



SEPARATION
FILTRATION UNLIMITED

STARDISC – THE VACUUM DISC FILTERS

ANDRTZ

ENGINEERED SUCCESS

“No solution on the market can match our latest disc filters in terms of sheer scale, or with such high filtration rates. This gives our customers a major boost to their tailings capacity and brine yield, with nearly one-third less downtime.”

ANDRITZ SEPARATION

Application Manager Potash



With a pair of our STARDISC vacuum disc filters, a solar evaporation plant in South America achieved 135 t/h in additional brine yield and 300,000 t/y in additional production capacity.



Are you ready to make our stars your heroes?

At ANDRITZ Separation, it is our ambition to reach the highest levels of performance and quality. As a strong partner around the globe, we are dedicated to finding the right solution for your separation challenge. And as part of the ANDRITZ GROUP, we can rely on an international network of highly qualified specialists and leverage worldwide synergies to provide you with sophisticated technologies, extensive know-how, and excellent services.

SOLUTIONS FOR ANY CHALLENGE

ANDRITZ Separation is the global specialist with the broadest technology portfolio in solid/liquid separation. Wherever you are, and regardless of the size of your company, we are there for you. With more than 150 years of experience in solid/liquid separation as well as reliable and timely service. And with innovations that boost capacity, maximize profitability, and help you ensure the success of your projects – from single machines to complete solutions.

YOUR TRUSTED PARTNER

For many years, we have been cooperating with the main players in the mining and minerals industry in order to improve the efficiency of their separation processes, covering applications from alumina to coal to potash and more. In addition, the chemical and environmental industries have profited from the exceptional performance of our vacuum disc filters as well.

Meanwhile, we can look back on more than 60 years of experience with over 500 vacuum disc filter installations worldwide – a track record that not only underscores our status as the global separation specialist but also as a strong partner for a wide range of customers in different industries, even providing sustainable solutions for the environmental market.

WANT TO KNOW WHAT'S IN IT FOR YOU?

ANDRITZ Separation provides you with the optimum equipment for your separation challenge: Based on our continuous R&D efforts aimed at developing state-of-the-art separation technologies, we make it our business to help you achieve your objectives in highly competitive markets.

So if you want to know what's in it for you, just turn over to the next page and learn more about the STARDISC product family of vacuum disc filters. It offers well-established technologies that have been applied successfully for the filtration of various products and might just provide the solution you have been looking for.



For more than 60 years, ANDRITZ Separation has provided efficient vacuum disc filter solutions to a wide range of key industries – from the mining and minerals to the chemical and environmental industries.

Two stars, one result: success

Do you want to increase yield and product quality? Would you like to combine that with low production costs and minimum environmental impact? The STARDISC product family of vacuum disc filters offers you a highly efficient filter operation to achieve these objectives and gives you a decisive competitive edge. It provides a maximum level of flexibility and is based on proven technologies that you can rely on – day after day.

MODULAR SYSTEM FOR HIGHEST FLEXIBILITY

STARDISC unites two vacuum disc filter designs that have made a name for themselves in different industries and many applications. Together, these popular disc filters allow you to cover the widest possible range of applications in vacuum disc filtration.

Thanks to its modular filter design with different diameters and a variable number of discs, the STARDISC product family offers you an unrivaled level of flexibility: It can be tailored to meet your specific process needs and provides solutions for a variety of industries, ranging from the mining and minerals to the chemical and environmental industries.

STARDISC

STARDISC separates the toughest materials by means of the tried-and-tested ANDRITZ VSF vacuum disc filter technology. It has a compact common trough with an agitator and, therefore, is especially suitable for products with high solids densities. Reliable throughput is guaranteed by a common piping concept.

STARDISC XL

Based on the proven Krauss-Maffei SSFE disc filter technology, the STARDISC XL allows you to use the largest disc diameter. Thanks to the special design of the filter segments, maximum throughput is achieved with a remarkably small footprint. The STARDISC XL has a self-agitating single trough for optimum slurry handling and individual piping for reliable dosage of blow-back pressure.

MAIN APPLICATIONS

- Alumina
- Potassium
- Non-ferrous ores
- Mining (e.g. coal, iron ore)
- Chemicals (e.g. PVC)
- Environmental (e.g. water treatment)

MATERIALS OF CONSTRUCTION

- Carbon steel
- Stainless steel
- Plastic filter cells (optional)
- Special materials

PROCESSING PARAMETERS

Operating principle	Vacuum filtration
Operating mode	Continuous
Particle size	1-800 µm
Filter area	42-252 m ²
Solids recovery	Excellent

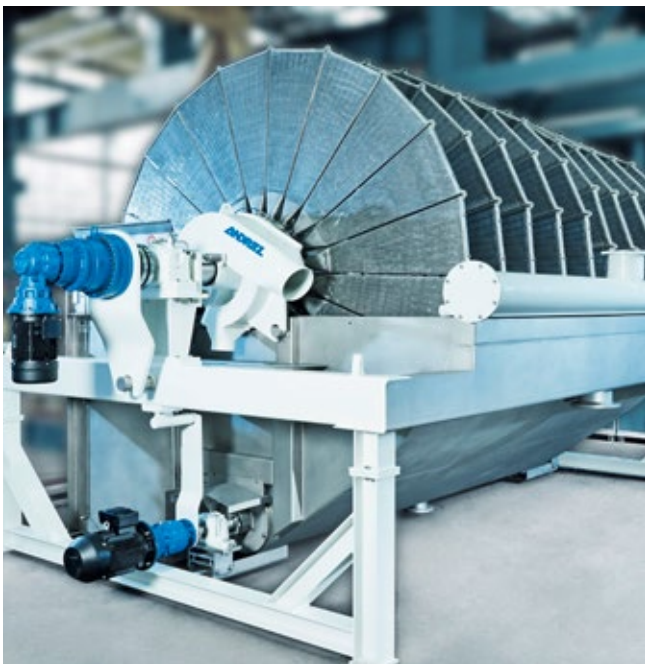


**FLEXIBLE
DESIGN**

**PROVEN
TECHNOLOGY**

**RELIABLE
OPERATION**

**EXPERTISE IN
AUTOMATION**



STARDISC



STARDISC XL

YOUR BENEFITS

- Tailor-made solutions to fit your process requirements
- Highest specific throughput while maintaining a small footprint
- Individual filtrate discharges for the cake building and cake drying zones
- Fast and easy filter cloth replacement
- Robust design
- Quick mounting of filter cells and two-part control discs for minimized maintenance effort

Fits your toughest needs



With their multi-tasking capabilities, the STARDISC vacuum disc filters are real all-rounders in the world of separation. The various designs perfectly fit your process conditions and your space requirements. No matter if your needs are focused on maximum yield, best product quality, highest efficiency, or optimum usage of resources, STARDISC makes the difference.

SMALLEST FOOTPRINT

In general, disc filters are the most space-saving solutions in separation. In order to take you to the next level, the STARDISC vacuum disc filters have been engineered to achieve the desired throughput with the smallest possible footprint.

GREATEST FILTER VARIETY

With our modular system, you are able to obtain the filter area best suited for your capacity requirements:

You can choose from different diameters and adapt the number of discs used to vary the filter area between 42 and 252 m².

WIDEST CHOICE OF FEATURES

With the STARDISC product family, you can also benefit from a large number of specially designed features that optimally fulfill specific process conditions. Discover the features on page 7 to find out which STARDISC is most suitable for your materials and individual requirements.

	Disc diameter [m]	Discs per unit	Filter area per disc [m ²]	Filter area per filter [m ²]
STARDISC	3	5	12	60
	3	6	12	72
	3	8	12	96
	3	10	12	120
	3.7	8	17.6	141
	3.7	10	17.6	176
	3.7	12	17.6	212
	3.7	14	17.6	247
STARDISC XL	5.6	1	42	42
	5.6	2	42	84
	5.6	3	42	126
	5.6	4	42	168
	5.6	6	42	252

Special sizes available on request.

FILTER DISCS IN DIFFERENT SIZES

Ultra-thin steel filter segments (also in stainless steel) minimize the required system volume. 20 or 30 filter cells reduce the specific volume and enlarge the cake building zone (less dead zones).



STARDISC: Smaller disc diameters allow for a compact trough to avoid the settling of heavy products.



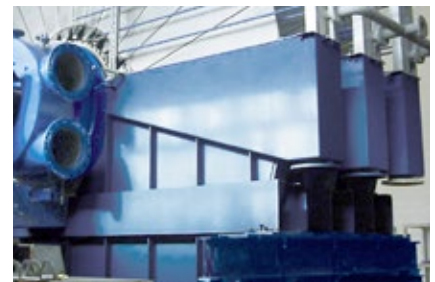
STARDISC XL: Large disc diameters enable maximum throughput at minimum footprint.

TROUGH OPTIONS FOR OPTIMUM SLURRY HANDLING

A common trough with an agitator for highest solids densities as well as a fluid-optimized, self-agitating single trough are at your disposal.



STARDISC: The common trough is applied with an agitator, making the filter suitable for products with highest solids densities.



STARDISC XL: The special geometry of the single trough design generates perfect fluid dynamics and turbulences.

PIPING FOR RELIABLE THROUGHPUT

Filtrate pipes handle discharge of the filtrate. Depending on the product, two different piping options are available: common piping and individual piping.

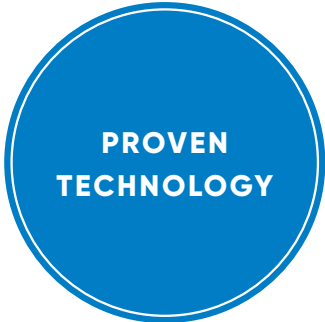


STARDISC: The common piping concept is the perfect combination of compact design and hydraulic efficiency.



STARDISC XL: Individual piping ensures reliable pressure dosage, and the maximum hydraulic area, even with largest disc diameters.

Excellent performance for high capacities



Several process areas define the filtration process. When the filter disc rotates, the filter segments pass through each process area. The different process areas are controlled and sealed off by the specially designed control head and the corresponding sealing disc.

CONTROLLED SUSPENSION FEEDING

The suspension is fed continuously into the trough and flows in the same direction as the rotating filter discs. Each filter disc is divided into filter segments. They rotate at 30-360 rph, and approximately 40-52% of the surface area submerges into the suspension. The feed level in the trough is kept constant by weir plate or level regulation.

RELIABLE CAKE FORMATION

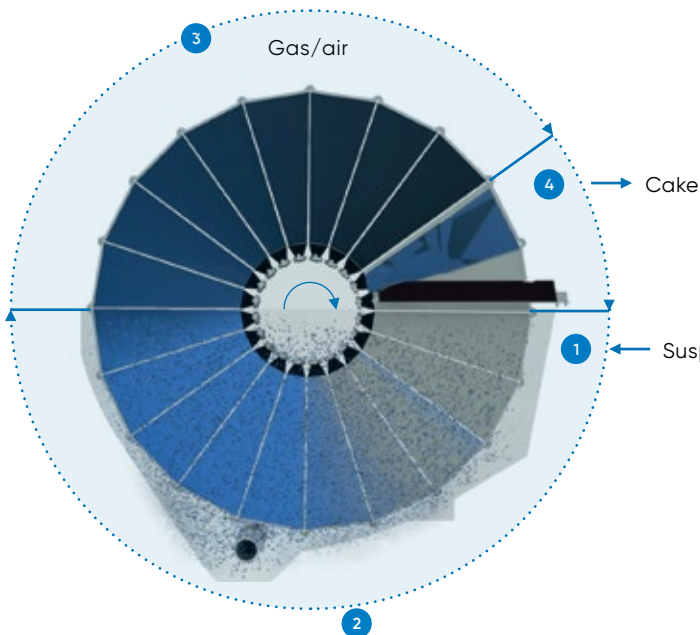
A vacuum is produced in the segment-shaped filter cells, which are covered with a filter bag. The liquid

filters through the filter cloth, while the solid matter forms a filter cake of uniform thickness on the filter cloth and emerges with the disc from the trough.

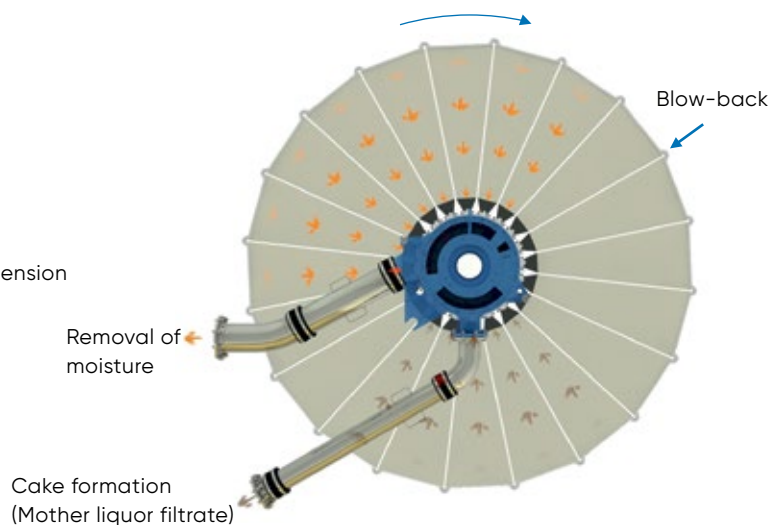
EFFICIENT REMOVAL OF MOISTURE AND CAKE DISCHARGE

As the disc filter rotates, the moisture is removed from the cake, which is discharged from the cloth at the end of this zone by means of compressed air (blow-back). The cake is discharged into the chute and further processed.

- 1 Feed
- 2 Cake formation
- 3 Removal of moisture
- 4 Cake discharge



Internal process view



External process view



Optimum cleaning and easy maintenance

RELIABLE
OPERATION

The STARDISC product family offers sophisticated features to ensure fast and reliable operation, giving you greater convenience.

EFFICIENT FILTER CLOTH CLEANING

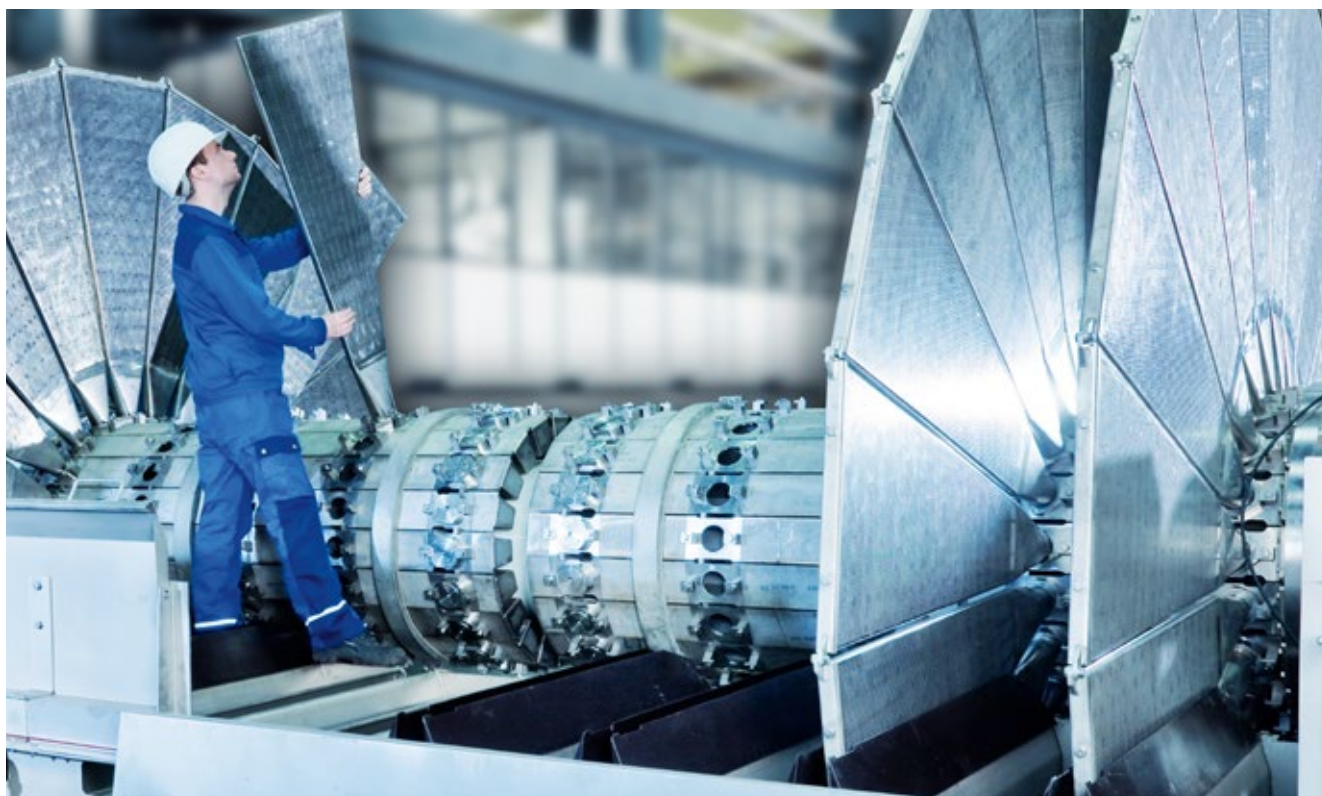
The specially designed filter cloth washing device maintains the quality of the weave at a constant, high level. The cleaning process can also be carried out in continuous mode during operation and extends the lifetime of the cloth to the maximum possible.

MAXIMUM HANDLING COMFORT

The STARDISC product family provides all essential factors for easy maintenance: Smart design, easy access to all relevant components and the process area of the filter, quick removal of essential parts that need maintenance at regular intervals, and minimized use of tools.

EASY FILTER SEGMENT SERVICE

Thanks to the intelligent quick-mounting system of the filter segments with bayonet fastening, the segments can be maintained and serviced easily with minimum effort. The system is designed in accordance with the highest standards, enabling operators to perform all necessary actions without additional support.





Optimized solutions for your convenience

With more than 100 sites and over 2,000 employees worldwide, ANDRITZ Automation is an international competence center for plant design, plant control, and machine control systems. As a one-stop shop, we provide complete automation solutions for machines like the STARDISC vacuum disc filters as well as for their integration into plant layouts. Our products and services have helped operations achieve record start-ups, increase capacity, improve efficiency, and save money.

STATE-OF-THE-ART AUTOMATION

Our Metris addIQ control system makes sure that you invest your money in the highest standards. It is based on the latest PLC and HMI technologies, such as Siemens ET200SP F, and has an integrated fail-safe system. Using different bus systems (preferably PROFINET), the control system can be linked to the existing DCS. VPN remote routers allow remote service and remote assistance at the customer's request.



Siemens SIMATIC, TIA Portal (image courtesy of Siemens AG)

INTUITIVE OPERATOR DESIGN FOR HMI

Our specialists have bundled the latest research findings and fresh insights into a solution package for HMI design. An intuitive operator design ensures full-scale efficiency in operation – from an individual machine up to an entire plant. An overall usability concept takes different requirements of the operating staff into account and, at the same time, enables operators with different levels of experience to fulfill their tasks. Easy-to-read icons diminish barriers of intercultural diversity and minimize translation and training efforts. There is one common HMI design that can be applied for all machines from ANDRITZ Separation.

SAFETY FIRST

Many safety requirements have to be considered, e.g. HAZOP, risk analysis, the European Machinery Directive, or ATEX. For CE conformity, the machine and the control system must be seen as one unit. As a one-stop shop, ANDRITZ Separation can provide you with state-of-the-art safety solutions from a single source.

READY FOR INDUSTRY 4.0 (IOT)

Thanks to our control system, you are well-prepared for industry 4.0. The latest PLC hardware and software, Ethernet technology, and integrated smart sensors are the basics for industry 4.0. Optional modules – such as dashboards for predictive maintenance, power consumption monitoring, or analysis tools – are available and/or constantly being developed.

SUPPORT FOR QUALIFICATION AND VALIDATION

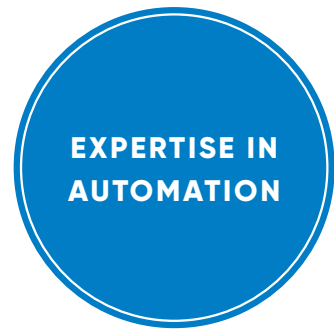
We have many years of experience in assisting our customers with qualification and validation tasks in compliance with the criteria of good manufacturing practice (GMP) and good automated manufacturing practice (GAMP).

SMART ACCESS – SMART SERVICES

The ANDRITZ Remote Service Portal provides easy web access to your machine: Monitoring and full control is ensured by a web browser via smartphone, tablet, or PC. Smart supervision of the current equipment status, peripherals, and machine performance is ensured. Optionally, service requests can be generated via smartphone app.

OPERATOR TRAINING AND CERTIFICATION

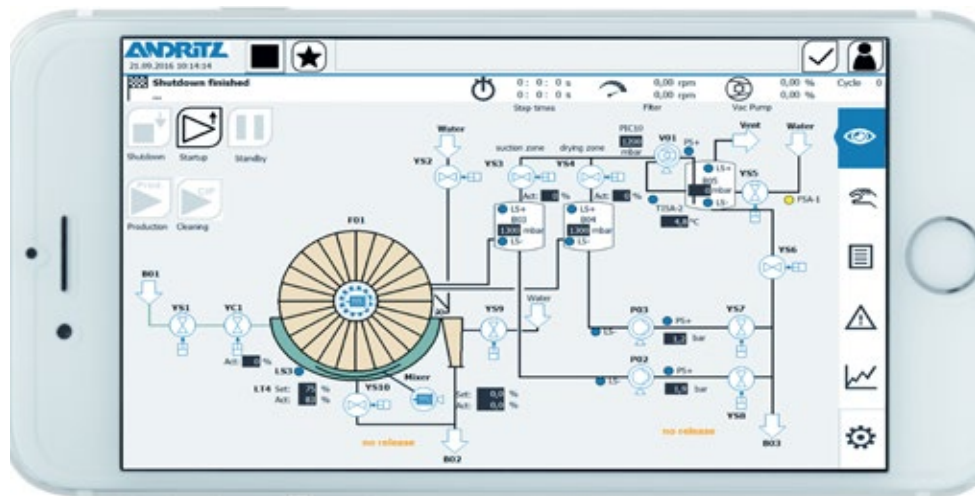
ANDRITZ Separation offers special training courses for its automation systems. In order to achieve the best possible results, we use individually tailored training systems that apply order-specific software for machine and process simulations. An ANDRITZ certificate proves that its recipient has successfully completed the training and is qualified to work with the respective system.



Simulator-based operator training

YOUR BENEFITS

- Highly efficient automatic production processes
- Compliance with safety requirements
- Compliance with GMP and GAMP
- Use of state-of-the-art automation software
- Easy web access and remote monitoring
- Tailored operator training and certification



Easy web access and intuitive operator guidance



Test our lab: we're all about finding the optimum solutions for your processes

ANDRITZ Separation operates fully equipped test centers in close vicinity to its customers, offering both lab-scale and pilot-scale equipment.

Our experienced separation specialists will advise you in order to determine suitable technologies from our wide portfolio that are most appropriate for your product. We also include the upstream and downstream process tasks in our considerations and evaluate single-step or multiple-step process solutions, typically trying to reduce the number of subsequent unit operations. In a first set of lab-scale trials, these technologies will be compared in an unbiased and independent review. Then, a second set of larger-scale tests will determine in detail the process parameters needed to optimize the operating conditions in your process.

We will provide a complete report recommending the best solution for your solid/liquid separation process, including scale-up information for the production equipment. Process warranties can be provided, even for new products. In addition, we can assist you in running long-term trials at your site with equipment from our rental machine pool.

What's your separation challenge?

ASK YOUR
SEPARATION
SPECIALIST





Your full-service provider

With ANDRITZ, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation systems, including such well-known brands as 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandebroek.

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ is your true full-service provider. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase

predictability in operations while raising your overall production efficiency. Wherever you operate, our network of 550 service specialists and global service centers ensures we'll always be there to support you for many life cycles to come. Let's sit down and see how we could take your operations to the next level.



LOCAL SUPPORT

Responsive local service centers and field service technicians



REPAIRS & UPGRADES

Optimization of machine and process performance, repair work, retrofitting, and modernization



SECOND-HAND & RENTALS

Certified second-hand and rental machines



TRAINING

Operator training and tailored seminars for operating and maintenance personnel



OEM SPARE PARTS

Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



SERVICE AGREEMENTS

Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring



PROCESS OPTIMIZATION

Automation tools and process expertise to boost your profit



LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades



Technical data - STARDISC

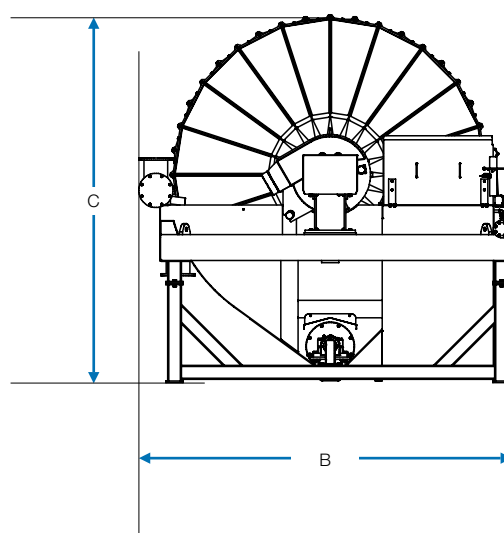
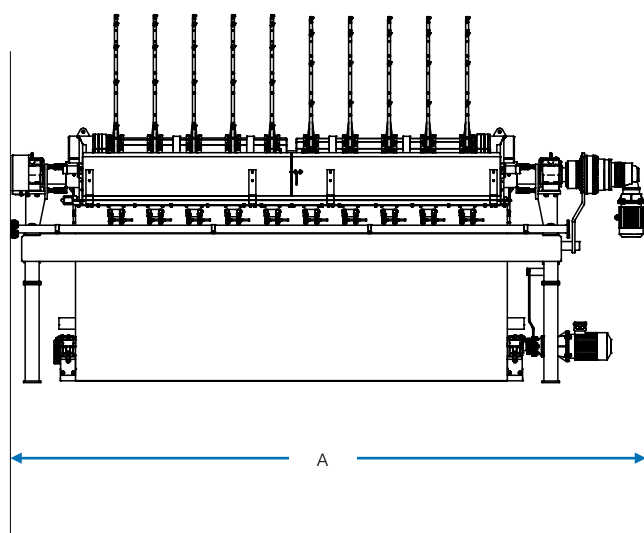
DESIGN: FILTER CELLS WITH ROD FASTENING

Filter type	Filter area [m ²]	Discs per unit	Cells per disc	Disc diameter [m]	A [m]	B [m]	C [m]	Weight empty [t]	Through volume [m ³]	Drive	
										Filter [kW]	Agitator [kW]
STARDISC 60/5	60	5	20	3	4.1	4	3.55	10.6	4.8	4	4
STARDISC 72/6	72	6	20	3	5	4	3.55	12.4	5.7	4	4
STARDISC 96/8	96	8	20	3	5.9	4	3.55	15	7.6	4	4
STARDISC 120/10	120	10	20	3	6.8	4	3.55	17.6	9.5	4	4

DESIGN: FILTER CELLS WITH BAYONET FASTENING

Filter type	Filter area [m ²]	Discs per unit	Cells per disc	Disc diameter [m]	A [m]	B [m]	C [m]	Weight empty [t]	Through volume [m ³]	Drive	
										Filter [kW]	Agitator [kW]
STARDISC 120/10	120	10	20	3	7.3	3.6	3.55	15.9	8.7	7.5	11
STARDISC 141/8	141	8	20	3.7	6.4	4.3	4.25	17.6	7.6	7.5	11
STARDISC 176/10	176	10	20	3.7	7.3	4.3	4.25	20.7	9.5	7.5	11
STARDISC 212/12	212	12	20	3.7	8.3	4.3	4.25	24.3	11.4	11	15
STARDISC 247/14	247	14	20	3.7	9.2	4.3	4.25	29	13.3	18	15

All technical data are approximate and subject to change without notice.

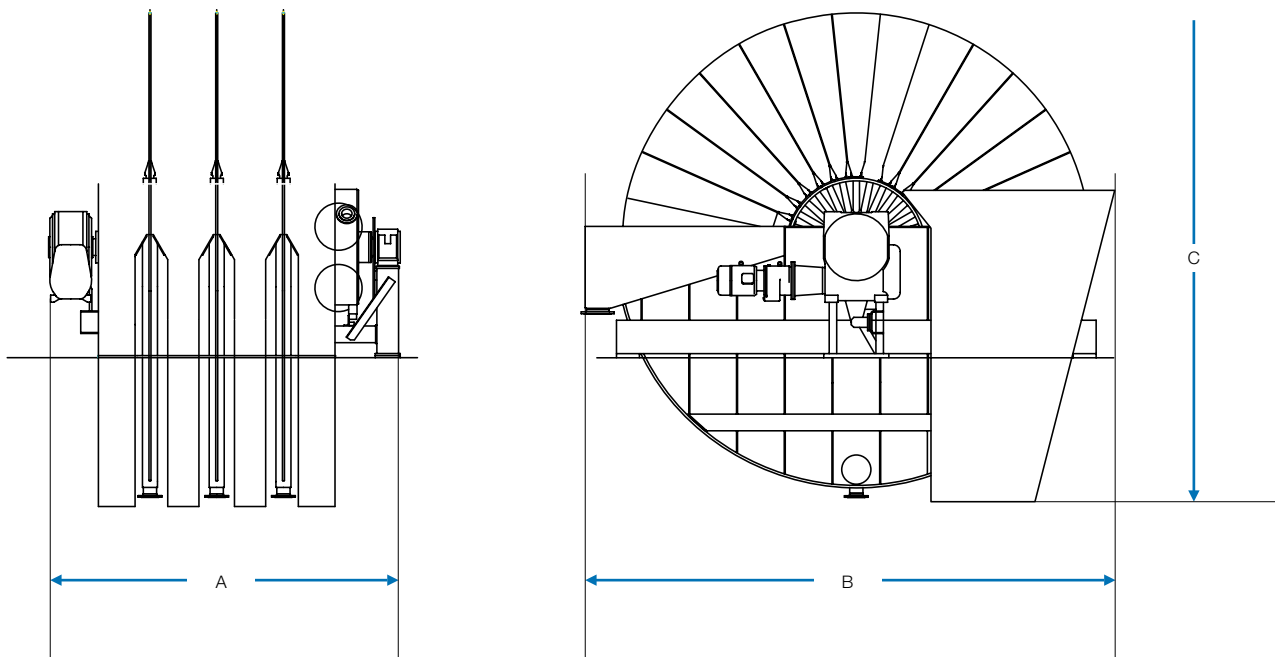


Technical data - STARDISC XL

DESIGN: FILTER CELLS WITH BAYONET FASTENING

Filter type	Filter area [m ²]	Discs per unit	Cells per disc	Disc diameter [m]	A [m]	B [m]	C [m]	Weight empty [t]	Through volume [m ³]	Drive	
										Filter [kW]	Agitator [kW]
STARDISC XL 42/1	42	1	30	5.6	2.6	6.2	5.8	9	2.25	7.5	-
STARDISC XL 84/2	84	2	30	5.6	3.4	6.2	5.8	15	4.5	11	-
STARDISC XL 126/3	126	3	30	5.6	4.2	6.2	5.8	20	6.75	15	-
STARDISC XL 168/4	168	4	30	5.6	6.5	6.2	5.8	25	9	18.5	-
STARDISC XL 252/6	252	6	30	5.6	7.5	6.2	5.8	36	13.5	22	-

All technical data are approximate and subject to change without notice.





WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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