ENGINEERING TOMORROW

Case story

VLT® frequency converters provide **optimal irrigation and soil humidity** for high-quality seeds

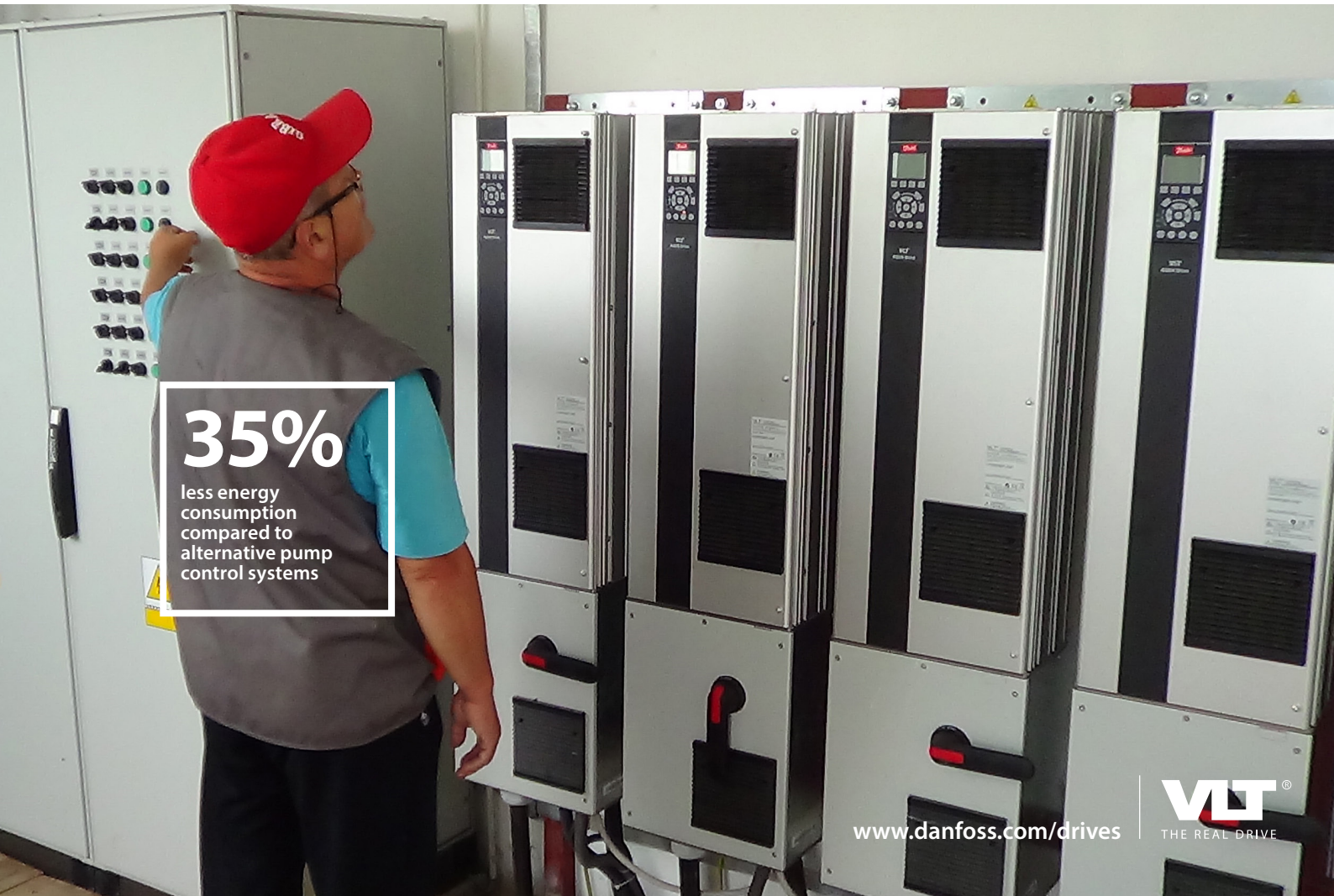
The Romanian seed company Jurex srl installs VLT® AQUA Drive frequency converters in its new irrigation pumping station.

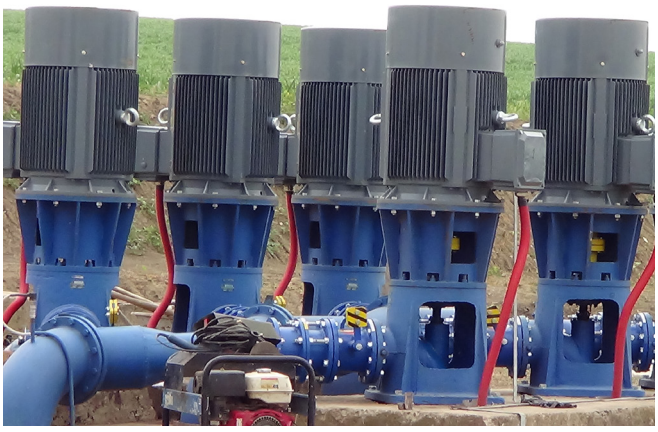
Romania has almost 15 million hectares of agricultural land. More than 2.5 million hectares of this farmland could benefit from irrigation, but to date only 0.5 million hectares are irrigated. Of the 0.5 million hectares of old irrigation systems, only 15% is retrofitted to modern standards. Danfoss and its partner Sincrondraiv srl play an important role in these retrofits.

Water for irrigation is taken from rivers and lakes in several pumping steps. The first step of pumping is typically equipped with a 6 kV motor with fixed speed and open loop operation. The following steps involve smaller pumping stations typically equipped with three to eight pumps operating in the range of 90–400 kW.

Experience

Jurex srl is a privately owned Romanian company producing high-quality seeds for sowing. To ensure the highest quality, the growing process has to be well-controlled and the soil humidity plays an important role. Therefore Jurex asked Danfoss partner Sincrondraiv to supply VLT® AQUA Drive frequency converters for one of their new irrigation pumping stations, knowing that Sincrondraiv and Danfoss are highly experienced in the field of

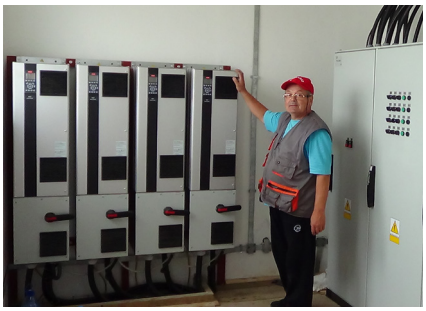




irrigation. In Romania, Sincrondraiv and Danfoss are considered to be the companies delivering the best possible solutions.

The new Jurex irrigation pumping station consists of two boosters. The first booster comprises six 110 kW pumps and the second booster comprises four 160 kW pumps. A VLT® AQUA Drive frequency converter controls each pump. In both cases, one of the frequency converters acts as master and the others as followers. The master controls the speed of the followers using the VLT® Advanced Cascade Controller MCO 102 option and Modbus TCP serial communication.

The VLT® AQUA Drive frequency converters used in the pumping station have an IP54 enclosure which – together with the standard 3C3 coating on the electronics – provides optimal protection against dust and moisture. All the frequency converters have an integrated mains disconnect and fuses.



Efficient and reliable

With VLT® AQUA Drive frequency converters controlling the irrigation pumps, it is possible to adapt the pressure and flow in the system to the current demand. This results in significant energy savings.

Furthermore the reduction of pressure and the smooth changes in pressure, made possible by the VLT® AQUA Drive dedicated software for irrigation applications, provides additional advantages. These functions help to protect the pipe system, resulting in fewer leaks and reduced water loss.

As the water supplied comes at a certain price, it is not only a question of saving water but also money. The special VLT® AQUA Drive pipe fill function also reduces the rate of new leakage. This extends the lifetime of the pipe system, thus reducing the need for capital investment.

Based on experience with similar applications, the VLT® AQUA Drive frequency converters in the Jurex pumping station are expected to consume 35% less energy compared to alternative pump control systems, resulting in a payback time of three to four years.

On top of this, the VLT® AQUA Drive has proven to be more energy efficient than the next best alternative, due to lower heat loss and the use of back channel cooling.

Dedicated

What makes the VLT® AQUA Drive the best solution for irrigation applications?

- Dedicated to water applications
- Enclosure up to IP66 and 3C2 coating as a standard (optional 3C3)
- Small size, side-by-side installation – saving space
- Easy to install, program, and commission – saving time
- Extremely energy efficient – saving energy
- Integrated fuses and mains disconnect
- Long motor cables
- Numerous special water and pump features such as sleep mode, Dry Pump protection, and end of curve
- Integrated PID controllers and control functions – eliminating the need for more PLCs