

One Source

Rotary sluice for lumpy materials



Ensuring uniform material flow

Key benefits

- **Minimises false air intake**
- **Improves mill performance**
- **Reduces power consumption**
- **Ensures optimal material distribution**
- **Reduces risk of unexpected stops**
- **Heated sluice is capable of handling sticky materials**
- **Sturdy design ensures long life**
- **Split design ensures easy access and maintenance**



Minimise false air intake

Most processes in a cement plant work under under pressure. It is therefore desirable to minimise the intake of false air. The unintended ingress of ambient air (false air) has a negative impact on not only the required size of machinery, but also the power consumption - especially of the process fans. Therefore, an effective sluice is needed to ensure the highest performance and efficiency.

The FLSmidth® rotary sluice for lumpy materials ensures a steady and uniform flow of feed material, with a minimum intake of ambient air. It has been an important and reliable component of the FLSmidth ATOX® mill, FRM™ mill and OK™ mill for many years. A range of rotary sluice sizes and capacities are available to match different needs.

Many applications

The rotary sluice can be used in many applications where lumpy materials are fed into process machinery. It is most commonly used for vertical roller mills (VRMs), however, other applications can also benefit from the performance of the rotary sluice.

The rotary sluice can handle wet or moist feed, such as limestone, clay, iron ore or slag.

For larger raw mills, the total feed rate to the rotary sluice can easily exceed 1000t/h. Rotary sluices with a diameter in the range of 600 - 2800mm have been designed to cover the entire range of requirements.

Retrofit options

Whenever an effective sluice is required for new or existing installations, the FLSmidth rotary sluice is the right choice. Suitable for both FLSmidth and non-FLSmidth equipment, the rotary sluice for lumpy materials can replace existing sluices in order to improve performance and energy efficiency.

For existing plants, we can adapt layouts to ensure the correct connections between the existing equipment and the new sluice. The versatility of the our rotary sluice for lumpy materials makes it easy to create tailor-made solutions exactly matching your needs.

Typical applications of the rotary sluice

- ▮ VRM raw mill, typical feed size up to 200mm
- ▮ VRM coal mill, typical feed size up to 100mm
- ▮ VRM cement mill, typical feed size up to 100mm
- ▮ VRM slag mill, typical feed size up to 5mm
- ▮ Ball mill, typical feed size up to maximum 75mm
- ▮ Flash drying, typical feed size up to maximum 75mm

Handling challenging material

A uniform, consistent feed is crucial for stable mill operation, especially for VRMs, since a lack of feed will lead to reduced grinding bed thickness and a corresponding increase in the vibration level. Compared to other types of feed sluices, the FLSmidth rotary sluice ensures that the feed of material is uniform, keeping the grinding bed stable and the vibration low. This ensures a steady operation, high equipment availability and a reduction in the risk of unexpected mill stops.

Low-speed rotor

For trouble-free operation and long life, the sluice design is based on a low-speed six-chamber rotor.

The six chambers ensure that at least one of the vanes is in contact with each side of the housing at any time, ensuring very low ingress of air. The 60 degree opening angle within the six chambers reduces the risk of material sticking inside the rotor during operation.

To limit false air ingress, replaceable sealing plates at the tips of the rotor vanes can be adjusted to obtain a small gap between the rotor and housing.

Split design

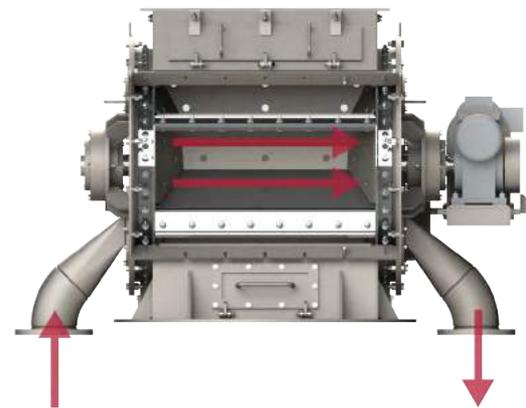
The rotary sluice is designed with a split housing which allows the cylindrical housing to be partly removed without dismantling the entire sluice. This design facilitates easy access and inspection of the interior of the sluice. When one or both sides are opened, it is easy to check the condition of the housing lining and replace it, if required.



Split housing - for easy maintenance

Heated sluice

For sluices working with particularly sticky material, a specially designed rotor that enables hot gas to pass through is available. The heating of the inside of the rotor walls prevents sticky material from adhering to the surfaces, ensuring a clean rotor.



Heated sluice - For sticky materials

For the heated sluice, hot gas is connected to the sluice housing, passing the rotor axially and exiting on the opposite side. Typically the hot gas is taken from a drying gas source, for example, from the hot gas inlet of the VRM.

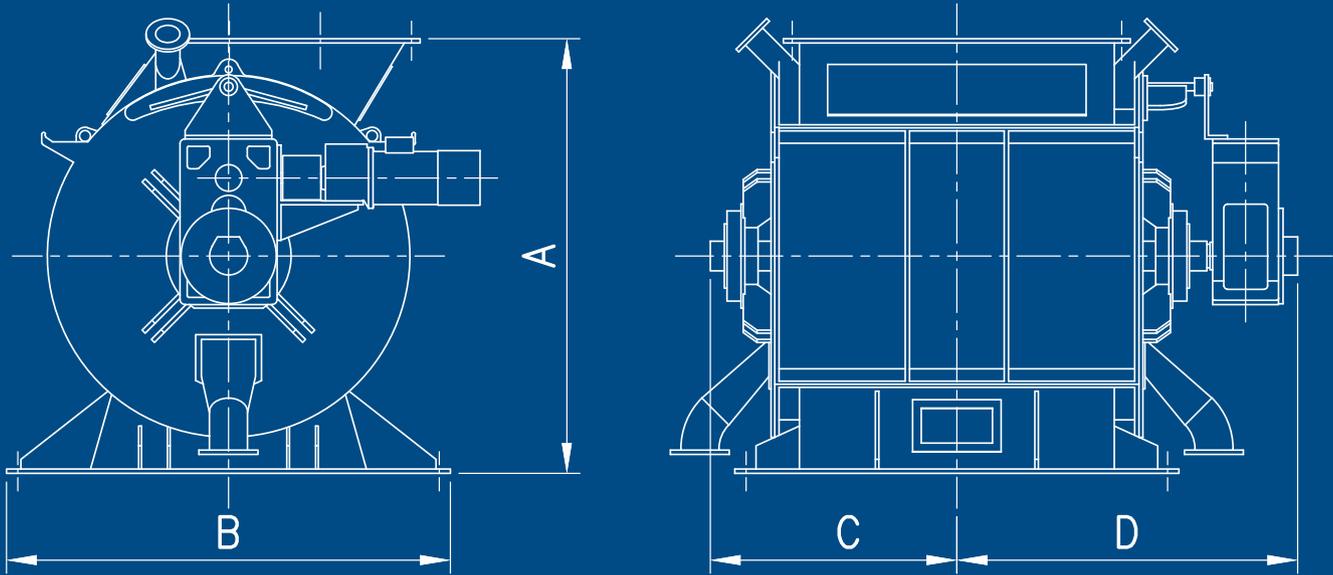


Six-chamber rotor design

FLSmidth rotary sluices

- ▮ Non-heated - For sluicing of dry materials
- ▮ Heated - For sluicing of moist materials
- ▮ Heated or non-heated with seal air

Rotary sluice dimensions and characteristics



Sluice size	Max. lump size (mm)	Capacity t/h dry						Dimensions			
		Raw materials		Coal		Cement	Slag				
		Standard	Heated	Standard	Heated	Heated	Heated	A (mm)	B (mm)	C (mm)	D (mm)
600	70	50	38	30	22	45	40	850	ø700	540	820
800	80	125	95	70	55	110	100	1140	ø1100	712	946
1000	105	130	100	75	60	115	105	1430	ø1520	1004	1220
1250	115	245	185	140	105	210	190	1800	ø1880	1280	1528
1400	140	345	260	200	150	300	270	2000	ø2080	1324	1666
1600	170	535	400			460	420	2240	ø2350	1424	1866
1800	205	765	575			650	600	2507	ø2560	1524	1968
2000	220	900	675					2800	ø2850	1705	2089
2200	240	1200	900					3100	ø3130	1800	2184
2500	240	1600	1200					3310	ø3400	1834	2334
2800	240	2300	1750					3700	ø3800	2000	2600

Capacities given are for guidance only and are dependent on bulk density.

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