



SEPARATION

SETTING STANDARDS IN PLASTICS RECYCLING

ANDRITZ DECANTER CENTRIFUGE
SENSOR ACZ

ANDRITZ

ENGINEERED SUCCESS

How can you help reduce environmental damage and secure long-term profit in the thriving plastics recycling sector?

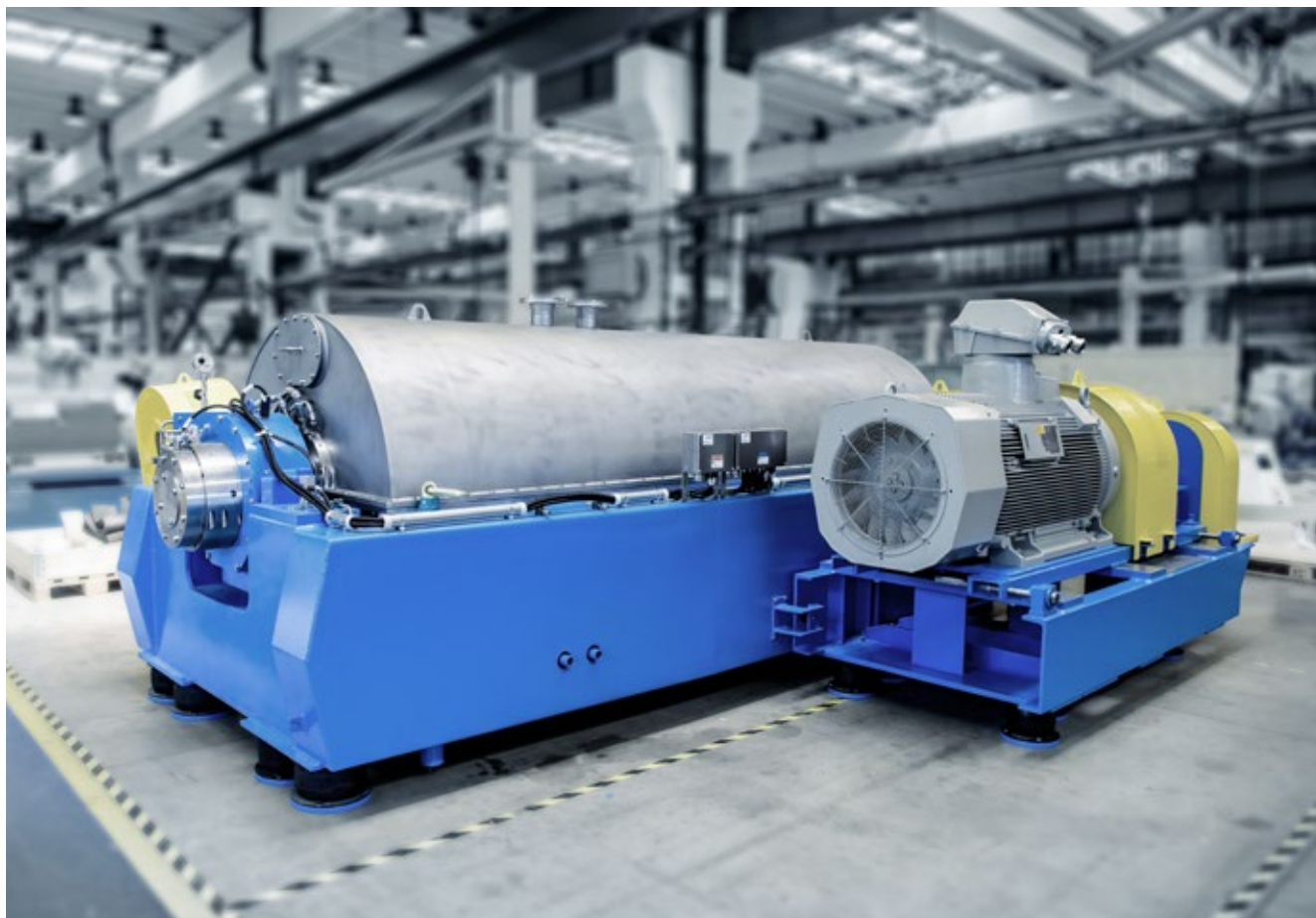


The growing success of the plastics recycling sector has turned an environmental hazard – plastic waste – into a valuable resource. But a growing industry comes with growing demands in terms of technology and quality. The key requirement is the highest possible degree of varietal purity of the regranulate. What's more, specifications for Melt Flow Index (MFI), density, elasticity, and so on must be provided for every single variety to verify quality to potential customers. Only pellets or regranulates that meet these stringent demands will have a future on the market.

ANDRITZ DECANTER CENTRIFUGE CENSOR ACZ FOR HIGH-PERFORMANCE PLASTICS RECYCLING

ANDRITZ has developed a unique product targeting the toughest plastics recycling challenges – the decanter centrifuge CENSOR ACZ. The system delivers consistently outstanding purity of the agglomerates

that are the pre-product for regranulates. This is ensured by the innovative, high-performance sorting method, which is particularly suitable for plastic waste containing particles of different shapes and sizes. requirements.



The ANDRITZ decanter centrifuge CENSOR ACZ with a diameter of 900 mm and a feed rate of up to 6,000 kg/h for highly efficient plastics recycling.

How can you develop a tried-and-tested, cutting-edge solution to meet your needs?

The ANDRITZ decanter centrifuge CENSOR ACZ system is a highly selective process for obtaining plastic fractions of optimum purity. It has a proven track record at installations worldwide with more than 25 years in industrial operation, meeting the high-efficiency plastics recycling targets within the scope of the German packaging ordinance and the globally leading dual-disposal system (DSD). By combining several process operations, ANDRITZ can offer a tailored solution to almost any recycling problem. Typical applications range from bottles, fibers, films, and cable sheathing, through to fishing nets, industrial waste, and plastic cladding. Plastics from the automotive industry, post-consumer carpets and synthetic turf, technical plastics, and production waste are just some of the products handled with maximum efficiency by the ANDRITZ decanter centrifuge CENSOR ACZ.

POTENTIAL APPLICATIONS - ELIMINATE THE GUESSWORK WITH THE CENSOR ACZ MOBILE TESTING UNIT

The first step in determining possible applications involves testing under laboratory conditions in ANDRITZ test centers to define the feed material and assess technical feasibility and performance. This is followed by on-site testing with a special mobile unit that can quickly simulate almost any process conditions to establish best sizing and process parameters – the ANDRITZ decanter centrifuge CENSOR ACZ mobile testing unit.

The mobile unit allows customers to have short-term operations up and running quickly and directly on the premises. The container plant can be operated at any site almost independently or be partly integrated into the existing production process to evaluate improvement potentials. Not only do the test results provide the most accurate feedback on the quantity and quality of the product, but they can also be scaled up easily for industrial plant equipment. Testing under real-life conditions means that customers have a solid performance window – for a system precisely tailored to their specific requirements.

FEATURES OF THE CENSOR ACZ MOBILE TESTING UNIT:

- Facilitates full-scale testing
- Easy to install; standard connection points for external feeding and discharge
- Can be operated independently or integrated into the existing process
- Boasts newly designed automation system with improved maintenance interface, remote maintenance support features, and Big Data analysis by ANDRITZ process experts to help optimize operations.

YOUR BENEFITS

- Data collection can be scaled up for industrial-sized machinery
- Produces sample material for further process steps (extruder, granulator, etc.)
- Saves time – fast installation and reliable results
- Determines the quantity and quality that can be achieved with the given feed material



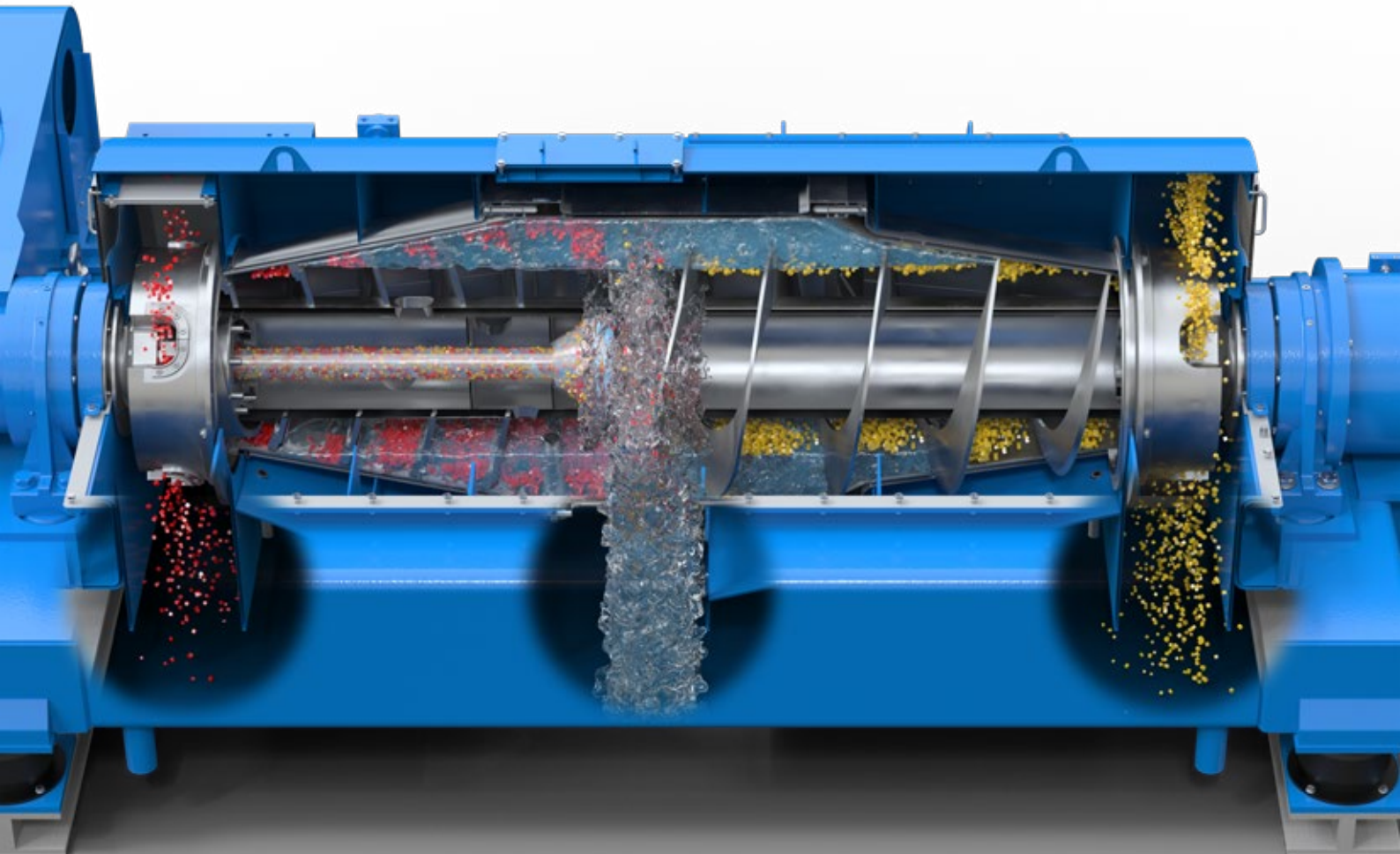
From single machines to plant engineering – ANDRITZ has the separation solution you need

The ANDRITZ decanter centrifuge CENSOR ACZ is at the heart of any efficient plastics recycling process – an all-in-one solution for separating, washing, and dewatering. Suitable for a wide range of applications, the system is easy to use whatever the scale of your operation and is available as a stand-alone machine or a fully customized, turnkey solution.

Especially the new design of the feed chamber, screw conveyor, and discharge nozzles, substantially reduces downtime caused by feeding system blockages and enables increased feed and production rates. In addition, the potential mechanical wear is reduced as a result of increased feed rates. The unique design of the conveyor ensures maximum sorting efficiency, yielding regranulate with greater purity and, therefore,

higher value than other solutions. Upgrades developed by ANDRITZ in close collaboration with customers have resulted in a system with less noise, a longer lifetime, and a better energy footprint.

Depending on the type of plastics to be separated, purity of more than 99.9% can be achieved, with very low valuable product losses.



CENSOR ACZ

operating principle

The core unit of the process is the sorting centrifuge, which separates, washes, and dewateres the products simultaneously. The commingled plastics are reduced to an optimized particle size by a shredder and a granulator/mill, mixed with a separation liquid in a mixing tank, and then pumped to the centrifuge.

The centrifuge is partly filled with a separation liquid, forming a liquid ring due to high-speed rotation. The plastics are fed into the centrifuge axially with make-up liquid and impinge on the surface of the revolving liquid ring. Here, intense turbulence results in deagglomeration of the individual plastic particles and largely frees them from any adhering dirt.

Any air bubbles adhering to the surface of the particles are stripped off by the centrifugal force, which is especially important in view of the predominantly hydrophobic material. All particles with a higher density than the liquid are forced outwards radially to the centrifuge bowl, while the lighter components float upwards inwardly. This occurs very quickly and with high selectivity in a centrifugal field creating forces over 1,000 times higher than in conventional processes.

A screw conveyor rotates inside the centrifuge at a speed slightly different to that of the centrifuge bowl. Counter-rotating screw flights are fitted to a screw body and transport the separated fractions to each of the conical ends of the centrifuge. There they are lifted up above the liquid ring and thereby discharged after dewatering.

The liquid fed into the centrifuge with the plastics is discharged through nozzles in the center of the centrifuge and circulated back into the mixing tank to be mixed with plastic and fed into the centrifuge.

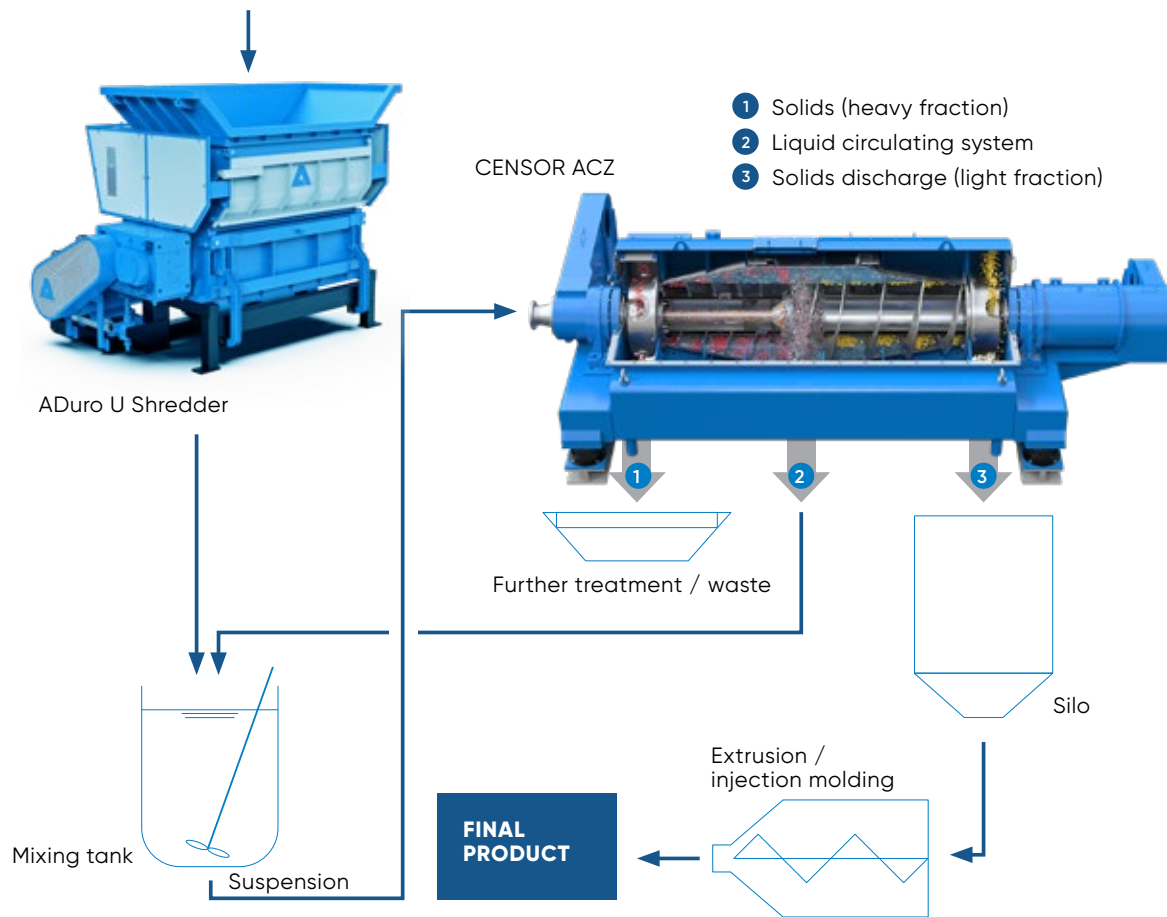
FEATURES:

- Optimized bowl
 - Two-cone design with innovative discharge nozzles for less wear
- Re-designed high-performance conveyor with
 - optimized geometry, improved throughput by up to 100%
 - maximum efficiency
 - improved feed chamber for less wear and optimized acceleration
- Latest feed-chamber generation for less wear
- Improved housing
 - Special inner coating for
 - less wear
 - better corrosion protection in salt applications
- High availability (over 8,000 h/a)
- Heavy wear protection on every part subject to high stress
- Separating, washing, and dewatering of the product in a single step
- Low water consumption and low residual moisture (i.e. less energy required for post-drying processes)

YOUR BENEFITS

- Highest sorting efficiency resulting in higher regranulate value
- Low valuable product losses
- Highest throughputs with low manpower
- Easy to operate
- Low space requirement
- Less noise
- Longer lifetime
- Better energy footprint throughout the entire process
- Suitable for a wide range of applications





INPUT

- Pre-consumer plastic waste
- Plastic from house-hold waste collection
- Industrial plastic waste
- Special materials like diapers, plastics films, etc.



Plastic films



Plastic waste from household waste collection



Plastic fraction - films



Plastic fraction - industrial waste

OUTPUT

- Plastic fraction with defined particle size

YOUR BENEFITS

- Compact system with just two machines:
 1. Shredding to a particle size < 10 mm in one step
 2. Separation, washing and dewatering in one unit
- Very high purity of output fraction
- High throughput with low manpower
- Low valuable product losses in shredding and in the centrifuge



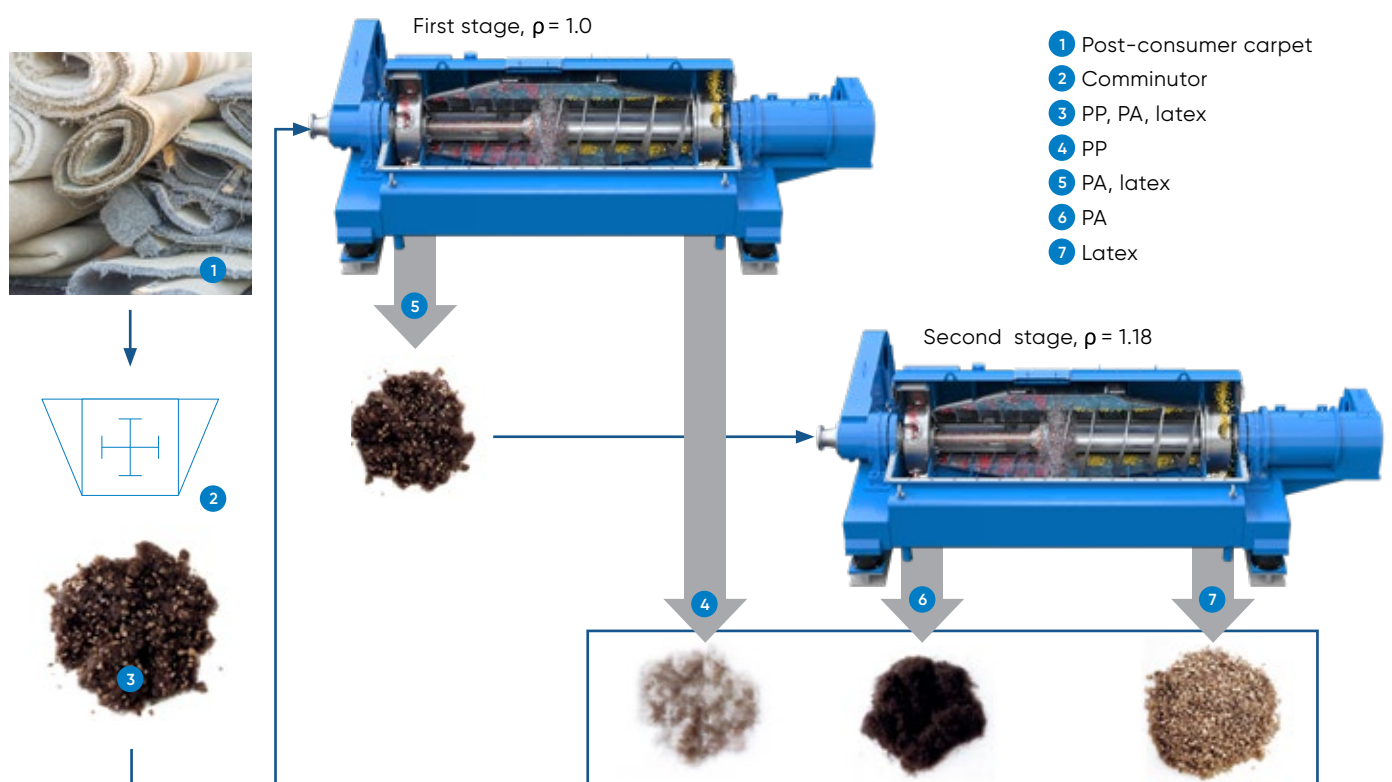
How can recyclers extract maximum value from post-consumer waste with multiple components?

A simple, everyday product such as carpeting presents a complex recycling challenge. Carpets are mostly composed of polyamide fibers (PA) and polypropylene binders (PP), with a backing of latex and calcium carbonate. The most valuable fraction is nylon (PA), and so the goal is to extract it with maximum purity. ANDRITZ has developed a multi-stage process with a special decanter centrifuge CENSOR ACZ allowing multiple types of different materials to be separated in the highest quality.

HOW DOES IT WORK?

To recover the nylon fibers (PA), the carpeting is reduced in size and then transported to a first decanter centrifuge CENSOR ACZ that uses plain water as the separation liquid. Here, the high centrifugal force separates the particles into a light PP fraction and a heavy PA and latex fraction. The specific density of PA is close to 1.1 g/cm^3 ; PP is lighter, with a density close to 0.92 g/cm^3 , and the

mixture of latex and CaCO_3 is considerably heavier than PA. The heavy fraction from the first stage is transported to a second decanter centrifuge CENSOR ACZ that uses a separation liquid with a density of 1.18 g/cm^3 (e.g. salt solution). The valuable, high-purity PA floating in this fraction is discharged as the light fraction and then sent to a dryer, extruder, or granulator. The decanting process steps can also be interchanged for different applications.





Two-stage ANDRITZ decanter centrifuge ACZ installation for sorting mixed plastics and producing absolutely pure PA granulate.

YOUR BENEFITS

- Quality of the regranulate enables further processing to obtain valuable fibers
- Fully customized, turnkey solutions from a single source
- Multi-stage processing for separation of more than two types of material
- Simple set-up



Intelligence for machine and process control

Metris addIQ control systems

With Metris addIQ, you get a well-proven, intelligent control solution for industrial processes and machines. Our solid/liquid separation specialists use their in-depth expertise to provide scalable solutions that are individually tailored to regional and application requirements. Whether you're automating new equipment or upgrading to extend the lifecycle of existing systems, we find the ideal solution for you.

Our tailored turnkey systems from a single supplier can improve entire plants or individual machines. By providing state-of-the-art automation technologies and digitalization, we ensure best-in-class performance. Automating machine and plant equipment measurably reduces gaps in many different production process steps. By using automation from ANDRITZ, you can reduce downtime thanks to features such as predictive analysis that allow you to optimize productivity.

Metris addIQ covers all levels of automation, starting at basic automation (machine, process, and plant control), to upgrades, and add-ons for process optimization. Together, you get a full range of optimized solutions that help reduce maintenance efforts and ensure preventive service for your machines and plants. These are all delivered from a single source and always individually tailored to your business demands. Metris addIQ control systems are part of the ANDRITZ brand for Digital IIoT (Industrial Internet of Things) Solutions.

Please find more information on Metris addIQ control systems for decanter centrifuges in the ANDRITZ addIQ brochure.



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





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!**

AFRICA

ANDRITZ Delkor (Pty) Ltd.
p: +27 11 012 7300
separation.za@andritz.com

EUROPE

ANDRITZ SEPARATION GmbH
p: +49 2203 57520
separation.de@andritz.com

ASIA

ANDRITZ Singapore Pte. Ltd.
p: +65 6512 1800
separation.sg@andritz.com

NORTH AMERICA

ANDRITZ Separation Inc.
p: +1 817 465 5611
separation.us@andritz.com

AUSTRALIA

ANDRITZ Pty. Ltd.
p: +61 3 8773 4888
separation.au@andritz.com

SOUTH AMERICA

ANDRITZ Separation Ltda.
p: +55 47 3387 9100
separation.bra@andritz.com

CHINA

ANDRITZ (China) Ltd.
p: +86 757 8258 6802
separation.cn@andritz.com

[ANDRITZ.COM/SEPARATION](https://www.andritz.com/separation)



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 2018. 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. PB CENSOR ACZ 1.0/05.2018 EN