



SEPARATION

EFFICIENT TECHNOLOGY FOR HIGH OIL RECOVERY

3-PHASE DECANTER CENTRIFUGES
FOR PALM OIL

ANDRITZ

ENGINEERED SUCCESS

Palm oil is one of the most important primary products in the world's oil, fat and biofuel markets. The main objective of every mill is to economically separate the crude oil from the fruit after squeezing, optimizing the potential yield. The decanter centrifuge is the right solution to maximize oil recovery and ANDRITZ is the industry leader for this technology.



Significantly improve palm oil recovery

At ANDRITZ, our expertise in the core processes in the palm oil industry allows us to specifically consider every need. Based on a robust and distinct design to provide appropriate maintenance intervals and to select the targeted phase from the feed, the machines offer a variety of elements to fine tune and maximize yields. With ANDRITZ decanters, you can achieve a light phase oil purity of more than 95%.

ADJUSTABLE SKIMMER IN OPERATION

In a 3-phase decanter, the light phase of the oil is discharged under pressure (1.5 to 2 bar) by means of a skimmer (also named a "pipette") that can be adjusted at millimeter intervals during operation. The flexibility of the ANDRITZ pipette design allows the user to adjust removal of the light liquid phase instantly without having to stop the machine or loosen any nuts. This enables the palm oil mill operator to pick the best oil quality or to adapt to any change in process conditions as required. The system provides better separation and optimizes the yield.

BEST PROTECTION AGAINST WEAR FOR EXTENDED DECANTER LIFE CYCLE

The ANDRITZ decanter centrifuge offers the best combination of constant protection against wear and tear and moderate costs. This allows the user to select the best fit from the range of options available. The different zones and elements in a decanter centrifuge that may be subject to higher wear are protected by a carefully composed selection of wear protection techniques and materials. These materials ensure that ANDRITZ decanter centrifuges are able to withstand high temperatures and abrasive products during operations.

EASY DISMANTLING

While you are saving time in production, there is no need to lose time during maintenance! The inline design of the ANDRITZ decanter centrifuge allows easy dismantling (requiring only basic lifting equipment and a single operator). This configuration saves expenses associated with maintenance and handling, and allows work to quickly resume with a series of modules used in rotation.

The ANDRITZ decanter centrifuge is equipped with a number of protection features:

- **Bowl:** the inner surface has strips or grooves, depending on machine size and application to minimize wear. Bowl outlets are protected with easily replaceable bushings.
- **Feed chamber:** it is equipped with sintered tungsten carbide bushings. The screw conveyor flight is reinforced with either tungsten carbide spray or tiles. Good wear and tear protection is a strategic, long-term investment with a guaranteed return.
- **Solids casing:** the receiving surface has a thick stainless steel plate. The solids outlet features hard alloy bushings. Exchangeable wear parts mean fewer repairs and less downtime, both leading to optimized



An ANDRITZ decanter centrifuge F5000, installed at a mill in Malaysia

Advantages in various stages of the palm oil process

CONVENTIONAL/UNDERFLOW PROCESS

The unique design of ANDRITZ decanter centrifuges, such as a combination of the flight and the feedport, results in gentle product feed and minimal shear forces on the product. As a result, oil recovery is improved because there is less stress and turbulence. In addition, the pipette device makes it easier to adapt to the required oil purity and keep oil losses to the heavy phase in check.

CRUDE OIL PROCESS

An ANDRITZ 3-phase decanter and nozzle separator can be used in combination to minimize the oil loss from the fresh fruit bunch (FFB) and further optimize the palm oil mill effluent (POME). With the underflow from the oil sedimentation tank used as the decanter feed, the 3-phase process delivers an oil purity in the light phase of more than 95% and an oil loss in the heavy phase of less than 1%. The heavy phase, which still contains oil as an emulsion, can be treated with a nozzle separator. The higher g-force of the nozzle separator can help break up a portion of the emulsion and minimize the oil loss in the POME.



An ANDRITZ decanter for the crude oil process

ADVANTAGES

- Pipette design able to adjust pick-up of the light phase
- Wear protection to ensure longer life cycle
- Two motor regenerative drives to adjust the differential speed even during operation, optimizing the phase separation and, consequently, oil yield
- Possibility of reducing speed contributes to minimizing vibration as well as wear and tear
- Two frequency converters for speed control in energy regenerating mode
- ANDRITZ TurboWISE feed chamber design helps to ensure gentle feed and less shear force acting on the product, with no emulsion formation
- Deep pond depth allows optimum capacity and retention time, and lower energy consumption
- Unique scroll design for lowest oil loss in the cake and separation of the liquid phases
- Easy maintenance of the bowl and scroll, i.e. balancing is possible on site
- Fully replaceable wear parts, even the tiles for scroll protection, for a fast and easy regenerative procedure with substantial cost savings

Our equipment range for efficient separation

As the world's leading separation specialist with the broadest technology portfolio, ANDRITZ offers a range of equipment suited to the treatment of diluted underflow sludge in the crude oil process, and much more.

DECANTER CENTRIFUGE F FOR DILUTED UNDERFLOW SLUDGE

Model	Mill capacity	Sludge flow rate	Main motor	Gearbox	Liquid discharge
F4000	30-45 tons FFB/h	15 m ³ /h	37 kW, inverter-driven	5,000 Nm	Pipette for liquid or heavy phase
F5000	60 tons FFB/h	25 m ³ /h	75 kW, inverter-driven	7,960 Nm	Pipette for liquid or heavy phase

ADDITIONAL SEPARATION SOLUTIONS FOR THE PALM OIL PROCESS

DECANTER CENTRIFUGE D FOR POME AND BIOGAS (DIGESTATE)

To dewater anaerobic pond water of POME or for digestate dewatering, ANDRITZ offers a wide range of high-performance decanter centrifuges for optimal process performance, minimum energy consumption, and low maintenance requirements to maximize plant operations.



An ANDRITZ decanter centrifuge for POME and biogas digestate

FILTER PRESS FOR PALM OIL FRACTIONATION

Refined palm oil should go through a fractionation process to separate the solid phase and the liquid phase. This fractionation step, which can be handled with an ANDRITZ filter press, is designed to maximize the value of the final product.



An ANDRITZ filter press for palm oil fractionation

Intelligence for machine and process control

With Metris addIQ, you have 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.

METRIS addIQ CONTROL SYSTEMS

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 have 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. addIQ control systems are part of Metris, the ANDRITZ brand for digital solutions.

ANDRITZ offers a broad and constantly growing range of innovative products and services in the industrial digitalization sector under the brand name Metris, helping customers to enhance plant efficiency and profitability, optimize the use of resources, achieve constant and highest product quality, reduce production downtime, and maximize user-friendliness.



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, 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!**

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