MULTOTEC

High Capacity Classification Cyclones

STEINHAUS Your Specialist in Process Equipment

High Capacity Classification Cyclones

Innovative designs and technology, delivering maximum separation efficiency and low running costs.
For specialised classification applications, including corrosive slurry and large diameter applications, Multotec manufactures a range of high capacity cyclones.

The heart of the Multotec cyclone range

Tests and simulations on the scrolled evolute inlet design prove the following advantages:

1. By allowing the particles to follow their natural downward spiral as a result of the scroll on the inlet, both wear and turbulence are reduced, thereby increasing the wear life of the inlet.

2. Due to lower turbulence in, and lower pressure drop across the inlet head, the cyclone has a higher capacity than other inlet designs.

3. The smooth evolute entry into the inlet allows the particles to align themselves as they move into the cyclone, before being subjected to the centrifugal action of the cyclone. This alignment results in a more efficient separation process within the cyclone.

4. With the scrolled evolute inlet, the feed entering the cyclone does not impact directly on the vortex finder as is the case for other designs. Wear on the vortex finder is considerably reduced, thereby extending the efficiency over the life of the cyclone. The vortex finder normally has the same life as the inlet head.

5. The rectangular inlet nozzle ensures that the feed is introduced in a thin band around the cyclone wall, thereby further minimising turbulence and providing additional benefits in terms of improved wear life and efficiency of separation.

General Features

The high capacity cyclones are made from a mild steel shell, which is either lined with rubber – the HC range – or ceramic tiles – the HA range. The cyclone lining material is dependent on the application to provide the most economic lifecycle cost.

Long-life vortex finder

The vortex finder is cast in highly abrasion resistant polyurethane for longer wear life and lower operating costs. Rubber- or ceramic-lined vortex finders are also available.

Lightweight overflow elbow

The overflow elbow is cast using a lightweight H.D.P.E for ease of maintenance and inspection of the cyclone internals. Alternatively, HDPE rubber-lined or mild steel rubber-lined elbows may be used for abrasive applications.

Cyclone distributors

We offer distributors for larger multiple cyclone operations. These assemblies have been designed to ensure optimum cyclone operation and are extremely compact.

Stacker Cyclones

All rubber cyclones are supplied in a stacker cyclone configuration, complete with flapper valve, rubber-lined overflow elbow and air-bleed/vacuum gauge arrangement.

Flapper valve

Stacker cyclones are ideally suited where maximum underflow densities are required and the tonnage of solids handled by the spigot fluctuates.

The most important design aspect of the stacker cyclone is the flapper valve. Normal cyclones are not well suited to applications where large variations in the tonnage of underflow solids are likely to occur, or where water in the spigot discharge has to be minimised.

The stacker cyclone is designed to be installed with an overflow pipe that creates a siphon effect. This closes the flapper valve and draws up excess water from solids that are discharged through the flapper valve. The net result is a consistently high underflow density, even at varying feed tonnages.

HC Cyclone

All wetted surfaces are lined with 15 mm or 25 mm thick, replaceable rubber liners, which have three times the life of conventional liners. This greatly reduces operating costs, maintenance and stock holding.

The new compression-moulded rubber, the result of extensive research and development of rubber technology and manufacturing methods, is also available.

The heated moulds receive pre-cut and weighed proportions of custom-mixed Multotec green formulation of natural uncured rubber. The moulds remain closed until the rubber is 100 % uniformly cured through the cross section of the component. This process allows the product to be dimensionally consistent and a better material quality. The uniform curing also ensures that the rubber is hardened through, and not just a hard outer casing.

HR Cyclone

For specialised applications and diameters greater than 900 mm, the bonded rubber lining is used.

All benefits of HC range, except for replaceable rubber liners.

HR cyclones are recommended for the following applications:

- Large diameter
- Non-standard applications
- Where specialised rubber compounds are needed

Weep holes

All major HC cyclone housings are designed with weep holes to alert plant personnel when a liner needs replacement. The advantages of weep holes are twofold:

1. They prevent damage of the cyclone housings.
2. They permit maximum life to be obtained from any liner, thus reducing operating costs.
    - 25 mm thick replaceable natural rubber liners
    - Mild steel shells

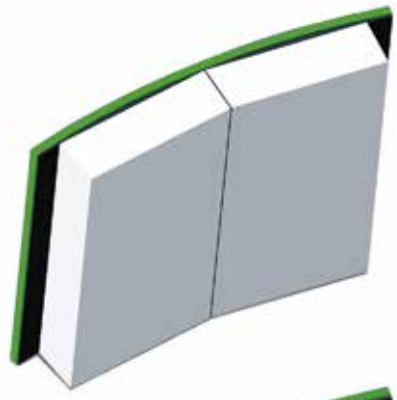
HA Cyclone

Tile design is of critical importance in terms of preventing lining failure and maximising the wear life of the cyclone. Narrow chamfered tiles, with staggered joints across flow, provide the smoothest internal surface and maximum wear life.

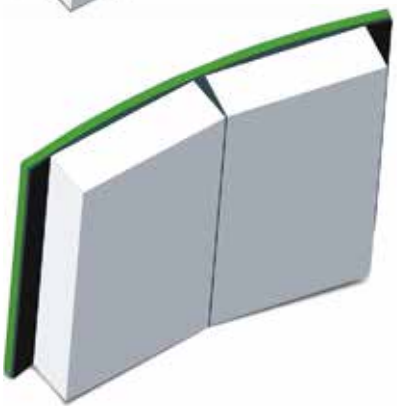
The tiling design for a scrolled evolute inlet head is complicated. Fortunately, as a result of the diverse business activities of the Multotec Group of Companies, the HA range of cyclones reflects the expertise of a company that specialises in both cyclone design and ceramic wear lining design. After years of experience and development, the HA range of cyclones is lined throughout with pre-engineered alumina tiles. Each tile is specifically designed for, and allocated a place in, the cyclone. Such careful design, coupled with years of operating experience, results in a lining with maximum strength and abrasion resistance.

A deliberate outward step is built into the design at the housing joints. This ensures that no inward steps, with attendant efficiency losses, are possible.

All wetted joints are sealed with epoxy. The problem of gaskets protruding into the cyclone body is thus avoided. Any possible areas of turbulence are minimised and a more efficient separation with less misplaced material is achieved.



Multotec's engineered tiles



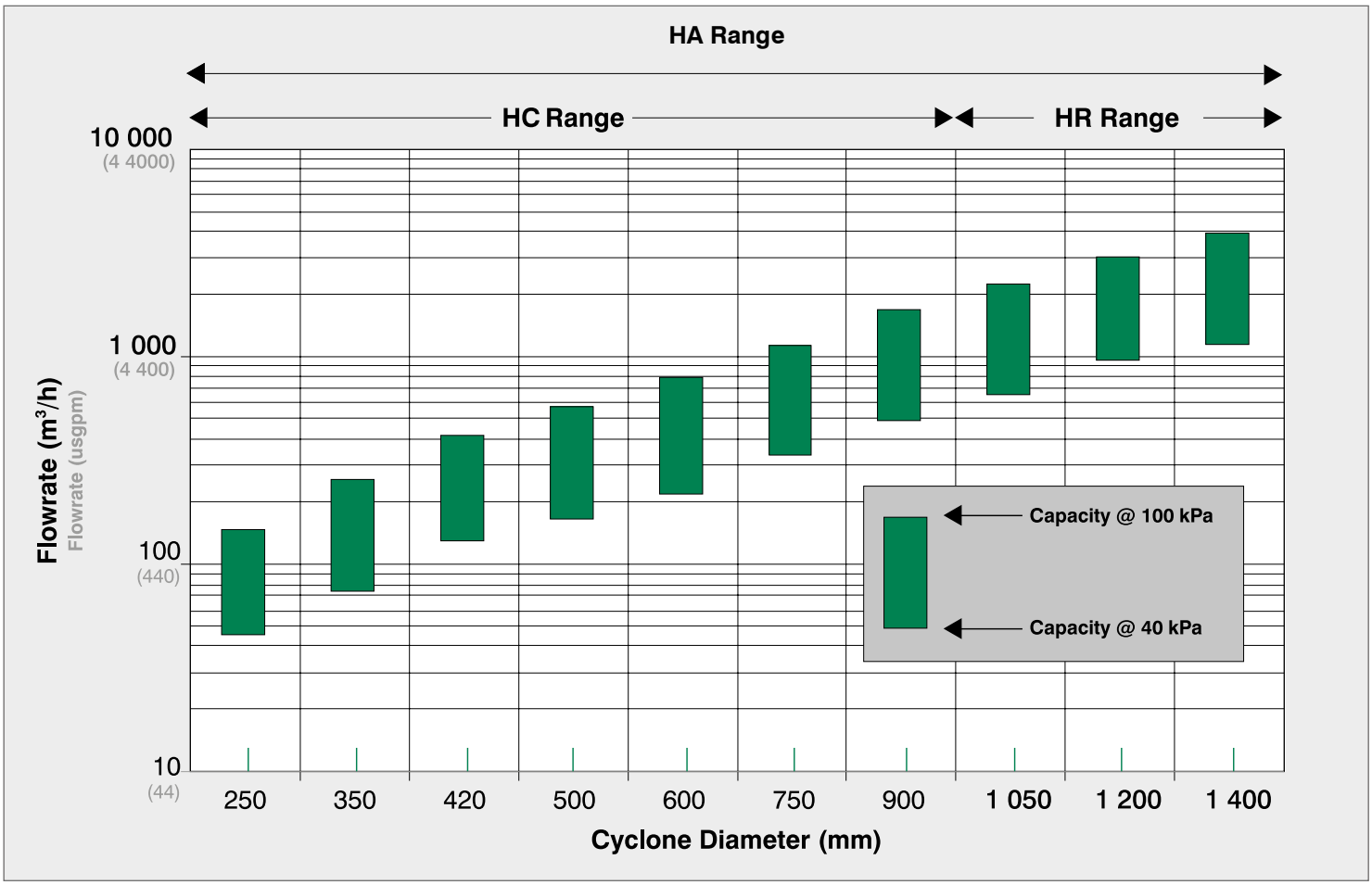
Multotec's standard tiles

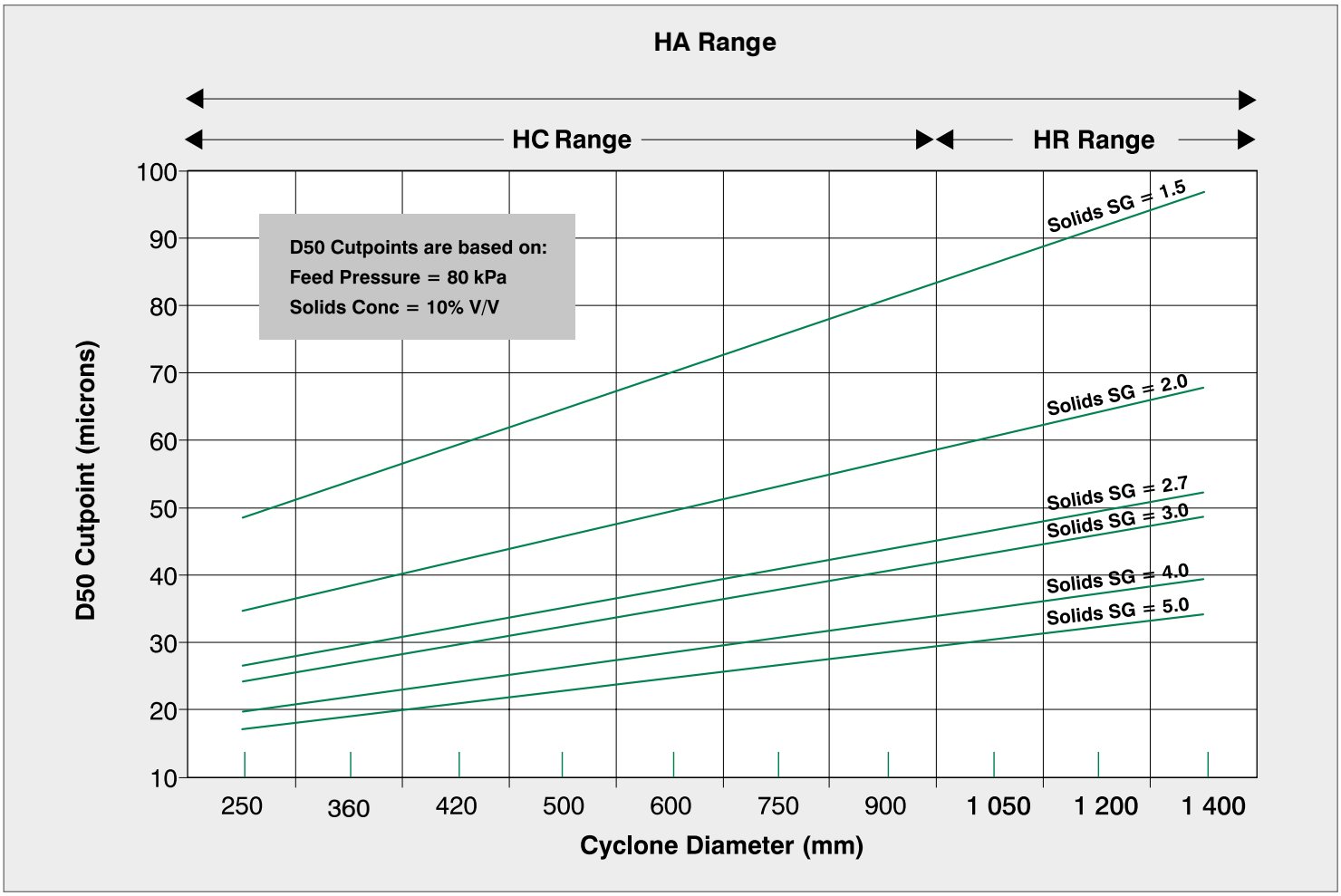
- 12 mm engineered tiles
- Mild steel shells

Interchangeable components

1. Only the worn component needs to be replaced, resulting in a cost saving.
2. Components can be changed to alter cyclone performance if necessary to accommodate changes in plant operation.

High Performance Data





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