

Colubris installations purify water worldwide – with NORD Universal motors

Clean water is often a scarce resource. Environmental standards determine whether water can be discharged into surface water, but it can also be too expensive and complicated to continuously use new clean water. Colubris installations in Winterswijk, Netherlands, ensure that water is purified worldwide and can be reused if desired. To accomplish this, Colubris relies on NORD Universal motors.

In short, Colubris turns dirty water into clean water. For this purpose the company develops, designs, constructs and supplies various techniques and solutions. The company exists since 1984 – although at the time using the Redox name – and is now internationally one of the established players in the field of water purification projects. Colubris prefers to talk about processes, of which the installations are a part, that are fully tailored to the customer's wishes. In addition to the water purification part, Colubris also develops and supplies solutions for waste separation and bioresources.

“Pure water is becoming an increasingly difficult product to obtain,” says Frank Tillmann, CEO of Colubris. “In addition, strict environmental regulations ensure that companies cannot simply discharge wastewater flows that are released during the production process via surface water or the sewerage system. These must be thoroughly purified beforehand. For many companies, preparing clean water themselves is the only option for expansion.” For this, Colubris is an important player, not only in the Netherlands, but also on the international market. Colubris supplies its solutions mainly to companies in the food industry, including slaughterhouses and vegetable processors. In addition, the company is increasingly working in the municipal sector, such as at wastewater treatment plants of water boards.



Colubris is one of the world's leading names in water purification. Among other things, the company built this installation for turkey processor HEIDEMARK in Germany.

Saudi Arabia

Tillmann: “We’re currently involved in a major project in Saudi Arabia, where we’re building a wastewater treatment plant for a chicken slaughterhouse in the middle of the desert. To give you an idea of the scale, 500,000 broilers are processed here daily. Water, of course, isn’t readily available there and has to be pumped from great depths.” To minimize water usage, the wastewater is purified and reused using Colubris’s systems and processes. “The plant we developed for this company can process 600 m³ of water per hour, or 7,500 m³ per day. That’s considerably more than typical users, such as slaughterhouses, which process an average of 1,000 m³ of water per day. What makes this wastewater treatment plant special is its exceptionally low chemical consumption. This results in operating costs that are six times lower than the industry average.” A similar plant also processes the wastewater from the chicken farm compound, after which the clean water can be used to irrigate the fields and vegetable gardens surrounding the farm. This, in turn, is used to grow food for the chickens on the farm. The plant for Saudi Arabia was built by Colubris’s approximately 60 production employees in Winterswijk and transported to the Middle East in more than 50 containers. Construction of the wastewater treatment plant is now in full swing.

Global certification of NORD crucial

Colubris has been a customer of NORD Drivesystems for more than thirty years. Long ago, the company decided to work exclusively with NORD motors. “In the past, drives from different suppliers were used,” says Erwin Geessinck, manager Purchasing & Logistics. “But it is more efficient to rely on the motors of one fixed supplier. We achieve the majority of our turnover abroad, particularly in Europe, North and South America, the Far and Middle East. That is why we chose NORD because the Universal motors are certified and accepted worldwide. In addition, these motors are extremely powerful at very low speeds, which is essential during the important first phase of the water purification process.”

In ‘dissolved air flotation’ units – also known as DAF units – oils, fats, various solids and flakes are separated using extremely fine rising air bubbles. Universal motors from NORD drive pumps and separators.



The steps in the purification process

“A water purification plant usually consists of various systems, which represent just as many steps in the entire process,” explains Project Engineer Marco Hogenkamp. “It includes machines that sieve larger solids from the water, ‘dissolved air flotation’ units, internally called DAF units. In these, oils, fats, certain solids and flakes are separated using very fine rising air bubbles. In addition, dissolved substances are removed in basins using aerobic and anaerobic techniques.”

Drum filters are usually at the beginning of the cleaning process and mainly remove solid particles. In these filters, dirty water is supplied from outside to a screen drum with small openings of 0.5 to 1 mm in the cylinder wall. The water flows through these openings to the inside of the cylinder and then through the same openings back outside, after which it is discharged for the next purification step. The captured

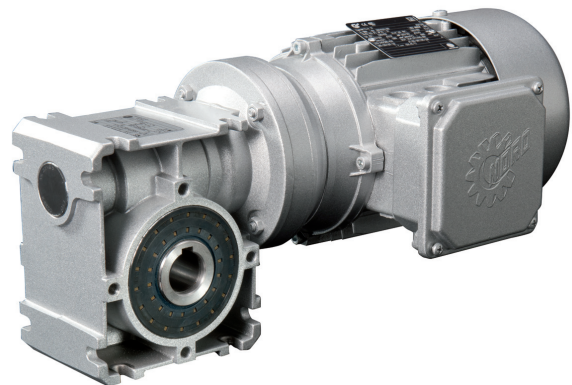
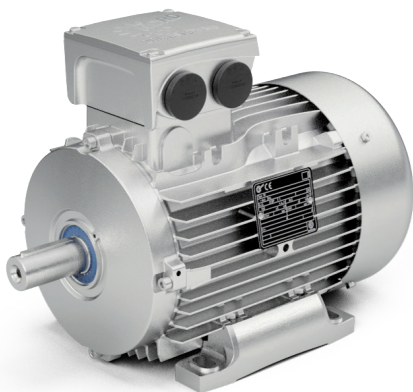
Purification installation with a drum filter (at left) and the SmartDose (at right) automates and optimizes the dosing of coagulant in water purification. For easy removal, a coagulant promotes the clumping of particles.



dirt leaves a thick layer on the cylinder and is continuously scraped off and discharged. This layer also functions as an additional filter. For proper functioning of the filter and the build-up of the layer, it is extremely important that the drum rotates at a correct speed.

High power at low speeds

The Universal motors, in combination with worm gears and parallel shaft gears from NORD, are able to rotate the cylinders at a very low speed - without at the expense of power. At 50 Hz they provide 7.5 revolutions per minute and at 10 Hz no more than 2.5 revolutions. Universal motors are available with powers ranging from 0.3 to 45 kW. The majority of the motors in the Colubris purification installations have power up to 3.0 kW. These are controlled via switch cabinet converters, which can be NORD units, but depending on the requirements or wishes of the customer can also be supplied by others. The gear units are not controlled decentrally, but use central switch cabinets. There is a practical reason for this. Colubris' water purification systems are often located in humid environments. Physically separating drive and control prevents moisture from affecting the operation of the converters.



NORD's Universal motors are available with power outputs from 0.3 to 45 kW. Most motors in Colubris' purification installations have a capacity of up to 3.0 kW. On the left a Universal motor without a gear unit, on the right a motor with worm gear drive.

*DAF unit from Colubris
at the poultry processing
company Plukon in Nijkerk,
known for the Friki brand.*



Service

For Colubris and its customers, it is essential that water purification plants operate without malfunctions. Geessinck: "When the water purification process stops, production usually almost immediately stops as well. NORD drive technology has the important advantage that the supplier can provide service worldwide." NORD has branches in more than 80 countries, which means that assistance can be provided quickly on site, if required. "But that's an advantage we never had to rely on very much," Geessinck laughs. "Practice has shown that NORD's high-quality motors and gearboxes hardly ever let us down."



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