Genesis Hydrocyclone™

LINATEX

A World Of Experience

Linatex is the name acknowledged around the world as the foremost authority in the use of rubber for abrasion, impact and corrosion resistance.

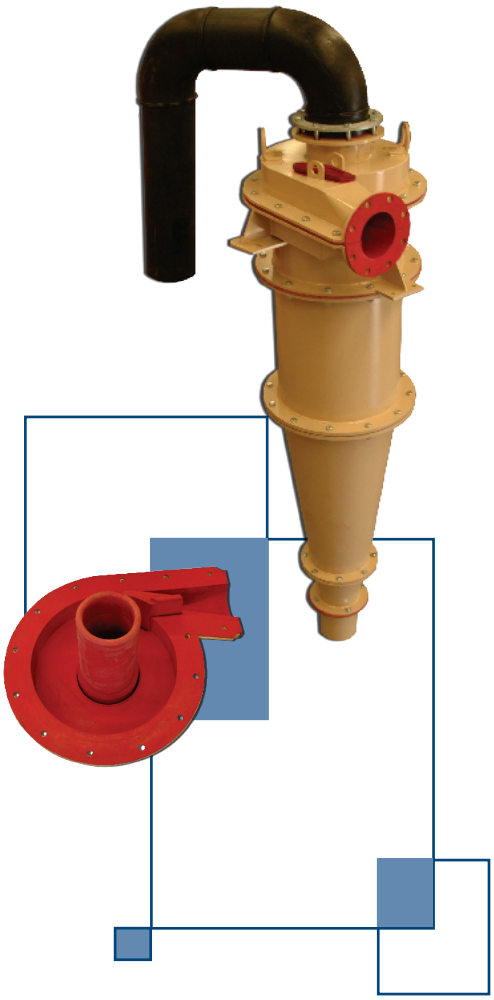
With a history dating back to the first processing of commercial rubber, Bernard Wilkinson established Linatex in Malaysia in the 1920's. Wilkinson's invention of Linatex revolutionised the concept of industrial wear design and solutions. Since then, Linatex has developed into an unrivalled expert in this filed.

Today Linatex is more than just internationally recognised rubber. Linatex has grown to encompass a complimentary range of products and services. These include process equipment, material handling products, a range of mining hose, a line of moulded and fabricated products and technical expertise.

Linatex has evolved to become a truly global operation. With Linatex sites in every continent and a distribution network unparalleled in the industry. Linatex can not only deliver our products wherever you are, but the Linatex network can also work with your team on special projects to gain access to international markets previously thought inaccessible. Not only can Linatex get there, chances are we already have a presence there.

In addition, Linatex talk to each other. We encourage the technical interchange between our members to expand our global depth of knowledge. This is done so that when you deal with Linatex, wherever you are, you have been given the opportunity of buying a product that has been designed, tested and proven in world markets.

New Genesis Hydrocyclone™



Linatex has used Computational Fluid Dynamics (CFD) modeling and specialist design principles to develop the new range of Linatex Genesis Hydrocyclones™. Incorporating a number of new features, this cyclone will provide improved classification efficiency and product recovery.

- An interchangeable inlet wedge is a unique feature of the Linatex Genesis Hydrocyclone™. The wedge allows operators the opportunity to quickly change the size of the inlet and fine tune the cyclone performance without physically removing it from the process line.
- The feed slurry is introduced to the body of the cyclone in a tall rectangular ribbon. The feed transition physically moves the solid particles closer to the wall of the cyclone, minimising the distances travelled during the separation process and results in improved efficiency. CFD modeling was used to design the round to rectangular feed transition area to reduce operational pressures and minimise wear and operational costs.
- The scrolled and swept inlet head allows the cyclone feed to be introduced to the cyclone without interfering with the separation stream. This ensures all forces acting on the slurry during separation are maximised and turbulence is minimised.

With over 50 years experience in the supply of process equipment to the mining and mineral extraction industries, Linatex will continue to provide full performance modeling and technical engineering support.

Other Design Advantages

- Linatex wear liners reduce maintenance cost due to their superior resistance to abrasion.
- Improved liner wear performance maintains internal geometries and in turn operational separation efficiencies for longer periods.
- Replacement inlet wedges can be used to maintain performance without needing to change out full liners.
- Drop-in Linatex replacement liners or field applied bonded –in linings permit economical "On Site" maintenance.
- The involute swept entry design produces a smooth, ribbon like flow regime inside the cyclone for reduced turbulence & sharper classification.
- A broad range of Linatex Cyclone sizes and configurations assures optimum equipment selection.
- Technical support from experienced engineers equipped with a wealth of world wide operating experience backs up each Linatex Cyclone installation.
- Prompt computer modeling based on proven mathematical techniques from a wide range of results.

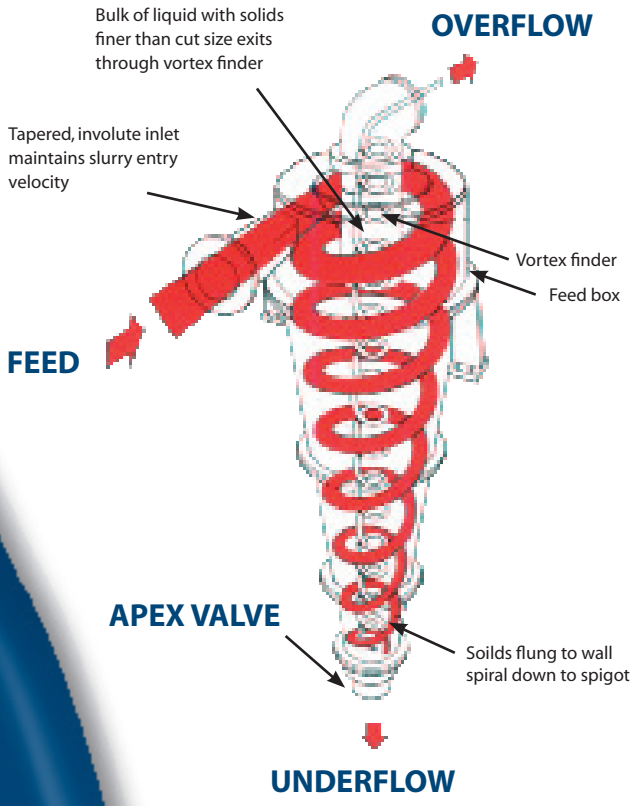
How does a Cyclone work?

There are no moving parts in a Cyclone

A mixture of solids and water is fed into the cyclone at a pressure of typically 40-150 kPa. The rotation imparted by the entry of the slurry into the feed box causes the solid particles to be thrown outward by centrifugal force. The higher the inlet pressure, the greater the force, which is commonly many times that of gravity.

Solids are flung to the wall of the cyclone, spiral down the cone and out through the apex. The bulk of the liquid spirals upwards and leaves the cyclone through the vortex finder. The solids which exit with the bulk of the water through the vortex finder are the particles which are so fine that the centrifugal forces are overcome by the entrainment or drag forces.

For a given inlet pressure or rotational speed there is a 'cut' size at which the drag and centrifugal forces are in balance. Particles finer than this cut size flow with the bulk of the liquid through the vortex finder, and particles coarser than the cut size exit through the apex.



Classification

Linatex Cyclones have proven to be an economical means of classification, especially in closed circuit grinding operations. Coarse material which reports to the spigot is returned for further grinding, while fine material in the overflow goes on to further processing, eg CIP or flotation.

Dewatering and Desliming

Linatex Cyclones are widely used to dewater and deslime mineral sands, concrete sands, iron sands, iron ore fines, phosphate rock and coal washery fines in mineral processing circuits, including back-fill feed preparation.

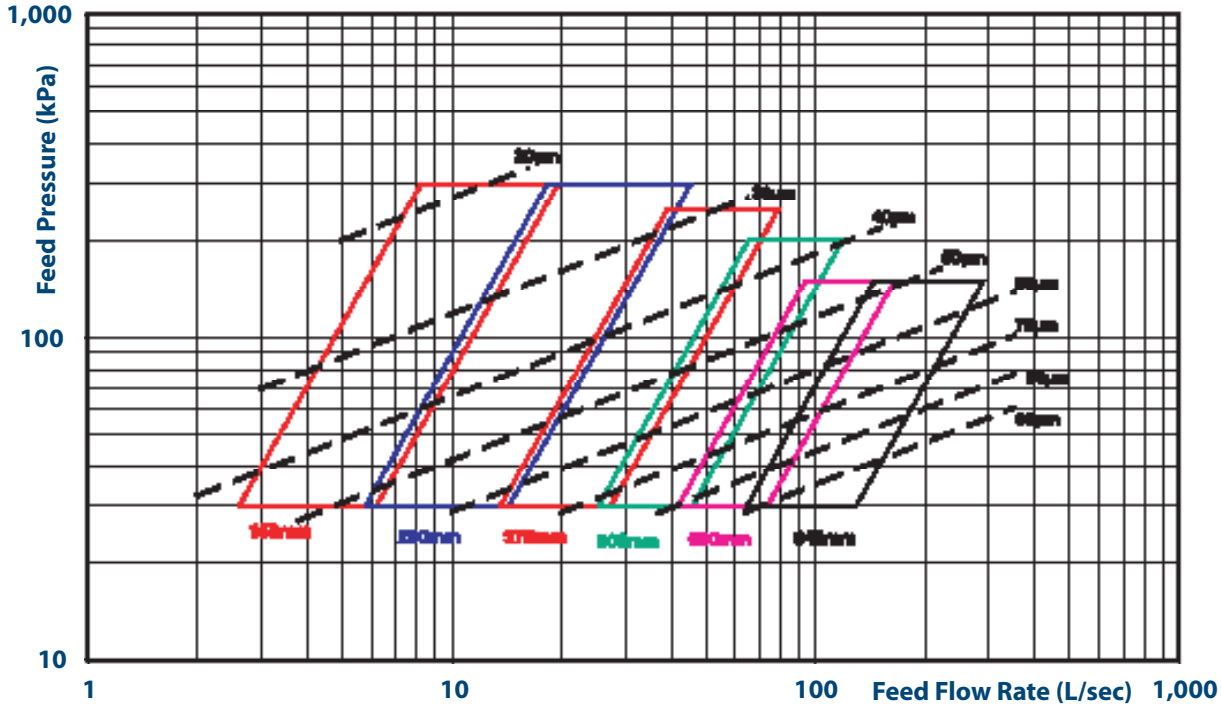
The particle size to be removed with the overflow determines the cyclone size, number required and the use of certain cone geometry or an extended feed box.

Fines Recovery / De-Gritting

Recovery of very fine solids requires small cyclones operating at higher than normal pressures. Particle size to be recovered and total throughput determine the cyclone diameter and numbers respectively. Clusters of small cyclones can also be used to remove oversize grits from cement, clay, drilling mud, effluent and other slurries.

Linatex Genesis Hydrocyclones™ - Slurry Performance Curves

Recommended Operation Ranges



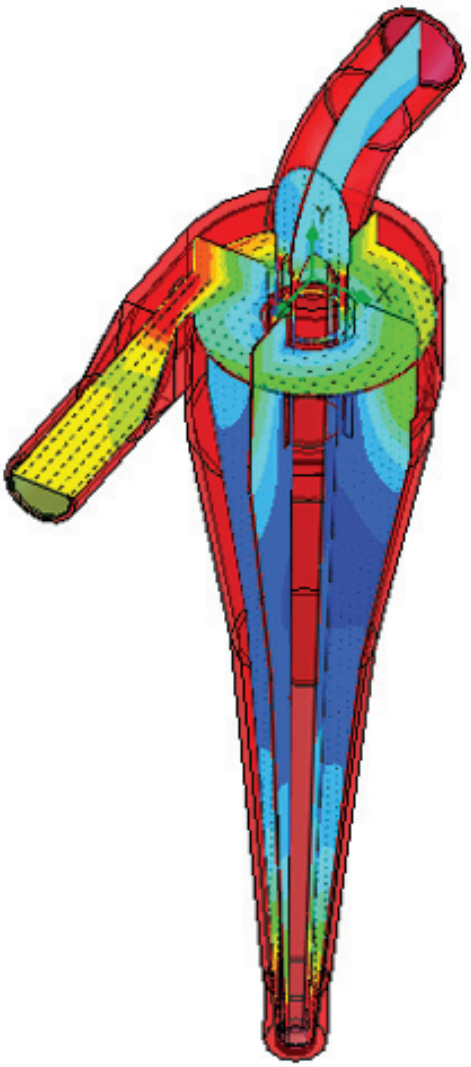
CFD Capability

Linatex is expanding its in-house expertise with the use of computational fluid dynamics (CFD). Three dimensional modelling combined with CFD analysis has become our preferred tool for developing the new range of hydrocyclones and promotes advanced feed geometry.

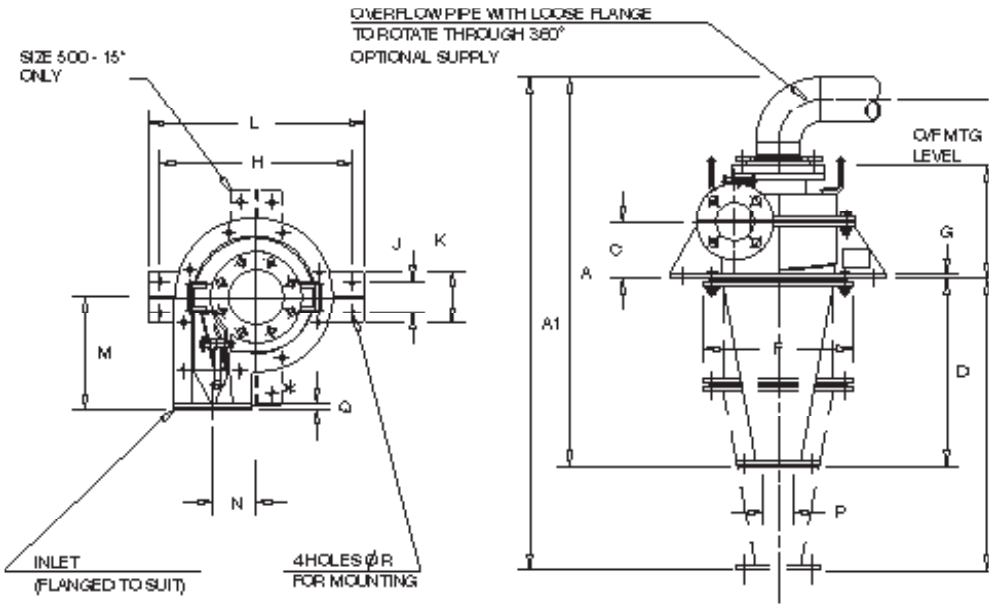
The vast amount of information that is available from the analysis of the hydrocyclone fluid dynamics at low solids concentrations include:

- plots of pressure and velocity distribution
- vector plots of velocity distribution
- three-dimensional flow trajectories
- particle tracking
- plots of erosion

Modelling of many fluid flow systems can now be carried out and Linatex will continue its commitment to the on going development of its product range using this powerful tool.



Units
length (mm)
Weight (kg)
Volume (Litres)

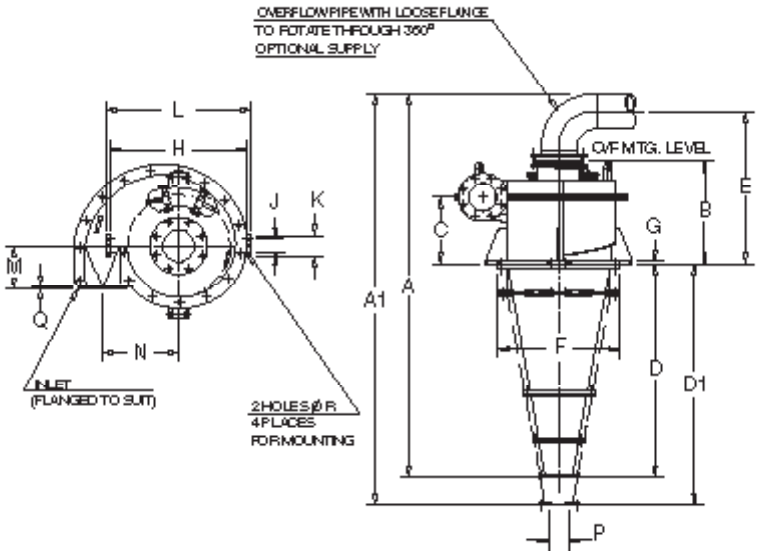


150 to 500 Cyclones 10°, 15° & 20° Cone Angles

Cyclone Size

																			With Cylindrical Section			
	A	B	C	D	E	F dia.	G	H	J	K	L	M	N	P dia.	Q	R dia.	Inlet N.B.	Vol.	Mass	A1	D1	Vol.	Mass
150-10	781	205	98	415	327	290	10	400	80	130	460	192	66	80	14	15	50	9	38	978	616	12.6	47
250-10	1468	282	143	966	447	370	10	480	80	130	540	280	109	80	16	18	80	35	69	-	-	-	-
250-20	971	282	143	469	447	370	10	480	80	130	540	280	109	80	16	18	80	44	57	1231	729	61	78
375-10	1862	370	194	1186	601	510	10	620	100	150	680	391	145	150	18	18	125	96	145	-	-	-	-
375-20	1275	370	194	599	601	510	10	620	100	150	680	391	145	150	18	18	125	60	115	1659	983	97	167
500-15	2165	546	305	1189	863	650	12	760	100	150	820	480	203	150	18	18	150	96	208	2775	1800	248	318

Units
length (mm)
Weight (kg)
Volume (Litres)



660 to 840 Cyclones 20° Cone Angles

Cyclone Size

																			With Cylindrical Section			
	A	B	C	D	E	F dia.	G	H	J	K	L	M	N	P dia.	Q	R dia.	Inlet N.B.	Vol.	Mass	A1	D1	Vol.	Mass
660	2721	723	474	1520	1076	870	16	980	100	150	1040	306	543	150	18	19	200	448	557	2929	1728	516	625
840	3341	1076	804	1618	1546	1028	16	1000	120	180	1060	392	684	250	22	24	250	897	748	-	-	-	-

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