

One Source

# Centrifuging Solutions



# Coarse Coal Centrifuges



FLSmidth manufactures a range of centrifuges that have established an unequalled track record of performance and reliability. The range includes coarse and fine coal centrifuges boasting high capacity, advanced technology, durability, value and efficiency.

All centrifuges are backed by professional support and on-site service.

## Coarse Coal Centrifuges

The FLSmidth® Ludowici® VM™ coarse coal centrifuge range are horizontal vibrating basket style machines which use the principle of centrifugal force to separate water from coal. The VM™1650 is the world's largest capacity coarse coal centrifuge.

## How it works

The centrifuge is equipped with a slightly conical screen basket, which is open at the larger diameter. The basket rotates around its horizontal axis and is simultaneously rapidly vibrated in the direction of this axis.

The feed is pressed to the basket by centrifugal force and, by vibration; it is conveyed along the inner side of the conical screen basket. During this process, surface water is removed from the particles and forced through the apertures of the basket. The dewatered solids are discharged at the front part of the water housing.

Ideal For	Feed size	Features and Benefits
<ul style="list-style-type: none"> <li>Coal nominally less than 50mm</li> <li>Dense medium cyclone products</li> </ul>	<ul style="list-style-type: none"> <li>-50mm to +0.5mm</li> <li>Feed moisture to 18% to 25%</li> <li>Surface moisture of product to 4% to 9% (dependant on particle size distribution of feed material)</li> </ul>	<p><b>Advanced design</b></p> <ul style="list-style-type: none"> <li>Easy operation and maintenance</li> <li>High capacity and availability</li> <li>Easy access to vibration motor</li> </ul> <p><b>Proven results</b></p> <ul style="list-style-type: none"> <li>Consistently superior dewatering results</li> <li>More than 750 units manufactured since 1992</li> <li>Machines still operating after 14 years</li> </ul> <p><b>Motor lubrication system</b></p> <ul style="list-style-type: none"> <li>Bolt on/off components and assembly</li> <li>Easy access</li> <li>Simple delivery/return of oil</li> <li>Oil flow switch</li> </ul>

# VM™1650 is the world's largest capacity Coarse Coal Centrifuge

## Additional Features

1. Effluent chamber (outside of basket) lined with WEAR-RESIST™ ceramic
2. Feed chute and product discharge chute lined with alumina ceramic Tiles for extended life
3. Feed chute is mounted on the door and swings away for fast basket maintenance access
4. Basket changed safely and easily using convenient removal mandrel
5. Wedge wire constructed centrifuge basket can be customised
6. Sample access inspection door (not shown)
7. Safety access platform for removal (not shown)

VM™ Centrifuge Water Housing



VM™ Centrifuge Feed Chute and Wedge Wire Baskets

Centrifuge Specifications						
	VM600	VM1100	VM1300	VM1400	VM1500	VM1650
Nominal Capacity (tph)*	20	150	250	300	350	410
Diameter of Basket (mm)	600	1100	1300	1400	1500	1650
Basket Angle	15	13	13	15	15	15
Basket Aperture (mm)	0.4/0.5	0.4/0.5	0.4/0.5	0.4/0.5	0.4/0.5	0.4/0.5
Main Drive Motor (kW)	7.5	30	37	45	75	75
Vibrator (2x) Motors (kW)	1.1	3.0	3.0	3.0	5.5	5.5
Oil Pump Motor	NA	0.75	0.75	0.75	0.75	0.75
Weight of Centrifuge (t)	1.6	6.8	8	8.1	12	12.5

\* Depending on Particle size

# FC™1200 Vertical Fine Coal Centrifuge



The FLSmidth® Ludowici® FC™1200 is a high capacity, vertically mounted scrolled basket style centrifuge.

It has a reputation for high availability, low product moistures and a long service life for baskets and “wet end” components. It incorporates robust mechanical components and has a basket/scraper drum life that is superior to competing fine coal centrifuges.

### How it works

The differential speed of the scraper drum to the basket, combined with the basket angle and gravity, conveys material from the feed end of the basket to the product discharge.

Feed enters through the top of the machine, falls onto the scraper drum cover and is dispersed over the vertically mounted basket. The rotational speed of the basket creates high G-forces, which forces surface water through the apertures of the basket and discharged via two effluent pipes at the side of the centrifuge. The dewatered fine coal is scraped off the basket surface by the scraper drum blades and then falls down past the gearbox and out through the bottom of the centrifuge.

Ideal For	Feed size	Features and Benefits
<ul style="list-style-type: none"> <li>• Simplified routine maintenance procedures</li> <li>• Dewatering of fine coal nominally less than 6mm</li> <li>• Dewatering of REFLUX™ Classifier product</li> <li>• Dewatering of coal spiral product, nominally less than 2mm and greater than 0.1mm in size</li> </ul>	<ul style="list-style-type: none"> <li>• Feedsizes -6mm to + 0.1mm (typically -2mm to +0.125mm)</li> <li>• Feed % solids 50% to 65% by weight</li> <li>• Surface moisture of product 9% to 13% (dependant on particle size distribution of feed material)</li> </ul>	<p><b>Value and efficiency</b></p> <ul style="list-style-type: none"> <li>• Low installation and maintenance costs</li> <li>• High efficiency</li> <li>• Maximum solids recovery</li> <li>• Low final moisture</li> <li>• Robust gears, shafts and bearings capable of trouble free operation for many years</li> </ul> <p><b>Advanced design features</b></p> <ul style="list-style-type: none"> <li>• Pressurised lubrication system for long bearing life</li> <li>• Re-usable oil filter with built in magnet and bypass indicator</li> <li>• Large throat opening in feed chute for greater throughput</li> <li>• Abrasive resistant wear parts as standard supply</li> </ul>



## Abrasion Resistant Linings

**(A)** Internal base of spoke piece lined with 12mm thick alumina ceramic tiles.

**(B)** Product wear ring lined internally with 12mm thick alumina ceramic tiles.

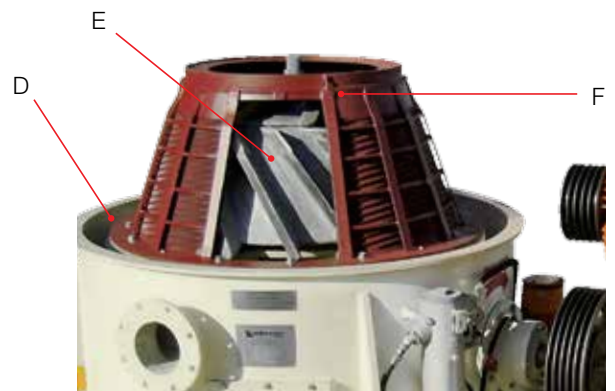
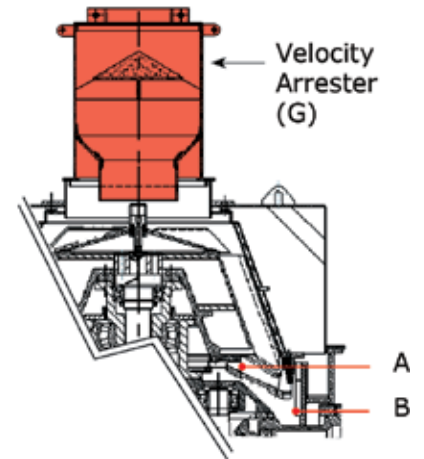
**(C)** Centrate chamber high density alumina wear tiles (not shown).

**(D)** Centrate launder trowellable ceramic (WEAR-RESIST™).

**(E)** Scraper drum abrasive resistant scraper blades (WEAR-RESIST™).

**(F)** Scraper drum cover / feed distribution zone (WEAR-RESIST™).

**(G)** Velocity arrester (optional extra). When feed pipe head exceeds 3 metres or feed velocity is greater than 1.5 metres per second, a velocity arrester complete with a WEAR-RESIST™ lined impact area is recommended.



## Centrifuge Specifications

Model	Nominal capacity (tph)	Basket diameter (mm)	Basket angle	Basket aperture (mm)	Drive motor (kW)	Lubrication motor (kW)	Machine weight (kg)	Typical feed size range (mm)
FC™1200	50-80*	1200	20	0.250/ 0.375	55	1.1	5860	-6 + 0.1mm

\* Depending on Particle size

# HFC™1300 Horizontal Fine Coal Centrifuge



HFC™1300 Horizontal Fine Coal Centrifuge (Front)

## HFC1300 Horizontal Fine Coal Centrifuge

The FLSmidth® Ludowici® HFC™1300 Fine Coal Centrifuge is a horizontally configured, scrolled basket style centrifuge to optimize water removal in fine coal processing. With a small footprint, the HFC occupies a similar space to the FC 1200 Centrifuge, yet has twice the rated capacity. The HFC 1300 is the world's largest capacity scrolled basket type centrifuge.

### How it works

The differential speed of the scroll to the basket, combined with the basket angle, conveys material from the feed end of the basket to the product discharge.

Feed enters through the top of the machine, falls onto the scraper drum cover and is dispersed over the vertically mounted basket. The rotational speed of the basket creates high G-forces, which forces surface water through the apertures of the basket and discharged via two effluent pipes at the side of the centrifuge. The dewatered fine coal is scraped off the basket surface by the scraper drum blades and then falls down past the gearbox and out through the bottom of the centrifuge.

Ideal For	Feed size	Features and Benefits
<ul style="list-style-type: none"> <li>• Dewatering of fine coal nominally less than 6mm</li> <li>• Dewatering of REFLUX™ Classifier product</li> <li>• Dewatering of coal spiral product, nominally less than 2mm and greater than 0.1mm in size</li> </ul>	<ul style="list-style-type: none"> <li>• Feed size -6mm to 0.1mm (typically -2mm to +0.125mm)</li> <li>• Feed % solids 50% to 65% by weight</li> <li>• Surface moisture of product 9% to 13% (dependant on particle size distribution of feed material)</li> </ul>	<p><b>Value, efficiency and support</b></p> <ul style="list-style-type: none"> <li>• Low cake moisture</li> <li>• Low installation cost</li> <li>• High efficiency</li> <li>• Maximum solids recovery</li> <li>• Professional back up and site service support</li> </ul> <p><b>Advanced design features</b></p> <ul style="list-style-type: none"> <li>• Higher unit capacity – designed to handle 100 dry tonnes per hour of REFLUX™ Classifier or spiral product</li> <li>• Lower product moisture – capable of 350 G force, to producing the driest product</li> <li>• Feed chute is mounted on the door and swings away for fast maintenance access</li> <li>• Cyclodrive used to drive basket and scroll</li> </ul>

# HFC™1300 is the largest Fine Coal Scrolled Basket Centrifuge in the world



HFC™1300 Horizontal Fine Coal Centrifuge  
Basket (internal)

## Design Features

**Higher unit capacity:** The HFC1300 is designed to handle nominally 100 dry tonnes per hour of REFLUX™ Classifier or spiral product – roughly twice the capacity of the FC1200. Lower Product Moisture: The HFC1300 is capable of G forces up to 350Gs, to produce the driest possible product.

The HFC1300 has been designed so that the wet end is disassembled in order of component wear with the basket on the outside and then the distributor, scroll and carrier. The HFC1300 is a horizontal style machine, meaning reduced maintenance height requirements.

The door is hinged complete with the chute allowing for quick access to routine wearing components. Modular design allows for easy replacement of components in complete sub-assemblies.

### Ease of maintenance:

- Wet end is disassembled in order of component wear with

the basket on the outside and then the distributor, scroll and carrier

- Reduced maintenance height requirements due to the horizontal style
- Modular design allows easy replacement of components in complete sub-assemblies
- Easy access to all lubrication points

**Optional:** A choice of drive motor and door handing change the footprint to best suit plant space requirements. Externally mounted easily accessed drive motor and drive belts. Maintenance of wearing components via custom engineered lifting tools.

**Vibration dampening:** The centrifuge frame is isolated from the plant structure through rubber mounts.

**Small footprint:** The HFC occupies a similar footprint to the FC1200.

## Discharge housing and base assembly

The discharge housing and base assembly are the main body of the centrifuge. All sub-assemblies are fixed to the discharge housing.

**Discharge housing:** The discharge housing consists of two wear lined compartments – the effluent and product housings.

**Abrasion resistant wear linings:** To ensure long life of the discharge assembly, all internal assemblies of the discharge housing are lined with either trowelable FLSmidth® Ludowici® WEAR-RESIST™ or alumina tiles.

## Specifications

Capacity*	75 – 100 tph
Drive motor	110 KW
Lubrication motor	0.75 KW
Basket Diameter	1300 mm
L x W x H	3010 x 2256 x 2065 (mm)
Mass	6,300 kg
Feed size range (nominal)	-6 + 0.1 mm

\* Depending on particle size

## **Minerals**

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