



SEPARATION

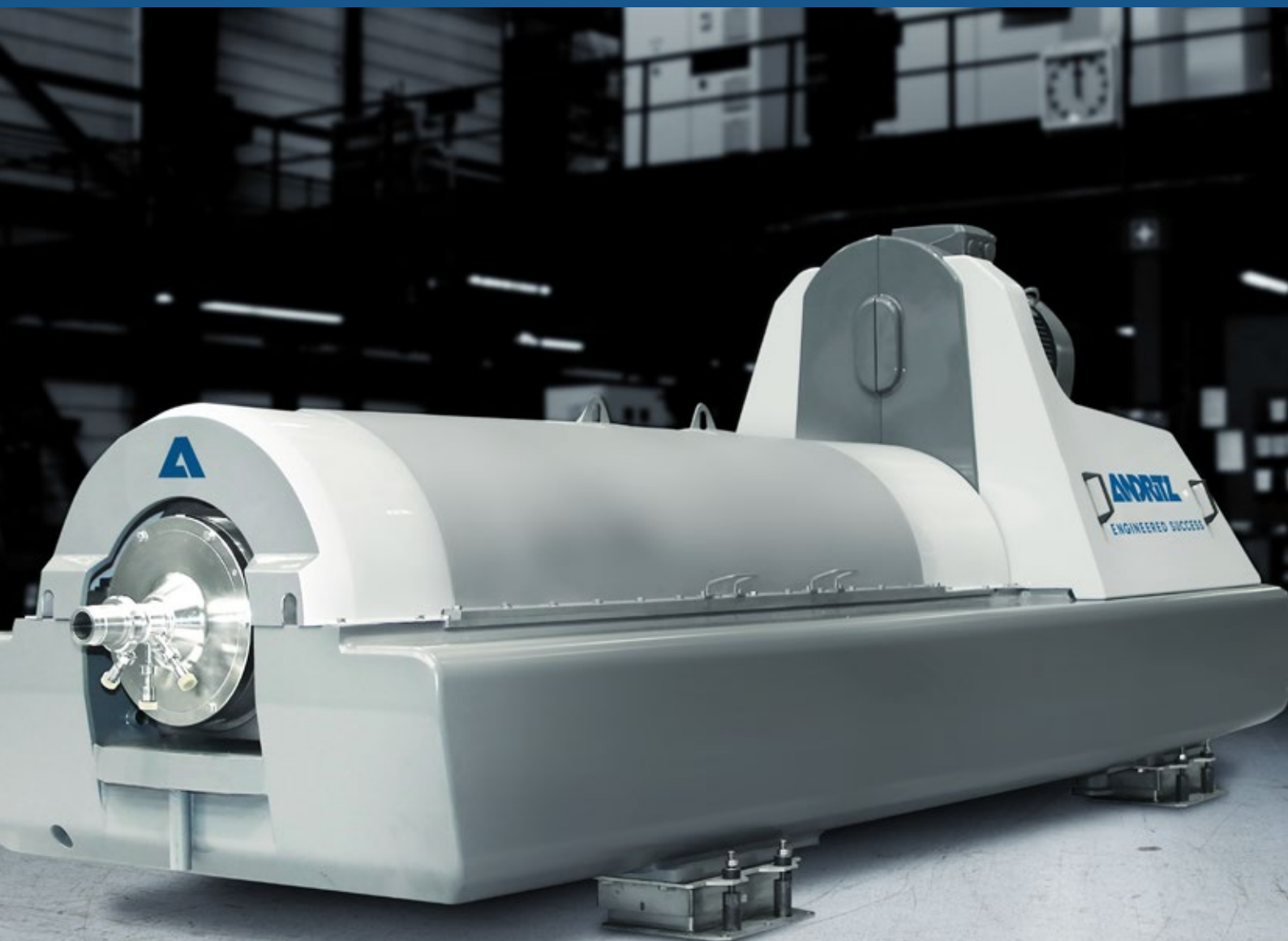
HIGH SEPARATION EFFICIENCY FOR TAPIOCA STARCH

DECANTER CENTRIFUGE F

ANDRITZ

ENGINEERED SUCCESS

Every year, 60 million tons of starch are extracted from cereal, from plant roots, and from tubers. Approximately 10% of this starch is extracted from manioc, a plant that is used as a basic food by millions of people in Africa, Asia, and Latin America. A solid/liquid separation phase is needed for this particular segment of tapioca starch, requiring in most cases an ANDRITZ decanter centrifuge F7000 to remove the water from the fruit and the F5000 for starch washing.



The best fit for the tapioca starch process – the ANDRITZ decanter centrifuge F

ANDRITZ offers the best combination of effective protection and reasonable cost, suggesting the best fit for a wide range of applications.

RELIABLE TECHNOLOGY BASED ON DETAILED KNOWLEDGE OF THE PROCESS

The ANDRITZ decanter centrifuge F is a generation of decanter that has proven its efficiency and reliability over decades in various industries. ANDRITZ Separation has thousands of satisfied customers with this equipment, not only because of its standard characteristics, but above all for the specific features added in the course of time: We know your process, and we pay attention to your needs.

THE TAILOR-MADE DECANTER

Each application has its own specially designed decanter with specific features to achieve the best performance and meet your requirements. For perfect clarification and optimum solids dryness, the ANDRITZ decanter centrifuge F has an adapted rotor design: standard or low angle, L/D ratio, and open or plain flight scroll. The scroll speed can be adjusted very accurately thanks to the various possible designs of our gearboxes, which are available in different materials. Our decanter is provided with gravity (tangential or vertical) or pressure discharge (centripetal pump or adjustable skimmer) to ensure the most suitable liquid discharge for your application.

HIGH SEPARATION EFFICIENCY

The combination of process and product knowledge in ANDRITZ helps to deliver high separation efficiency. When starch losses need to be minimized in the removal of fruit water, ANDRITZ will optimize the F decanter to provide the highest g-force. The g-force will be reduced if it becomes a disadvantage to the process, such as fine fiber removal during starch washing.

CLEAN PROCESSING

The general machine design has been modified to fulfill the stringent demands in terms of hygienic design and concept. Surfaces, seals, and angles are designed in accordance with the latest food guidelines, such as 3A or EHEDG. Depending on the specific application, the ANDRITZ decanter centrifuge F comes equipped with various cleaning phases in the cleaning-in-place (CIP) system.

WEAR PROTECTION

The different zones and elements in a decanter that may be subject to higher wear are protected by a carefully composed selection of wear protection means. Depending on the extent of wear, different material compositions ranging from polyurethane to sintered tungsten carbide elements are used to protect the scroll (feed chamber, flight), bowl (inside, solids discharge ports), solids discharge casing, and feed pipe.

Serving various stages in tapioca starch processes with ANDRITZ decanter centrifuges

With tapioca starch, the ANDRITZ decanter centrifuge F can be used in two stages:

REMOVAL OF LIQUID PHASE FROM THE FRUIT

Process to remove the unwanted protein in the water without contributing to starch losses. In this application, a decanter with a strong gearbox is required. At ANDRITZ, we have one of the largest gearboxes on the market for removal of the liquid phase from the fruit after grinding. With the ANDRITZ decanter centrifuge F, approximately 60% of the pasty material that leads to blockages of screening equipment and approximately 80% of the cyanide are removed.

WASHING STEP

In the tapioca starch process, the starch is usually pre concentrated up to 18°Bé. The F5000 decanter installed after the pre-concentration stage can wash and dewater the starch continuously and achieve a concentration of 23 to 25°Bé. With a constant, high concentration of starch, the downstream process – in this case the peeler centrifuge – can be further optimized. Furthermore, the unwanted fine fiber sometimes present after the preconcentration stage can be removed with an ANDRITZ decanter during the washing stage.



Decanter centrifuge F7000 for removal of liquid phase from fruit

FEATURES

- Ability to accommodate customer requirements and provide best performance due to modular design
- Maximum security with probes for vibration, bearing temperature, and motor
- Full washing capability to address product accumulation risk
- Available with Turbojet weir plate for liquid phase removal stage, providing huge energy savings (up to 30%)
- Flexible by using regenerative or other drive system
- Unequalled wear protection to ensure longer life cycle
- Two motor drives to adjust machine speed during processing when the optimum process mode is achieved, thus always generating maximum yield
- Fully replaceable wear parts – even the tiles for scroll protection – for a fast and easy regenerative procedure with substantial cost savings

YOUR BENEFITS

- Longer production time without requiring manual or automatic cleaning and thus, lower cleaning costs
- Increase in yield, less starch in the fibers/ pulp from the fourth extraction stage due to improved starch extraction efficiency and less pasty material sticking to the fibers
- Less manpower needed as the extractor basket does not have to be washed so frequently
- Less fresh water consumption because less water is needed to clean the pasty material off the screen
- Optimum product quality thanks to special feed chamber, ensuring gentle treatment
- Low maintenance requirement and long service life thanks to robust design and high-grade materials

Our decanter range for efficient separation

Our large range of decaners helps us to provide you with a solution to meet your specific demands in the tapioca starch process. The application-driven design, combined with the features in our full range of machines, can handle the capacities you need. From low-end flows with low solids content up to high flow rates with high solids content, we can assist you with all your separation challenges.



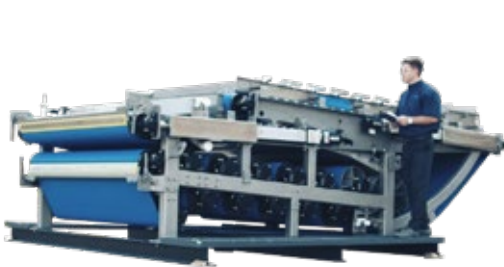
Decanter centrifuge F5000 for washing step

Model	Capacity	Flow rate	Main motor	Gearbox	Liquid discharge
F5000 for washing step	200 tpd com. starch	35 m ³ /h	75 kW	7.96 kNm	gravity
F7000 for removal of liquid phase	200 tpd com. starch	80 m ³ /h	200 kW	22 kNm	gravity

Additional ANDRITZ equipment range for the tapioca starch process

As the world's leading separation specialist with the broadest technology portfolio, the ANDRITZ equipment range includes additional solid/liquid separation equipment for tapioca starch processing, such as nozzle separators, belt presses, peeler centrifuges, and dryers.

MECHANICAL TECHNOLOGIES AND PERIPHERALS



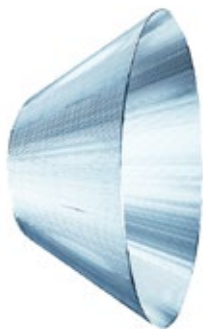
Belt press for tapioca starch process



Separator CNZ 91 for tapioca starch process



Peeler centrifuge HZ 200 for efficient starch dewatering



Wedge wire screens for all starch applications



Single-stage centrifugal pump, ACP series

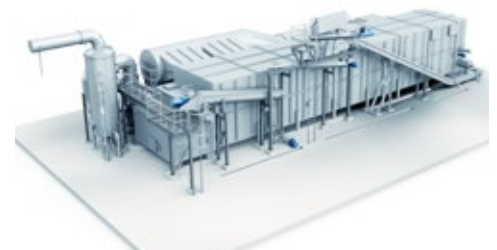
THERMAL TECHNOLOGIES



Paddle dryer for dextrinization



Drum dryer for drying and modification of starch to obtain starch soluble in cold water



Belt dryer for tapioca fiber



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 Vandenbroek.

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!**

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