



OVERVIEW

OPTIDRIVE 3GV and OPTIDRIVE ODE-2, provide excellent performance and total control of decanters in olive oil production mills in Greece

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COMPANY

OLIVE OIL MANUFACTURER

Improved control and lower costs for olive oil production

Greece

Decanters are horizontal centrifugal separators, between solid and liquid matter. They are widely used in the mineral oil, gas and renewable energy industry, biological, waste water and industrial waste treatment plants, tunneling, mineral elements, and drilling fluids purification processes, pharmaceutical and chemical industry, food and beverages industry for fruit juices, vegetable and olive oil production. The decanters are complex stainless steel machinery that requires high precision engineering, with motor power ranging from 22kW to 132kW. Decanter diameters range from 400mm to 1000mm with a high mass (from 1.5 to 5 tonnes); rotating at 3000rpm (47Hz-56Hz). This creates an enormous moment of inertia, frequently in excess of 3000 "g".

A differential gear box rotates the outer drum and the inner scroll (Archimedes screw), at different speeds. The magnitude of differential speed between the drum and scroll is critical to obtaining the correct level of media separation and precise control of this is required in order to maintain an efficient process. A relatively small speed fluctuation on drum or scroll (due to load) induces a greater fluctuation on differential speed, the accuracy of which should vary within the first decimal (eg. 12.5rpm). The excellent motor control of the INVERTEK's OPTIDRIVE 3GV drive, at vector speed control mode (P4-01=0), with the "autotune" function activated (P4-02=1), provides the required speed accuracy necessary for the integrity of the process. Depending on the density and the liquid content of the separated media, the internal "P.I." speed controller's values (P4-03, P4-04) are adjusted to provide required the motor speed accuracy at reasonable current peaks. The renowned, easy to set procedures of the OPTIDRIVE 3GV, combine with its advanced and powerful features, allows fast set up with complete, precise control of each decanter. "Drive healthy" and "external trip" (motorPTC) (P2-01=22) features, ensure continuity of the process with the peripheral machinery.

To avoid overfeeding of the decanter, "User Relay Output" function (P2-13=4) can be selected to monitor, "motor torque" with the "high" and "low" limits (P2-14h, P2-14l) set to disable the feeding pump and allow the decanter to discharge and re-engage the pump at lower feeding loads. In addition to the procedure of load/feed control, the feed pump is controlled by an OPTIDRIVE ODE-2. The "Analog output" function of the decanter's OPTIDRIVE 3GV (P2-11=10) can be selected to provide an analog signal of motor current. This signal applied to the OPTIDRIVE's ODE-2 second analog input, operated at P.I. control mode, ensures constant feed to the decanter at desirable levels, selected via its first analog input. Depending on size, the acceleration time (P1-03) can be set between 400s and 900s and the deceleration time (P1-04) can be set to 0s to activate the internal DC bus overload controller for the smallest possible ramp. A 520mm diameter decanter at a "coast to stop" mode needs approx. 45min to stop, where as, at P1-04=0 requires less than 15min. Last but not least the excellent "Spin Start" function provided by the OPTIDRIVE 3GV provides fast speed recovery of the decanter in case of short or longer mains power cuts, a frequent event in remote areas of the Greece country side. When PLC and HMI are used to control the decanter and its peripheral machinery, such as feed pump, feeding screws, vibrating filters, solids discharging screws, liquid discharging pumps, the OPTIDRIVE integrated "modbus" control mode is used to provide a precise, fast and total control of the line, with considerably lower installation costs.

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