

***Recovery Of Valuable Raw Materials -
Protection Of Machines And Plants***



***Technology
Full Of
Attraction***



**wagner
magnete**

L 0428/1 e

NON-FERROUS SEPARATOR

- + *Integrated ferrous separator*
- + *Protection against jamming*
- + *Wear resisting motor brake*
- + *New ceramic rotor shield*
- + *Excellent interior sealing*
- + *Large service doors*



WAGNER MAGNETE is one of the first companies to concentrate on the area of non-ferrous metal separation (metals such as aluminum and copper) in addition to well-established conventional ferrous item separation. We are gaining a great deal of experience that can be implemented during the development of the new 0428/1 series. Extensive tests and new manufacturing possibilities led to a new concept that has clear advantages for our customers, especially with regard to durability, operating security and serviceability:

A separator for remaining ferrous items is integrated in the standard device. For customers, this does away with the added expense of separating any remaining ferrous items (< 50 mm) at another location that causes waste. Use of magnetic conveyor pulleys or magnet drums before the non-ferrous separator is no longer necessary. The material on the conveyor is fed to the non-ferrous separator with a vibratory feeder; remaining ferrous items are separated from the material flow before eddy current separation actually takes place. Any remaining ferrous items can be discharged or fed to the material goods after the non-ferrous separator as desired. The special ceramic coating on the magnet rotor, together with the extremely detailed interior sealing and high-quality belt materials, guarantee a high level of durability.

The automatically opening separation edge prevents excessively long materials from blocking or wedging against the separation edge. In this way, the separation edge can be set to the best position for operation. The separation edge can be adjusted horizontally and vertically in a wide range inside of the discharge hood. Large inspection doors make it easy to carry out adjustment and service work inside of the discharge hood. On WAGNER non-ferrous separators, speed control for the magnet rotor is handled using powerful frequency invertors with excellent dynamic properties.



If there is a power failure or the E-stop is activated, maximum braking torque is used to quickly reduce the magnet rotor to a low speed that is no longer dangerous. This modern and reliable rotor brake is not subject to wear and is maintenance-free.

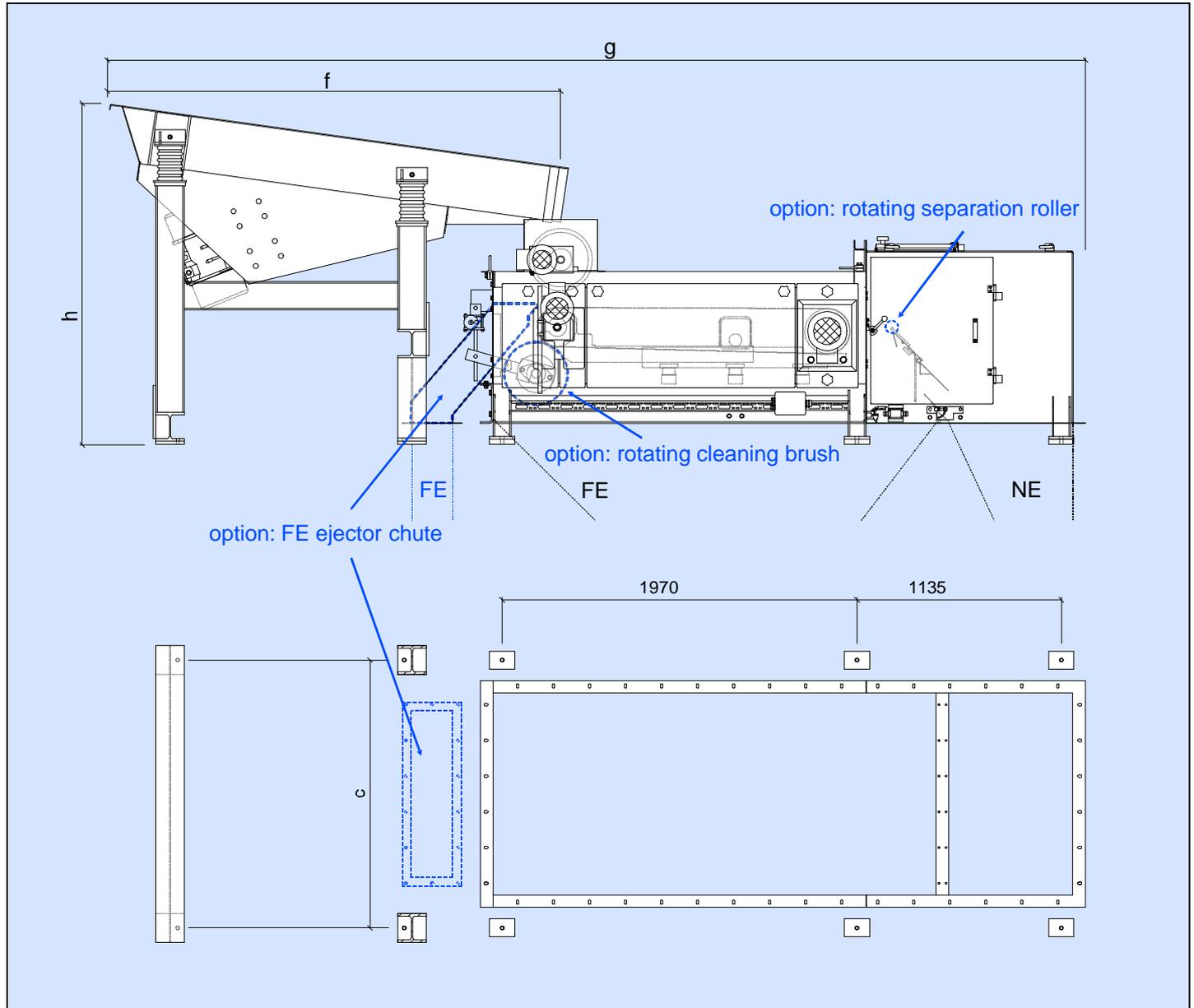
DIMENSIONS AND TECHNICAL DATA

Type	working width mm	throughput		power kW	weight kg	overall dimensions		
		typ. cbm/h	max. cbm/h			length	width	height
0428/1-25/40/6	400	15-20	25-30	5,5	1300	3360	1450	1260
0428/1-25/60/6	600	25-35	40-45	5,5	1500	3360	1650	1260
0428/1-25/90/6	900	40-50	60-65	5,5	1700	3360	1950	1260
0428/1-25/120/6	1200	60-75	80-85	5,5	1900	3360	2250	1260
0428/1-25/150/6	1500	75-90	100-110	5,5	2100	3360	2550	1260
0428/1-25/200/6	2000	100-120	130-150	7,5	2300	3360	3050	1260

We would be more than happy to help you select the right non-ferrous separator for your purposes. Please give us a call or send us a fax or e-mail. A corresponding data sheet that can be downloaded and filled in can be found at: www.wagner-magnete.de

Many different types and options are possible

Depending on the area of use, the 0428/1 series can be delivered in dust-protected design with a cover over the material on the conveyor, a rotating separating roller, an additional ejector chute for remaining ferrous items and an automatic, rotating brush for cleaning the belt. Because the material on the conveyor should always be evenly dosed using the vibratory feeder, control of the feeder and the respective brake device are integrated in the controller for the non-ferrous separator. Many special functions can be added to the controller. Integration in a complex control system via Profibus for example, allows diverse open and closed loop control possibilities.



DIMENSIONS								
Type	working width a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm
0428/1-25/40/6	400	1445	1000	710	630	2000	5050	1950
0428/1-25/60/6	600	1645	1200	910	830	2000	5050	1950
0428/1-25/90/6	900	1945	1500	1210	1130	2000	5050	1950
0428/1-25/120/6	1200	2245	1800	1510	1430	2000	5050	1950
0428/1-25/150/6	1500	2545	2100	1810	1730	2000	5050	1950
0428/1-25/200/6	2000	3045	2600	2310	2230	3000	6050	2050



The non-ferrous separators can also be delivered as devices protected against explosions according to ATEX 95 (RL94/9). For additional information, please see our I Ex-1 leaflet!

Non-ferrous separation using the eddy current technique

Operation of the non-ferrous separator is based on the induction principle. At a high frequency, a fast rotating magnet pole system induces eddy currents in the conductive non-ferrous metal parts. This creates magnetic fields on them with the same polarity as the magnet rotor, which causes a buildup of the repelling “Lorentz force”. This force works against gravity. Together with the force of inertia, this causes the items to be thrown out of the material flow. The distance they are thrown is mostly determined by the size and form of the item in addition to the specific material properties. Large items are thrown further than small ones. Flat items are subject to higher induction per volume unit than thick items. Wire formed items only create very small eddy currents

Comparison: material parameters

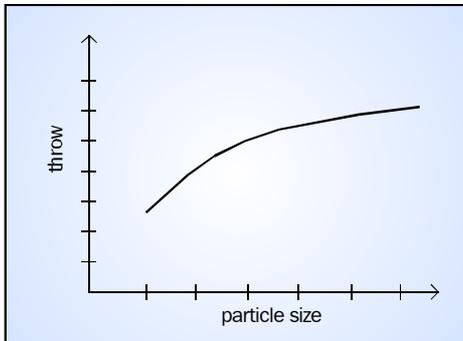
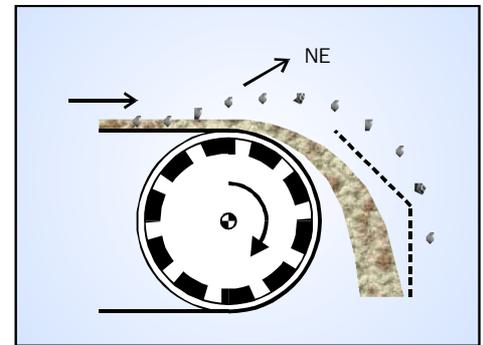
Aluminium	13,0
Magnesium	12,2
Copper	6,3
Silver	6,0
Zinc	2,3
Brass, tin	1,5
Lead	0,5
Stainless steel	0,1

Ability to separate non-ferrous metals

The strength of the induced currents and therefore their repelling forces depends on the specific electrical conductivity of the metal. The gravitational force depends on the specific weight. Therefore the quotient of these two values (=material parameter) is a measurement of the ability to be separated. Aluminum, magnesium, copper, aluminum alloys and silver can be separated easily. The relationship of the values is not so good for zinc, brass and tin. Stainless steel, many steel alloys and lead cannot be separated.

Good material feed = effective sorting

All materials lying over non-ferrous metals that can be separated make it difficult to eject items or prevent ejection from the material flow. For this reason, the basic requirement for optimal sorting and minimal obstruction of material goods is having a single layer. We recommend that the material on the conveyor is well distributed over the entire working width and fed to the eddy current separator with a vibratory feeder. When loading the vibratory feeder, make sure that the material is placed over the entire width of the feeder.

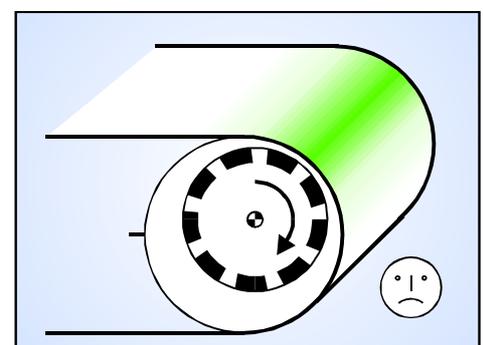
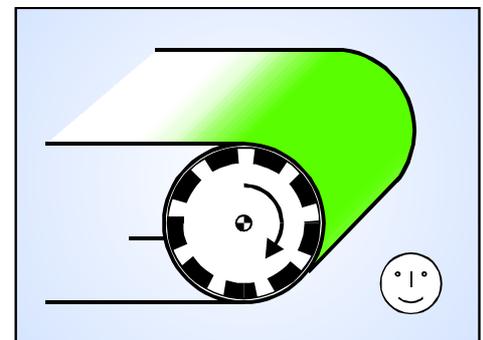


Important: Optimal material condition

Eddy current separation can achieve very high levels of separation if the material on the conveyor is dry, free of ferrous items and sized as closely as possible. The ideal size ranges from 30 to 60 mm edge length. If the material is poorly sized, the gap between the rotor and separation edge must be set according to the largest size. In this case only the metal parts above average size will be ejected over the separation edge. Additionally, poor sizing also increases obstruction of material goods.

Maximum level of separation is only possible with full rotors

Non-ferrous metals with a low specific electrical conductivity are only subject to a low acceleration force in the magnetic field. With concentric full rotors, the reach of the magnetic field across the surface of the material on the conveyor is much larger than with eccentric systems. The cause of this is the exponential relationship between the magnetic field strength and the distance to the magnet system. This distance is a minimum over the entire angle of contact for the material on the conveyor just at concentric full rotors. For this reason, the material on the conveyor is subject to the magnetic field much longer with full rotor systems than with eccentric systems. In spite of the relatively low acceleration forces, even less conductive metal items achieve a higher ejection speed with a full rotor because of the long exposure time. The images next to this text show the extended magnetic field of the WAGNER MAGNETE concentric full rotor (top) and the magnetic field of an eccentric rotor system (bottom). It is clear that the magnetic field strength is at its maximum just along a line running across the direction of the conveyor.

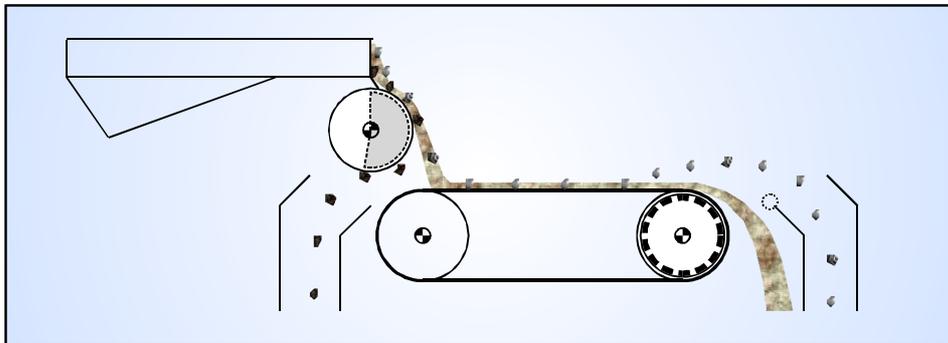


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Eddy current technology, a real winner

During further development of the WAGNER non-ferrous separator, we have implemented ground-breaking techniques, especially to significantly increase operating security. In addition to utilizing the most modern materials to increase resistance to wear and the development of an automatically opening separation edge, the integration of an effective separator for removing remaining ferrous items are the most important new feature: A strong neodymium magnet drum on the standard device provides very good separation of any ferrous items that are remaining in the material to be processed. This significantly increases the lifespan of the downstream eddy current separator without having to sacrifice the many advantages of the full rotor. The magnetic field of the full rotor has a much further reach across the surface of the material on the conveyor belt than other



New ceramic rotor shield

To protect the magnet rotor shield from wear, we have developed a new method for applying a special ceramic composite coating onto the shield.

This procedure provides a high level of protection against wear and breakage.

Excellent interior sealing

Well fitting brushes and an extra high side walls prevent parts of the material on the conveyor belt from going over the edge of the conveyor into the side areas of the device.

A very good interior seal is provided to further protect the device from items coming in from the sides and from dust collecting in the interior. Large service covers allow the interior sealing to be opened on both sides of the device so that service work can be completed easily.



Extremely durable WAGNER conveyor belts

We have developed extremely durable PU conveyor belts especially for our non-ferrous separator. As compared to standard plastic or rubber belts, our special belts are up to six times more durable.

Changing belts and all work on the magnet rotor can be done easily and efficiently from the sides of the device. The side covers can be easily removed throughout the entire length of the machine.

Standard design:

Open type (non-covered conveyor)
Axle base 1500mm
Belt speed 0,5 - 2,0 m/s
Rotor speed ca. 3000 U/min
Mains voltage 400V 50 Hz
SPS Siemens S7-200
Operation via touchscreen
Electronic, maintenance-free rotor brake also in case of power failure

Driving motors:

Rotor: standard motor NORD 4,0 kW
Belt: geared motor NORD 1,5 kW
Drum: geared motor NORD 0,55 kW
Separating edge: drummotor 0,37 kW

Inverters:

Toshiba, NORD

Options:

Rotating separation roller
Rotating brush for conveyor belt
Ejector chute for remaining FE
Covered (dust protected) design
Feeder control
Profibus interface
Motors with maintainance switch