **S/N waves**, and rare earth new material anti-static units. For hard-to-handle streamers, it realizes multiple interception. Through the special design of the internal space, there are **4-6** treatment methods available at any point inside the SpotLesser, enabling comprehensive, three-dimensional and repeated purification of granular materials. It can effectively remove impurities such as dust, debris, fluff, and streamers from granular materials, with a pellet cleaning precision of **≤ 5 ppm** and a streamer removal rate of **>99.99%**. The SpotLesser has obtained internal/external anti-static explosion-proof certification. The application of pellet cleaning system would not affect the normal operation of material flow, it is fully in compliance with HSE standards.

核心技术&气场分布

CORE TECHNOLOGY & GAS FIELD DISTRIBUTION

- 稀土新材料除静电单元
Rare earth new material for static elimination unit
- 加速单元
Acceleration unit
- 流膨单元
Fluidization unit
- S/N波
Primary wave unit
- 分离单元
Separation unit
- P/N波
Secondary wave unit
- 多元气场单元
Multi-zone airflow unit
- 动量反转单元
Momentum reverse unit
- 多点多级分布式静电消除单元
Multi-point & stage distributed static elimination unit
- 夹带检测单元
Carryover detection Unit
- 电荷除静电单元
Charge static elimination unit



SpotLesser洁粒器采用专利的气场布局，可与其他技术完美结合，能有效去除：粉尘，丝带，绒，voc气体，潮气，臭味等。

SpotLesser utilizes a patented air flow design that seamlessly integrates with other technologies, effectively removing contaminants such as dust, streamers, fluff, VOC gases, moisture, and odors.

主流除粉技术性能对比

PERFORMANCE COMPARISON OF TECHNOLOGIES

对比要素 COMPARISON	洁粒器 SpotLesser	脱粉除尘器 PRECIPITATOR	传统淘析器 TRADITIONAL ELUTRIATOR
性能指标 PERFORMANCE	<p>含粉量<20PPM并可调节，参数调优后可达5PPM，同时有效去除丝带。</p> <p>Dust level less than 20ppm and it is adjustable, the best result could be down to 5ppm after optimization. Streamers could be effectively removed at the same time.</p>	<p>产品含粉量≥45 PPM。</p> <p>Dust level ≥45ppm.</p>	<p>产品含粉量>70 PPM,产品含有丝带。</p> <p>Dust level ≥70 ppm, with streamers and fluff.</p>
设备特点 CHARACTERISTICS	<p>一共19层级洁粒技术，P/N波，S/N波粉尘去除技术可同时有效消除黏结态粉尘、丝带及各类TCC污染物。</p> <p>P/N Wave, S/N Wave dust removal technology. Dust and streamer, cohesive fines, together with all other contaminants (TCCs) could be removed at the same time.</p>	<p>_____</p> <p>No comments.</p>	<p>理论的缺陷使其只能去除部分粉尘和丝带，不能有效去除丝带、不能有效去除丝团，不能有效去除带黏结态粉尘。</p> <p>Theory drawback make it limited to the removal of some dust and streamer, long streamer, fluff and sticky dust could not be removed.</p>
结构特点 MECHANISM	<p>洁粒层级高达19级。</p> <p>19 pellet cleaning phases in total.</p>	<p>一级筛板、二级筛板。</p> <p>Two stage of baffleplate, for dust removal.</p>	<p>_____</p> <p>No comments.</p>
运行状况 OPERATION CONDITIONS	<p>设有针对堵塞和夹带的技术100%应对尘暴，无夹带。</p> <p>Anti clogging and carryover preventing technology, 100% handling the dust storm problem, no carryover.</p>	<p>_____</p> <p>No comments.</p>	<p>_____</p> <p>No comments.</p>



洁粒器脱粉前
Before cleaning by SpotLesser



洁粒器脱粉后
After cleaning by SpotLesser

SpotLesser洁料系统运行模式

OPERATION MODES OF SPOTLESSER

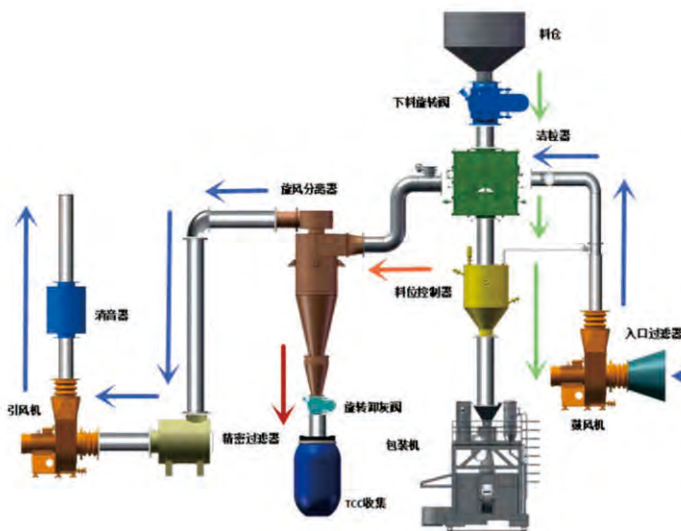
开环模式(OPEN LOOP MODE)

开环运行模式适合交替处理不同种类的物料或是更换生产线使用，还可以避免同种物料的循环污染。它是将过滤后的新鲜空气通过鼓风机进入洁料系统。引风机将含粉尘的气体吸入过滤器。经过滤器中分离后，TCC进入集尘器，净化后的空气排向大气。

开环模式可以避免细小粉尘循环污染物料，能有效去除洁料系统中残留VOC气体，具有安全性高，操作灵活的特点。

The SpotLesser pellets cleaning system could be operated in open loop and closed loop modes, the open loop mode is suitable for the cleaning of different material or changing of production line, it avoids the pollution problem in the same pellets. The filtrated air is supplied by the Blower fan. The induced fan indrafts the dusty air into the filter. TCC are separated with air by filter and fall into dust bin, the purified air is discharged into atmosphere.

The open loop mode can avoid the cyclic pollution of materials by fine dust, effectively remove residual VOC gases in the pellets cleaning system, and features high safety and flexible operation.



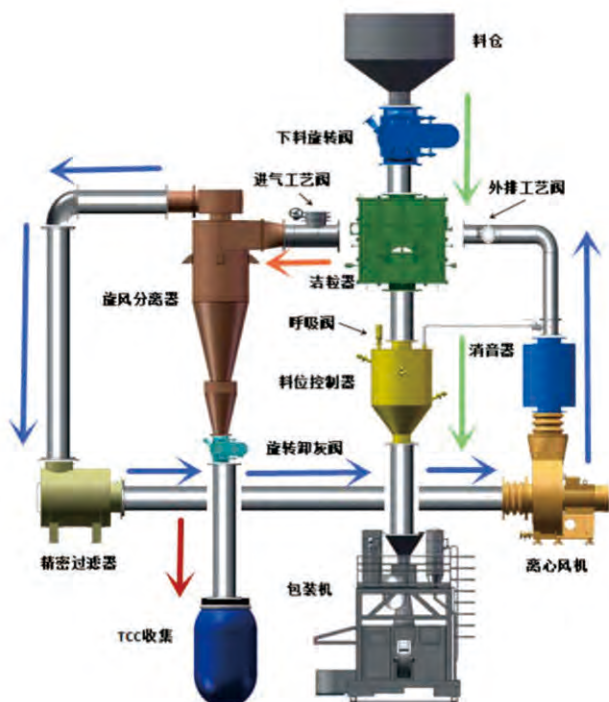
闭环模式(CLOSE LOOP SYSTEM)

闭环运行模式则适用于标准工况和使用惰性气体的工况。风机为洁料系统提供循环的气体。TCC与气体在精密过滤器中分离后，TCC进入集尘器，净化后的气体返回到风机。

闭环模式具有能耗低，占地小，气体排放量底，对外部环境要求低的特点。

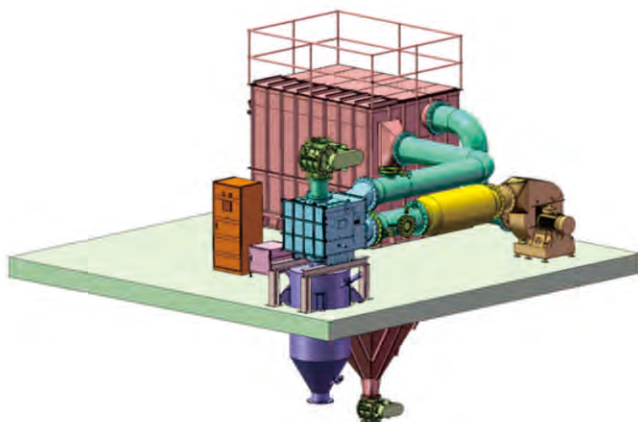
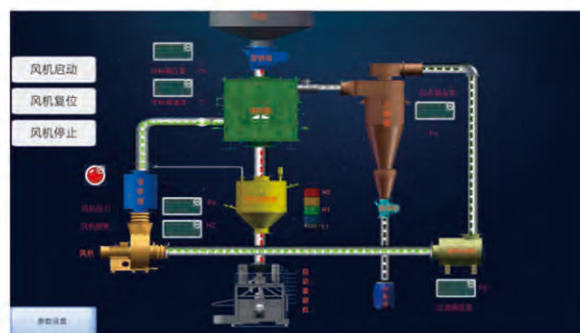
The close loop mode is suitable for standard and inertia gas applications. Fan provides fresh air to the SpotLesser pellet cleaning system. TCC are separated with air by precision filter and fall into dust bin, the purified air is returned to fan.

The close loop mode has the characteristics of low energy consumption, small footprint, low gas emission and low requirements for the external environment.



洁料系统特点

SYSTEM CHARACTERISTICS



核心性能

Core Performance

- 洁净精度高；经优化后丝带脱除率可达99.99%，经优化后粉尘小于5ppm；

Cleaning with high precision, streamer removal rate up to 99.99% after optimization, dust removal down to 5 ppm;

- 颗粒夹带在万分之一以下,有夹带监控单元；

The granule carryover rate is below 0.01%, and it is equipped with a carryover monitoring unit;

- 规格型号齐全，处理量20公斤/小时~108吨/小时；

Full range of models, capacity from 20 kg/hour ~ 108 ton/hour;

- 主机高度低，适用范围广。

The SpotLesser is compact in height and could be used in a wide range.

安全合规

Safety Compliance

- 安全性高，自主设计大型开环系统，拥有10年以上的安全运行记录；

High safety level, innovative open loop system with over 10 years of safe operation records in China;

- 已取得内/外防爆静电消除装置防爆认证；

The explosion-proof static elimination devices have obtained internal/external EX certification;

- 无电磁辐射，无磁场辐射，无电场辐射，噪音水平低全面符合HSE标准；

No electromagnetic/magnetic field radiation, no electric field radiation, Low noise level, fully compliance with HSE;

- 可连续长周期运行，无需停机维护。

Long term continuous operation.

专利认证

Patent Certification

- 已获得美国等24个国家的发明专利，处于国际先进水平；

The company has obtained invention patents in 24 countries and ranks at an internationally advanced level;

- 已获得CE认证并拥有产品质量保证保险；

CE certified, with Ex certificate for Charge static elimination unit (internal/external explosion-proof);

- 可依据设备现场实际情况进行升级改造，型号可按需选配，产品可定制化生产；

Upgrades and modifications are available based on site-specific conditions of the equipment, model selection can be tailored as required, and custom production options are offered;

- 完全自主知识产权，无外贸壁垒。

With complete knowhow and intellectual property right.

相关业绩 REFERENCE LIST



聚焦高端化工领域，我司自主研发设计制造的SpotLesser洁料系统，已成功服务于中国石化、中国石油、德国巴斯夫、日本三菱、东洋工程、万华化学、福建中沙古雷等行业领军企业，广泛应用于PP、PE、PC、EVA及各类新材料生产装置，以专业技术精准解决物料清洁与颗粒控制需求，为高端化工生产的纯度与稳定性保驾护航。

Focusing on the high-end chemical industry field, the pellet cleaning system independently developed, designed and manufactured by our company has successfully served leading enterprises in the industry such as Sinopec, CNPC, BASF (Germany), Mitsubishi (Japan), Toyo Engineering, Wanhua Chemical and SABIC Fujian Petrochemical. It is widely applied in production equipment for PP, PE, PC, EVA and various new materials. With professional technology, it accurately meets the needs of material cleaning and granule control, and safeguards the purity and stability of high-end chemical production.



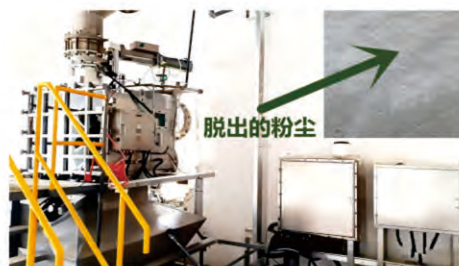
扬子巴斯夫成套洁料系统
Yangzi BASF Complete Pellet Cleaning System



日本三菱成套洁料系统
Mitsubishi (Japan) Complete Pellet Cleaning System



吉林石化成套洁料系统
CNPC Jilin Complete Pellet Cleaning System



燕山石化成套洁料系统
Sinopec Yanshan Complete Pellet Cleaning System

某聚烯烃装置安装洁料系统后，仅两周便高效分离出约1立方米TCC粉尘/丝带，经检测，无夹带，分离后完全不含颗粒料，净化效果优异。

After installing the pellet cleaning system in a polyolefin plant, it efficiently separated approximately 1 cubic meter of TCC dust/streamer within just two weeks. Testing confirmed the absence of carryover, with the separated material completely free of pellets entrainment, demonstrating superior purification performance.

SpotLesser洁粒器应用领域

AREA OF APPLICATIONS

塑料行业

化工化肥空分行业等其他领域

医疗行业

高端农业

其他行业高端透明制品

PLASTIC INDUSTRY

PETROCHEMICAL, FERTILIZER AND SEPARATION INDUSTRY

PHARMACEUTICALS INDUSTRY

HIGH END AGRICULTURE

OTHER HIGH-END INDUSTRY



高压电缆

HVCABLE



分子筛

MOLECULAR SIEVE



颗粒药片

TABLETS AND PILLS



咖啡豆

COFFEE BEAN



车辆灯罩

CAR LIGHT SHIELD



母料

MASTER BATCH



催化剂

CATALYST



医疗器械输液袋注射器

MEDICAL INFUSION BAG SYRINGE



高端大米

QUALITY RICE



电池隔膜

BETTERRY DIAPHRAGM

塑料行业范围 PLASTIC INDUSTRY

普通塑料颗粒
PLASTIC PELLETS

高压电缆
HV CABLE LON

离子交换树脂
EXCHANGE RESINS

母粒
MASTERBATCH

化工化肥空分行业等 其他领域范围 PETROCHEMICAL, FERTILIZER AND SEPARATION INDUSTRY

分子筛
MOLECULAR

催化剂
SIEVE CATALYST

干燥剂吸附剂
DESICCANT & ADSORBENT

医药行业范围 PHARMACEUTICALS INDUSTRY

颗粒药片
TABLETS AND PILLS

医疗器械输液袋
MEDICAL INFUSION BAG AND SYRINGE

注射器
SYRINGE

高端农业范围 HIGH END AGRICULTURE

咖啡豆
COFFEE BEAN

高端大米
QUALITY RICE

其他行业高端 OTHER HIGH-END INDUSTRY

眼镜片
LENS

塑料薄膜
PLASTIC FILMS

手机壳
CELLPHONE CASE

冰箱内盒
FRIDGE DRAWER

汽车灯罩
CAR LIGHT SHIELD

饭盒
LUNCH BOX

矿泉水瓶
WATER BOTTLE

电池膜
BATTERY DIAPHRAGM

儿童玩具
TOY

洁料系统型号及选配表

MODEL AND OPTIONS & CONFIGURATION TABLE FOR PELLET CLEANING SYSTEM

SL-95 SpotLesser 洁粒器

型号 Model	SL-19/KA	SL-95-KB	SL-95-KC	SL-95-KD	SL-95-TA	SL-95-TB	SL-95-TC	SL-95-TD	SL-95-TE	SL-95-TF	SL-95-TG	SL-95-TH	SL-95-TI
处理量 Capacity	20-90 (kg/h)	80-350 (kg/h)	300-600 (kg/h)	500-1100 (kg/h)	1.0-2.0 (t/h)	1.8-4.0 (t/h)	3.8-8 (t/h)	7.8-16 (t/h)	15-30 (t/h)	28-45 (t/h)	40-60 (t/h)	55-80 (t/h)	70-108 (t/h)

产品的型号需要根据净化产品的堆积密度、颗粒形状、类型和粉尘含量选择
Product model shall be selected based on the bulk density, particle shape, product type and dust contents.

系统选配 System Options	防爆防护 Ex proof		风量调节 Air regulation		除湿干燥 Drying		制造标准 Code		远程控制 Remote control		稀土永磁材料 Rare earth new material for static elimination	
	材质选择 Material selection		消毒杀菌 Disinfection		除铁质物 Iron removal		P/N波 P/N wave		抛光/耐磨 Polish/Wear resist		夹带监控 Carryover monitoring	
	开环/闭环 Open/Close loop		检测控制 Monitor & Control		固定/移动 Fixed/Mobile		S/N波 S/N wave		表面处理 Surface treatment		电荷除静电(防爆) Charge static removal (ex-proof)	
配置要求 Configuration Requirements	风机 Fan	电机 Motor	分离器 Separator	阀门 Valve	消音器 Silencer	精密过滤器 Precision filter	料位控制器 Level controller	控制系统 Control system				

规格参数及其它配件可按需定制，如有需要请向我们索取征询书。
The specification and parameters and other auxiliaries could be tailor made as per requirements, please contact us for questionnaire if needed.



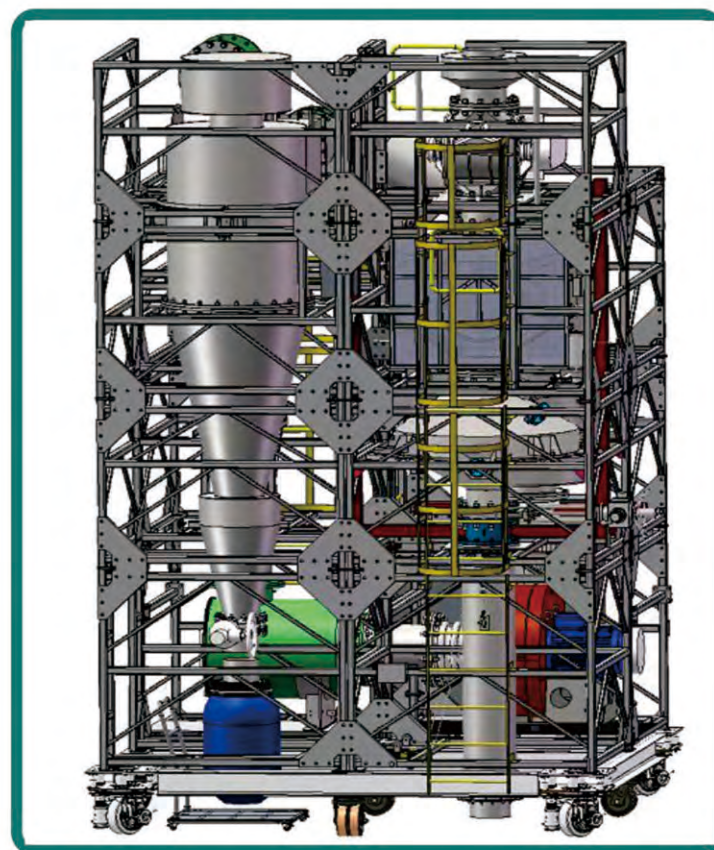
**19层级洁粒技术
层层机理各异 级级效果精进
多点分布式静电消除技术
安全有效去除颗粒静电**

**P/N波、S/N波
已获得美国、英国、法国、德国、
意大利、西班牙、瑞士、奥地利、
比利时、丹麦、荷兰、葡萄牙、
瑞典、卢森堡、沙特、日本
等24个国家的发明专利，
处于国际先进水平。**

19 Phases Pellet Cleaning Technology;
Different Layers with Different Mechanism;
Spotless for Every Pellet;
Multipoint Distributed Static Elimination
Technology; Effective Static Removal with
Intrinsic Safety; P/N Wave, S/N Wave;
The company has obtained invention
patents in 24 countries and ranks at an
internationally advanced level.

**新华社
对洁粒器
肯定和赞誉！**

**Affirmation and appraisal
for SpotLesser from
Mainstream Media!**



地址：北京市丰台区迦南大厦1606室
电话：010-83510208
网站：<https://www.lfep.com.cn>
电子邮件：seller@lfep.com.cn

ADD: Suite 1606, Building A, Jia'nan Tower, No.2
Youwai St., Beijing
Tel: 86-10-83510208
<https://www.lfep.com.cn>
E-mail: int@lfep.com.cn

