YU vacuum drum filter
High-capacity vacuum filtration
**YU vacuum drum filter**

High-capacity vacuum filtration

The high-capacity YU rotary filter, formerly the Bird Young rotary filter, is the high-end solution for rotary vacuum drum filters. The YU filter is best suited for free-filtering materials, where it can benefit from the much higher filtration rates. Its unique, single-cell design provides for very high filtration capacity (5-10 times higher than conventional drum filters), excellent cake washing due to thinner cakes, and smaller space requirements.

The advantages of the YU vacuum drum filter lie in thin cake applications, where highest filtration rates are combined with high washing rates, highest solids throughput rates, and all this also under gas-tight conditions.

The YU vacuum drum filter is available in various stainless steel materials and a wide range of sizes. Due to the long history of the single-cell design, the YU vacuum drum filter design has been proven in many applications.

### Your benefits
- Highest filtration performance
- Easily accessible process area in open design
- Processing in gas-tight models
- Visual inspection of process area in gas-tight machines
- Highest vacuum area (up to 93%) due to single-cell design
- Highest solids throughput rates
- Excellent cake washing
- Ease of operation
- High rotation speed
- Quick initial formation of thin cake
- Unrestricted gas flow

### Processing parameters
- Operating principle: vacuum filtration
- Operating mode: continuous
- Cake discharge: blow-off
- Particle size: 50-300 µm
- Filter area: 0.1-35 m²
- Filtration capacity: up to 4,500 l/m²h
- Solids throughput: up to 3,500 kg/m²h
- Gas-tight operation: possible
- Operating temperature: up to 95 °C

### Main applications
- Terephthalic acid, bisphenol A, polymers, sodium sulfate, boric acid, explosives, aspirin, antibiotics, time-release medicine, winterized salad oils, sterates, sodium bicarbonate, starches

### Construction materials
- Stainless steel
- Special materials

---

- YU vacuum drum filter with housing
Operation

The suspension to be filtered is fed continuously to the filter trough. Due to the exclusive, inverted pyramid-shaped compartment design of the trough, the slurry is distributed equally and no agitation system is needed as a result.

The single-cell drum is usually submerged for between 11% and 19% of the filtration area. Up to 93% of the filtration area is constantly under vacuum, and the drum rotates at up to 30 rpm. A thin cake forms on the drum because of the high rotation speed.

The YU filter operates on the steepest slope of the filtration curve as a result of the fast filtration possible with the open design of the filter internals (see chart with “Typical filtration curve”).

The YU vacuum drum filter builds up a vacuum with a liquid seal pump, which is connected to the drum via the separator to the hollow axle. This causes the liquid to filter through the filter cloth. The solids contained in the suspension are deposited in a uniform layer on the filter cloth, thus forming a filter cake.

The filtered solids layer emerges from the slurry as the drum rotates and is then washed, dried, and removed from the filter cloth. The wash liquid is applied to the cake directly through washing pipes.

The filter cake is discharged by the blow-back shoe, which is fitted with very close clearance to the accurately machined inside surface of the cylinder, sealing off vacuum and blow-back pressure at the point of cake discharge. Cake discharge is achieved by a pulse of gas behind the cake. The snapping action of the filter media initiated by the flow of gas discharges the cake entirely and cleans the filter medium at the same time.

As the drum rotates, it is re-immersed in the suspension. The filter cloth can be cleaned before the next filtration cycle, either by means of water jets, bubbling, or both.

Your savings
■ Lower space requirements
■ Fewer machines required
■ No agitation necessary

FILTRATION RATE = SLOPE \( \frac{dQ}{dt} \)

\[ \Delta Q \]

CONVENTIONAL FILTER
- Long submersion
- Thick cake
- Low filtration rate

\[ \Delta Q \]

YU
- Short submersion
- Thin cake
- High filtration rate

\[ \Delta Q \]

Submersion time t
# YU vacuum drum filter

## Technical data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; x 4&quot;</td>
<td>300</td>
<td>100</td>
<td>0.4</td>
<td>320</td>
<td>0.1</td>
<td>810</td>
<td>1,300</td>
<td>1,220</td>
</tr>
<tr>
<td>18&quot; x 12&quot;</td>
<td>450</td>
<td>305</td>
<td>1.5</td>
<td>810</td>
<td>0.5</td>
<td>1,850</td>
<td>1,830</td>
<td>1,470</td>
</tr>
<tr>
<td>18&quot; x 24&quot;</td>
<td>450</td>
<td>610</td>
<td>2.2</td>
<td>960</td>
<td>0.9</td>
<td>1,550</td>
<td>1,830</td>
<td>1,470</td>
</tr>
<tr>
<td>3’ x 3’</td>
<td>900</td>
<td>915</td>
<td>4</td>
<td>2,230</td>
<td>2.8</td>
<td>2,340</td>
<td>1,400</td>
<td>1,400</td>
</tr>
<tr>
<td>4’ x 4’</td>
<td>1,200</td>
<td>1,220</td>
<td>15</td>
<td>5,090</td>
<td>4.9</td>
<td>2,850</td>
<td>1,800</td>
<td>1,880</td>
</tr>
<tr>
<td>4’ x 6’</td>
<td>1,200</td>
<td>1,830</td>
<td>15</td>
<td>5,880</td>
<td>7.2</td>
<td>3,450</td>
<td>1,800</td>
<td>1,880</td>
</tr>
<tr>
<td>5.5’ x 6’</td>
<td>1,650</td>
<td>1,830</td>
<td>18.5</td>
<td>9,480</td>
<td>9.8</td>
<td>4,270</td>
<td>2,540</td>
<td>2,490</td>
</tr>
<tr>
<td>5.5’ x 8’</td>
<td>1,650</td>
<td>2,440</td>
<td>18.5</td>
<td>11,045</td>
<td>13.0</td>
<td>4,880</td>
<td>2,540</td>
<td>2,490</td>
</tr>
<tr>
<td>5.5’ x 10’</td>
<td>1,650</td>
<td>3,050</td>
<td>18.5</td>
<td>12,620</td>
<td>16.3</td>
<td>5,490</td>
<td>2,540</td>
<td>2,490</td>
</tr>
<tr>
<td>5.5’ x 12’</td>
<td>1,650</td>
<td>3,660</td>
<td>22</td>
<td>14,180</td>
<td>19.2</td>
<td>6,095</td>
<td>2,540</td>
<td>2,490</td>
</tr>
<tr>
<td>6.5’ x 12’</td>
<td>1,950</td>
<td>3,660</td>
<td>37</td>
<td>33,000</td>
<td>25</td>
<td>8,080</td>
<td>2,710</td>
<td>3,250</td>
</tr>
<tr>
<td>8’ x 14’</td>
<td>2,400</td>
<td>4,270</td>
<td>45</td>
<td>50,510</td>
<td>35</td>
<td>9,295</td>
<td>3,380</td>
<td>4,250</td>
</tr>
</tbody>
</table>

* Operating weight of filter includes filling (app. data)
** Power requirements in kW for drum drive (excl. vacuum and filtrate pump), depending on application

---

Outline sketch of the YU vacuum drum filter

---

**AFRICA**

ANDRITZ Delkor (Pty) Ltd.
Kyalami, South Africa
Phone: +27 (11) 012 7300
separation.za@andritz.com

**AUSTRALIA**

ANDRITZ Pty. Ltd.
Carrum Downs, VIC, Australia
Phone: +61 (3)8773 4888
separation.au@andritz.com

**CHINA**

ANDRITZ (China) Ltd.
Foshan, Guangdong, P.R. China
Phone: +86 (757) 8258 6802
separation.cn@andritz.com

**NORTH AMERICA**

ANDRITZ SEPARATION Inc.
Arlington, TX, USA
Phone: +1 (817) 465 5611
separation.us@andritz.com

**ASIA**

ANDRITZ Singapore Pte. Ltd.
Singapore, Singapore
Phone: +65 (6512) 1800
separation.sg@andritz.com

**SOUTH AMERICA**

ANDRITZ SEPARATION Ltda.
Pomerode, Brazil
Phone: +55 (47) 3387 9100
separation.bra@andritz.com

---

All data, information, statements, photographs, and graphic illustrations in this leaflet are without any obligation and raise no liabilities to or form part of any sales contracts of ANDRITZ AG or any affiliates for equipment and/or systems referred to herein. © ANDRITZ AG 2015. All rights reserved. No part of this copyrighted work may be reproduced, modified or distributed in any form or by any means, or stored in any database or retrieval system, without the prior written permission of ANDRITZ AG or its affiliates. Any such unauthorized use for any purpose is a violation of the relevant copyright laws. ANDRITZ AG, Stattegger Strasse 18, 8045 Graz, Austria.

---

VKN PB YU vacuum drum filter 1.0 06.2015 EN