



Sinoma

粉磨系统整体解决方案专家
Grinding System Solution Provider

天津水泥工业设计研究院有限公司
Tianjin Cement Industry Design & Research Institute Co., Ltd.



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企业简介 Company Introduction

天津水泥工业设计研究院有限公司（简称天津水泥院），成立于1953年，是大型国家骨干工业设计院之一。如今的天津水泥院已经发展成为一家国际化工程公司。天津水泥院以自主核心技术与关键主机装备出口带动成套装备和工程出口，在水泥工业建设领域形成了以“技术+装备”为核心力的工程总承包经营模式，形成了集技术研发、工程设计与咨询、设备成套供货、工程建设、工程监理、生产运营、备品备件等服务于一体的完整产业链。

辊压机事业部是天津水泥院专业从事水泥原料、熟料、矿物原料、钢渣、矿渣等物料的粉磨理论和系统工艺研究、设备研发和制造、工程配套和改造、技术咨询、设备运行和维护等的专业化公司，可以为广大客户提供物料粉磨系统的整体解决方案。公司主要产品有辊压机、选粉机、球磨机等。

Ever since its establishment in 1953, Tianjin Cement Industry Design & Research Institute Co., Ltd. (hereinafter referred to as "TCDRI") is one of the earliest large scale industrial design institutes, and now TCDRI has developed into one powerful international engineering company. Relying on independent core technology and key equipment export, TCDRI stimulates his export of equipment package and project contracting, forms its special project general contracting mode- "Technology + Equipment" as core competitiveness in cement industrial construction field, forms its integrated industrial chain consisting of technical research and development, engineering design and consulting, complete sets of equipment supply, engineering construction, project supervision, production management and spare parts service.

Roller Press Business Unit is professional company who is engaged in cement raw materials, clinker and mineral raw materials, steel slag, slag or other materials of grinding theory, system technology research, equipment research, development, manufacturing, engineering supporting and transform, technical advice, equipment operation and maintenance. We can provide customers with material grinding system of the overall solution. Our main products are roller press, separator, ball mill, etc.

辊压机

Roller Press

产品特点 Product Characteristics

借助国际先进技术，自主研发开发。

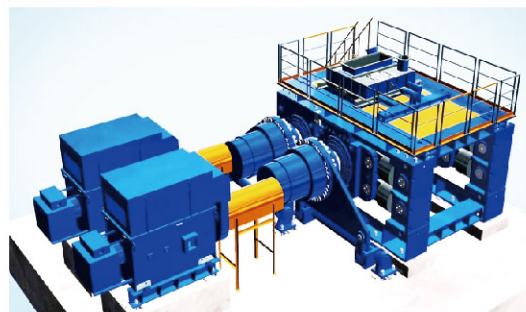
Independent research & design with advanced international technology.

产量高，电耗低，高运转率。

High capacity and running rate, low power consumption.

工作压力高，振动小、运行平稳。

High working pressure, little vibration and reliable operation.



结构特点 Structural Features

两种辊面形式（堆焊/柱钉），工况适应性更强。

Two roller surface options (welding/stud) are provided, more adaptability for different conditions.

以降低维护保养量指导设备设计。

Equipment design is oriented to simplify the maintenance necessity to ultralow.

四列圆柱辊子轴承，承载力更高，寿命更长。

Four row cylindrical roller bearing provide higher bearing-load capacity and longer life-time.

两种喂料方式可供业主选择：中心喂料和偏心喂料。

Two kinds of feeding device for roller press are provided: central and eccentric feeding device.

液压系统集成度高，特殊设计的液压缸寿命更长。

The high integrated hydraulic system is more reliable, specially designed hydraulic cylinder with imported sealing part provide a longer life-time.

智能润滑系统可精确控制供油量及发出故障报警。

Intelligent lubrication system can accurately control the oil supply and give a fault alarm.

智能化的控制设计，使辊压机在良好的状况下运行，操作方便，易于掌握。

Due to the smart design of the control system, the roller press can be operated and controlled under the optimum working condition without great effort.



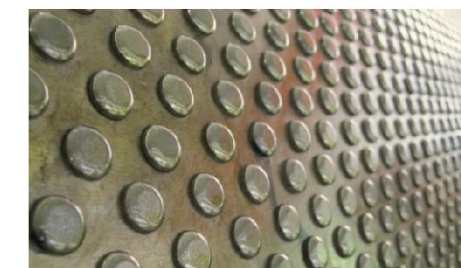
技术参数 Technical Specification

型号Type	通过量Thought put (t/h)	装机功率Installed power (kW)	线速度Line speed (m/s)
TRP100-30	60~80	2 × 110	1.196
TRP100-50	110~140	2 × 185	1.196
TRP100-60	150~190	2 × 315	1.380
TRP120-45	130~160	2 × 250	1.270
TRP120-60	190~230	2 × 400	1.440
TRP120-80	230~280	2 × 560	1.310
TRP140-65	240~290	2 × 560	1.430
TRP140-80	300~370	2 × 560	1.470
TRP140-100	380~460	2 × 630	1.480
TRP140-110	460~550	2 × 710	1.600
TRP140-120	500~600	2 × 800	1.600
TRP140-140	540~650	2 × 900	1.600
TRP160-100	500~580	2 × 800	1.660
TRP160-140	680~830	2 × 1120	1.600
TRP180-120	680~830	2 × 1250	1.699
TRP180-140	800~1000	2 × 1400	1.699
TRP180-160	920~1100	2 × 1600	1.699
TRP180-170	1070~1300	2 × 1800	1.868
TRP200-120	800~980	2 × 1400	1.800
TRP200-160	1120~1400	2 × 2000	1.889
TRP200-180	1400~1600	2 × 2240	1.889
TRP220-160	1350~1660	2 × 2000/2240	2.078
TRP220-180	1420~1730	2 × 2500/2800	2.000
TRP240-180	1820~1950	2 × 2800/3000	2.270

备注：TRP220-160辊压机为目前国产最大规格的生料、水泥辊压机。
Note: TRP220-160 roller press is the largest roller press in raw meal and cement grinding systems in China.

柱钉辊面应用特点 Application Feature of Stud Roller

- 辊套采用特殊热处理方式及材质
- Roller sleeve adopts special heat treatment method and material
- 相对于堆焊辊面更长的使用寿命
- Longer wear life than traditional hardfacing solutions
- 相对于堆焊辊面更高的耐磨性
- Higher resistance towards tramp material than existing hardfacing solutions
- 低维护成本
- Low maintenance and cost-effective



对于生料、熟料、钢渣和矿渣，柱钉辊面是一种理想的选择。超高的耐磨表面可以大幅的延长辊轴的使用寿命，从而使辊压机具有超高的性价比。

The Stud surface of roller is ideal for grinding raw meal, clinker, steel slag and blast furnace slag. Its high resistance to wear and surface overloading prolongs the roller lifetime significantly, making it a highly cost-effective solution for roller presses.

选粉机 Separator

TESu/TES/TAS型选粉机适用范围 TESu/TES/TAS Separator Application Scope

适用于普通水泥圈流磨系统、辊压机水泥联合粉磨系统、辊压机生料终粉磨系统、矿渣（钢渣）粉磨系统和金属矿加工制备系统，目前已销售360余台套，应用效果良好。

The separator is applied to closed flow cement mill system, roller press combined cement grinding system, raw meal roller press finished grinding system, slag grinding system etc. So far, more than 360 sets are applied with excellent performance.

TESu/TES型选粉机结构特点 TESu/TES Separator Features

使用翼型导流装置，产品颗粒级配良好，分级精度高；

Aerofoil guiding device for accurate particle size distribution of product;

涡轮式分级叶片使分选空间增大5-10倍；

With turbine classifying rotor, separation area expands more than 5-10 times;

分级转子内部的折流装置可消除内部涡流，降低空气阻力，减少能量消耗；

Use of baffle device to eliminate vortices and decrease the power consumption.

分级叶片、撒料盘、导流装置等易磨部位采用抗磨损材质，有效延长了选粉机使用寿命；

Classifying blade, dispersing equipment and guide vane with long service time due to anti-wearing material;

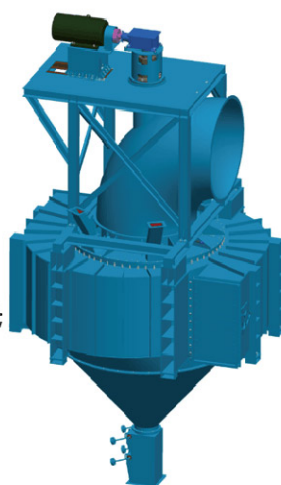
主轴承采用干油润滑，运转可靠，易于维修。

Grease lubrication system, reliable and easy maintenance.

<注>TESu(可分为双分离及三分离形式)为上、下喂料，下进风；TES为上喂料，侧进风。

<notes>TESu separator (for double- and tri-separating): top and down feeding, down air inlet;

TES separator: top feeding, side air inlet.



TESu/TES型选粉机技术参数 Technical Specification of TESu/TES Separator

规格型号 Type	选粉风量 Air Volume (m ³ /h)	配用电机 Power (kW)	规格型号 Type	选粉风量 Air Volume(m ³ /h)	配用电机 Power (kW)
TESu-200	90000	90	TES-200	90000	90
TESu-230	120000	110	TES-230	120000	110
TESu-250	150000	132	TES-250	150000	132
TESu-270	180000	160	TES-270	180000	160
TESu-290	210000	185	TES-290	210000	185
TESu-310	240000	200	TES-310	240000	200
TESu-330	270000	250	TES-330	270000	250
TESu-350	300000	280	TES-350	300000	280
TESu-370	330000	315	TES-370	330000	315
TESu-390	360000	315	TES-390	360000	315
TESu-410	390000	355	TES-410	390000	355
TESu-430	420000	355	TES-430	420000	355

TAS型组合式选粉机结构特点 TAS Separator Features

动静一体设计，降低土建高度和沿程阻力损失；

Combination of the static part and dynamic part - low plant height and on-way pressure loss.

静态部分更扁平、动态部分出风口扩容、整机CFD流场优化，局部阻力损失更低；

Optimized flow field with CFD - low local pressure loss.

组合式密封、后倾转子叶片、可调导流叶片，调节更灵活、选粉效率高；

Combined sealing, back inclined rotor blade, adjustable guide vane - high separating efficiency.

动态部分粗粉返回静态部分并设计调节装置，控制内循环、提高二次分选能力；

Re-separation device - No fines in coarse.

设备阻力：~3500Pa，比传统动选加V选低500~700Pa，电耗更低；

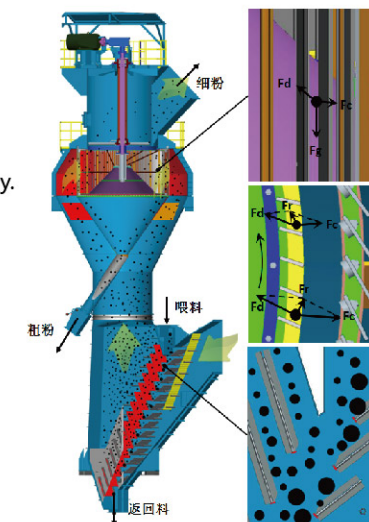
Pressure loss:~3500Pa, 500~700Pa less than original static separator and dynamic separator.

选粉效率：>90%，比传统动选加V选高5-10%，产量更高；

Separating efficiency>90%, 5~10% more than original static separator and dynamic separator.

建造成本：扁平化设计，土建高度比传统动选加V选低5~8m，建造成本更低。

Plant height reduced, construction investment decreased.

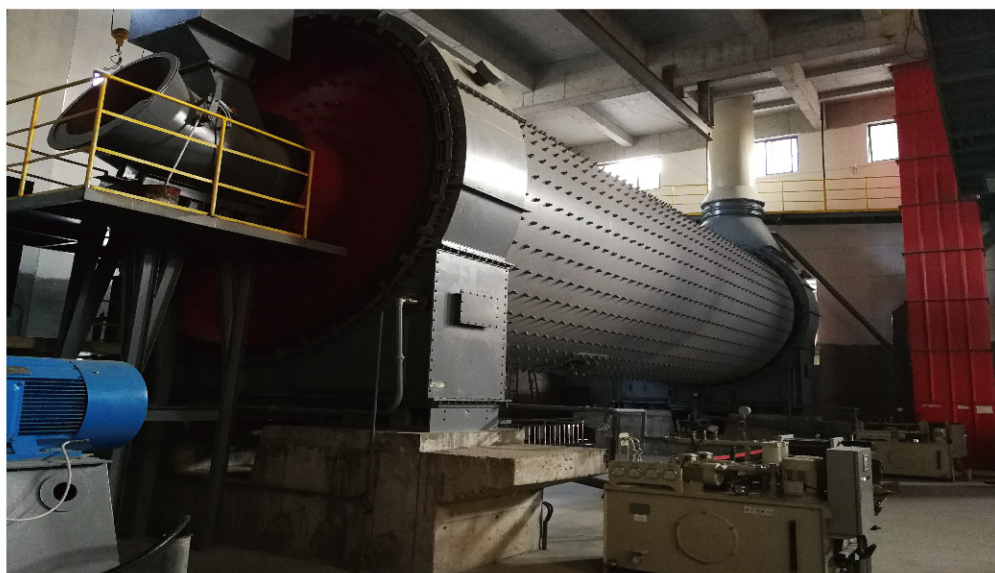


TAS型组合式选粉机技术参数 Technical Specification of TAS Separator

规格型号Type	选粉风量Air Volume(m ³ /h)	配用电机Power(kW)
TASr-270	165000-185000	75
TASr-330	245000-275000	90
TASr-380	320000-370000	110
TASr-410	380000-430000	132
TASr-460	480000-540000	160
TASr-540	660000-740000	220
TASc-200	80000-90000	55
TASc-230	100000-115000	55
TASc-250	125000-140000	75
TASc-270	145000-165000	75
TASc-290	165000-190000	90
TASc-310	190000-215000	110
TASc-330	215000-245000	132
TASc-350	245000-275000	132
TASc-370	275000-310000	160
TASc-390	300000-345000	185
TASc-410	330000-380000	185
TASc-430	365000-420000	220
TASc-450	400000-460000	220
TASc-470	440000-500000	250
TASc-490	480000-540000	280
TASc-510	520000-580000	315
TASs-270	140000-160000	132
TASs-330	240000-260000	185
TASs-410	330000-380000	355

说明：TASr: 生料, TASc: 水泥, TASs: 矿渣/钢渣。
Remark: TASr: raw meal; TASc: cement; TASs: slag/steel slag.

球磨机 Ball Mill



产品特点 Product Characteristics

- | | |
|-----------------|-----------------------------------------------------------------------|
| 良好的物料适应能力。 | Superior adaptability for materials. |
| 粉磨效率高，设备故障少。 | High grinding efficiency and low failure rate. |
| 较低的漏风系数。 | Low gas leakage coefficient. |
| 流程简单、安全可靠、运行稳定。 | Simple process, safe and reliable operation. |
| 适用新建厂和老厂改造。 | Suitable for construction of new plant and modification of old plant. |

结构特点 Structural Features

- | | |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 生料磨和煤磨进料进风装置采用风与料分路入磨的结构型式，提高烘干效果，进料由耐磨板制作，使用寿命更长。 | The material and air feeding device of raw mill and coal mill, which adopted separately ways to increase drying effect, and the material feeding pipe made by wear-resisting plate, which can help to increase the service time. |
| 烘干仓扬料板采用耐磨合金钢，耐磨性更好且更换方便。 | The drying compartment lifting plate made by wearable alloy, better wear resistance and easy to replaced. |
| 悬臂式烘干仓减轻了磨机重量，减小了筒体尺寸，便于运输。 | The cantilever drying compartment reduce weight of mill and dimension of shell for easy transportation. |
| 采用焊接双滑履支撑结构，制造质量有保障，提高了设备的可靠性。 | The double sliding shoes welded supporting structure ensures the manufacturing quality and improves the reliability of the equipment. |
| 滑履轴承底座为独创的焊接平板式结构，结构更简单，制造质量更可靠，安装、调整和维护更加方便。 | The base of slide shoes used complete structure which is unique design; easy installation, adjustment and maintenance. |
| 良好的滑履轴承密封性保证车间的环境卫生整洁。 | Excellent sealing of slide shoes make sure the environment clean of workshop. |
| 滑履轴承采用一台高低压稀油站，布置简单，操作维护方便。 | The slide shoes is lubricated by single high pressure lubrication station, which is simple layout and easy maintenance. |
| 磨内装置的设计结合多年应用经验，更换更便捷，检修更容易，适应各种系统配置。 | Combined with many years of application experience, the inner design is easy to replace, easy to maintenance, suitable for various process systems. |

煤磨球磨机技术参数 Technical Specification of Coal Mill

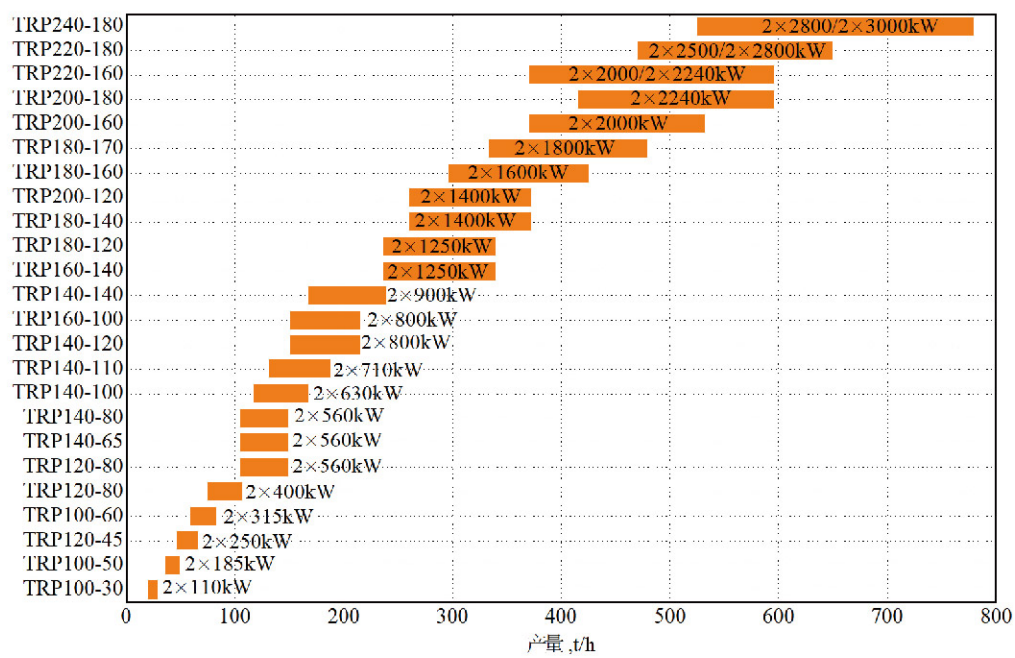
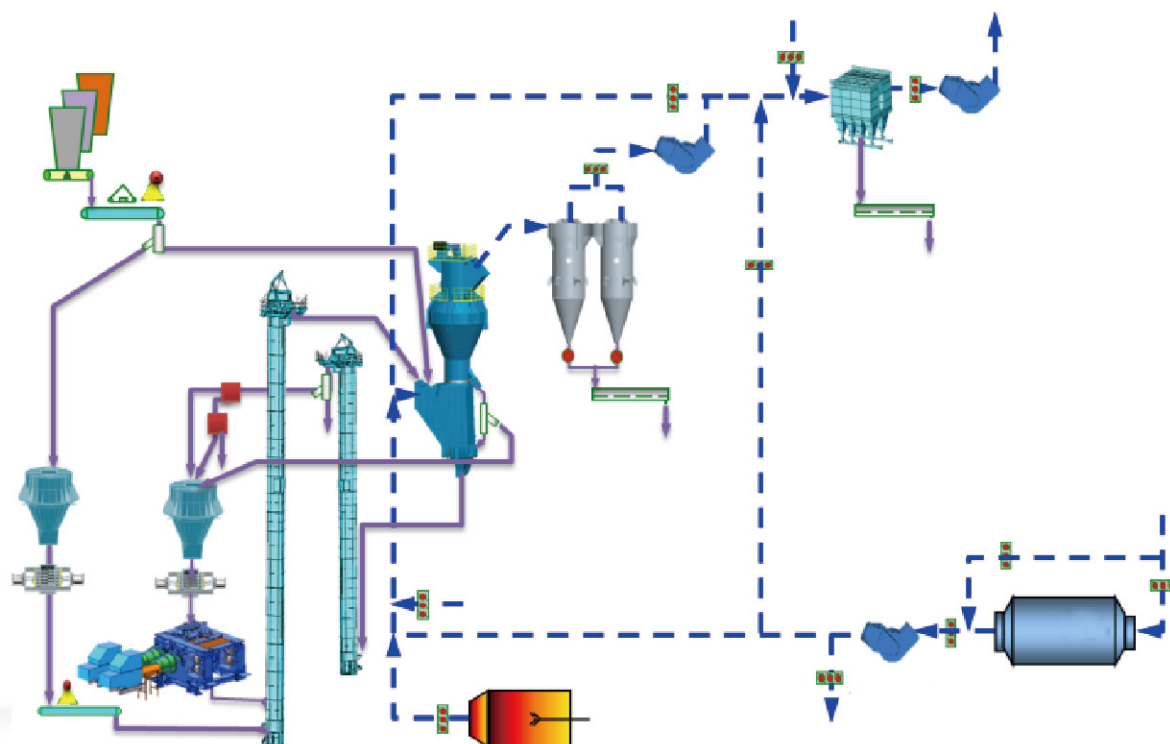
规格(m)Type	生产能力(t/h) Capacity(t/h)	转速(r/min) Rotation Speed(r/min)	研磨体装载量(t) Weight of grinding media(t)	入料粒度(mm) Feeding Size (mm)	传动方式 Mode of Drive	主电机功率(kW) Power(kW)
Φ3.0×6.5+2.5	18~20	18~20	43	<25	边缘 edge	630
Φ3.2×6+3	24	24	44	<25	边缘 edge	710
Φ3.4×6+3	18~30	18~30	42~60	<25	边缘 edge	710/800/900
Φ3.6×6+3	30	30	54	<25	边缘 edge	900
Φ3.8×7.5+3	40	40	86	<25	边缘 edge	1400
Φ4.0×8+3.5	50	50	110	<25	边缘 edge	2000

水泥磨球磨机技术参数 Technical Specification of Cement Mill

规格(m)Type	传动方式 Mode of Drive	粉磨仓数 Nos of Chamber	转速(r/min) Rotation Speed (r/min)	研磨体装载量(t) Weight of grinding media(t)	支撑方式 Supporting Type	主电机功率(kW) Power(kW)
Φ3.0×11	边缘edge	双仓/三仓2/3 Chambers	18.30	97	主轴承Trunnion	1250
Φ3.2×13	边缘edge	双仓/三仓2/3 Chambers	17.76	120	双滑履Slide shoe	1600
Φ3.5×13	中心Central	双仓/三仓2/3 Chambers	16.97	148	主轴承Trunnion	2000
Φ3.8×13	中心Central	双仓/三仓2/3 Chambers	16.30	180	双滑履Slide shoe	2500/2800
Φ3.8×14.5	中心Central	双仓/三仓2/3 Chambers	16.30	200	双滑履Slide shoe	2800
Φ4.0×13	中心Central	双仓/三仓2/3 Chambers	15.95	190	双滑履Slide shoe	2800/3000
Φ4.2×13	中心Central	双仓/三仓2/3 Chambers	15.60	209/240	双滑履Slide shoe	3150/3550
Φ4.2×13.5	中心Central	双仓/三仓2/3 Chambers	15.60	245	双滑履Slide shoe	3550
φ4.2×14.5	中心Central	双仓/三仓2/3 Chambers	15.60	245	双滑履Slide shoe	3800
Φ4.4×15	中心Central	双仓/三仓2/3 Chambers	15.30	240/282	双滑履Slide shoe	3800/4200
Φ4.6×14	中心Central	双仓/三仓2/3 Chambers	15.00	265	双滑履Slide shoe	4250/4500
Φ5.0×15	中心Central	双仓/三仓2/3 Chambers	14.40	404	双滑履Slide shoe	5800/6300

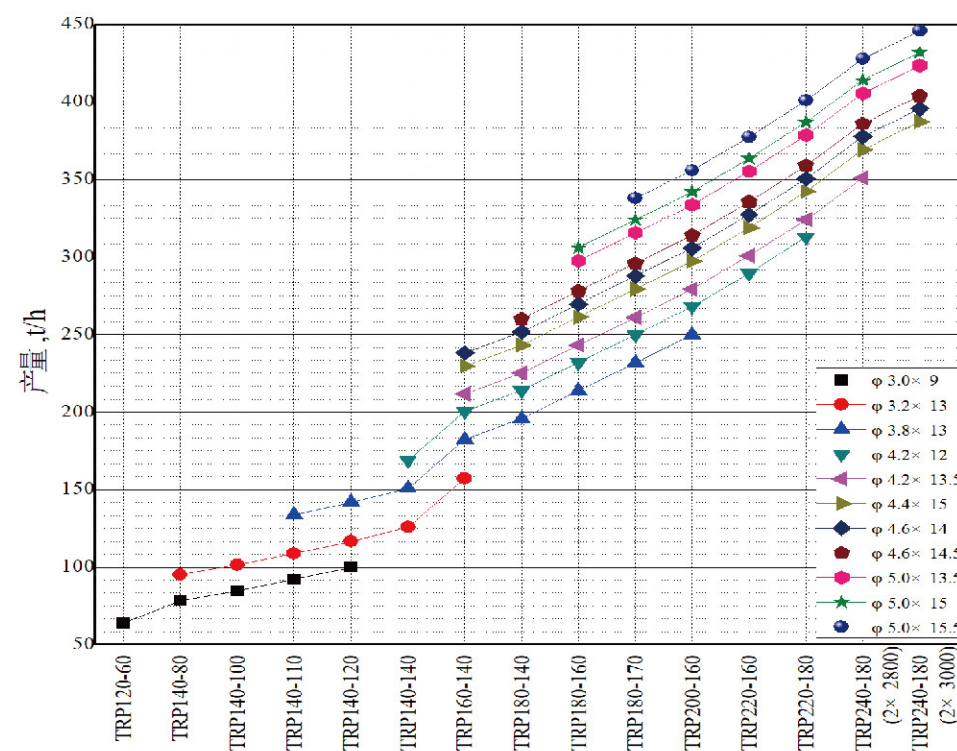
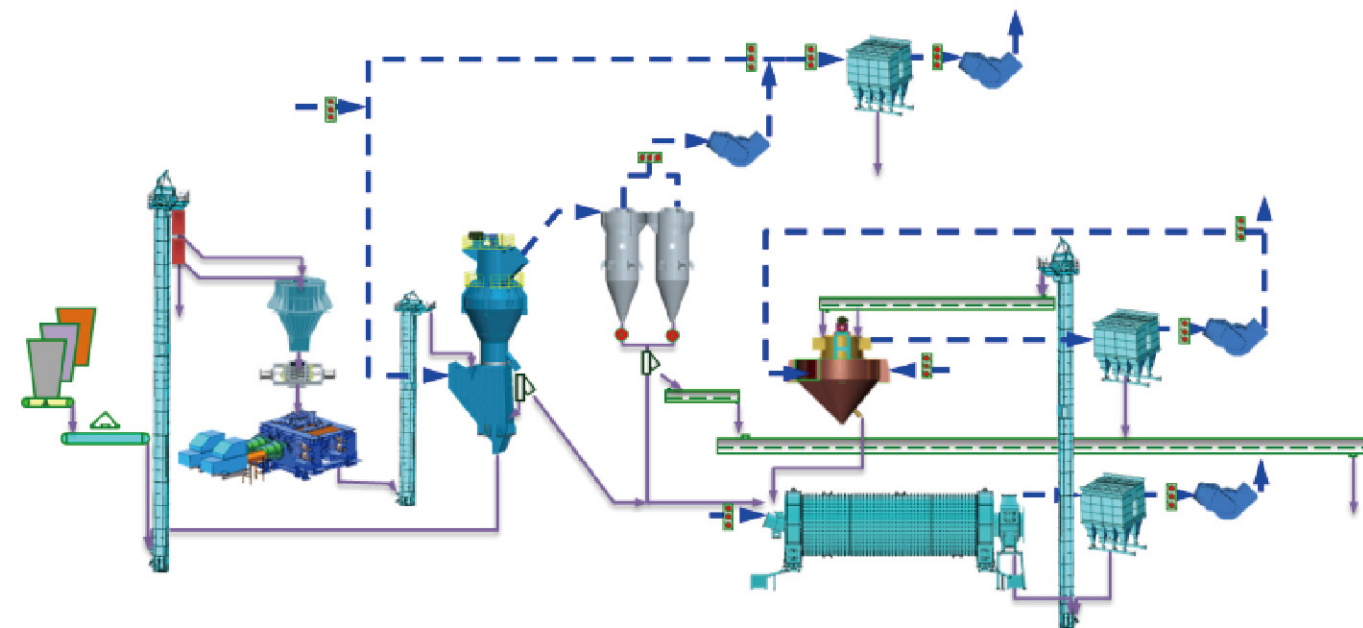
典型生料粉磨流程

Typical Raw Meal Grinding Process



典型水泥粉磨流程

Typical Cement Grinding Process



典型钢渣/矿渣粉磨 Typical Steel Slag/ Slag Grinding

技术特点 Technical Characteristics

系统运营电耗低，节能降耗效果显著。系统电耗仅为 35 ± 1 kWh/t，分别约为单独球磨系统和立磨系统的45%和90%。

Based on the principle of inter-particulate comminution, finished grinding system with roller press has the advantages of high efficiency and low power consumption, the power consumption of the system is only 35 ± 1 kWh/t.

系统排铁方便，可有效去除物料中铁杂质，避免在系统内富集；回收钢渣/矿渣中以往无法回收的渣包铁，形成额外的选铁经济效益，从而进一步提升辊压机辊面的工作寿命（堆焊辊面粉磨矿渣可达3000h）。

Finished grinding system with roller press is convenient for iron discharge. Recovery of iron from steel slag and slag not only has economic benefit, but also improves the lifetime of the roller surface (more than 3000h for hard-facing by welding for grinding slag).



2019年1月通过科学技术成果鉴定
Passed the Appraisal of the Scientific and Technological Achievements in China

常见钢渣/矿渣粉磨工艺的对比 The comparison of various grinding methods for steel slag/blast furnace slag

粉磨系统 Grinding systems	球磨系统 Closed-circuit grinding in ball mill	辊压机+球磨机联合粉磨系统 Finished Combined grinding in roller press and ball mill	立磨系统 Grinding in vertical roller mill	辊压机终粉磨系统 Finished grinding in roller press
烘干能力 Drying capacity	一般（需配套烘干设备） Common (dry in rotary dryer)	好（V选烘干） excellent (dry in V-separator)	好（磨内烘干） excellent (dry in vertical roller mill)	好（V选烘干） excellent (dry in V-separator)
除铁效果 Iron-removal	差 poor	好 excellent	差 poor	好 excellent
成品性能 Product performance	好 excellent	好 excellent	较好 good	较好 good
粉磨系统电耗 Power consumption	100%	65~75%	45~55%	40~45%
维护 Maintenance	100%	130%	120%	115%
系统总投资 Investment cost	100%	130%	115%	115%

备品备件服务 Spare Parts Service

天津水泥院辊压机事业部拥有二十余年专业辊压机研发生产经验，辊压机生产早已形成规模化、系列化，一直致力于为广大客户提供优质且专业化服务，在整机的开发中同时也致力于备品备件的开发制造，为广大客户提供全系列辊压机整机备件现货供应，提出备件“现货云仓储”服务理念，我们邀请您成为辊压机事业部的合作伙伴，辊压机事业部将作为您备件的平台，预先为您采购备品备件，大大减少客户备件投资资金成本和时间成本，同时，我们也将不断完善售后服务，建立以客户服务中心的现代营销发展战略框架，竭诚为广大客户保驾护航。

Roller press business unit supplies the high quality and professional services for our customers. We have more than 20 years experience in designing the roller press that has been large-scale developed and serialized. Our company also supplies the whole spare parts and the service concept is 'good in cloud stock'. We hope that you could be the partner of our company. Roller press business unit will supply the spare parts support so that the customers will reduce the investing and time cost. Meantime, we will strength the after-sale service and establish a strategic framework focusing on custom service, so as to serve our customers better.

