

ENGINEERING  
TOMORROW



Case story | VACON® 1000

## VACON® 1000 powers deep pumping at **Los Gatos mine**

MEXICO: Faced with the challenge of pumping stagnant water from depths of more than 400 meters, the Cerro Los Gatos mine opted for medium-voltage variable speed pump control using the VACON® 1000 drive from Danfoss. Drives were delivered and installed in the record time of 14 weeks from factory acceptance test.

**14  
weeks**

delivery time  
from factory  
acceptance test  
to commissioning



A photograph of a dark, rocky underground mine tunnel. The floor is covered in gravel and small rocks. In the distance, a person wearing a red safety vest is visible. The walls are rough and uneven. A green sign on the left wall reads "RAMPA ACCESO NIVEL 350". A yellow sign on the right wall reads "REFUGIO".

## Robust reliability for 24/7 operation

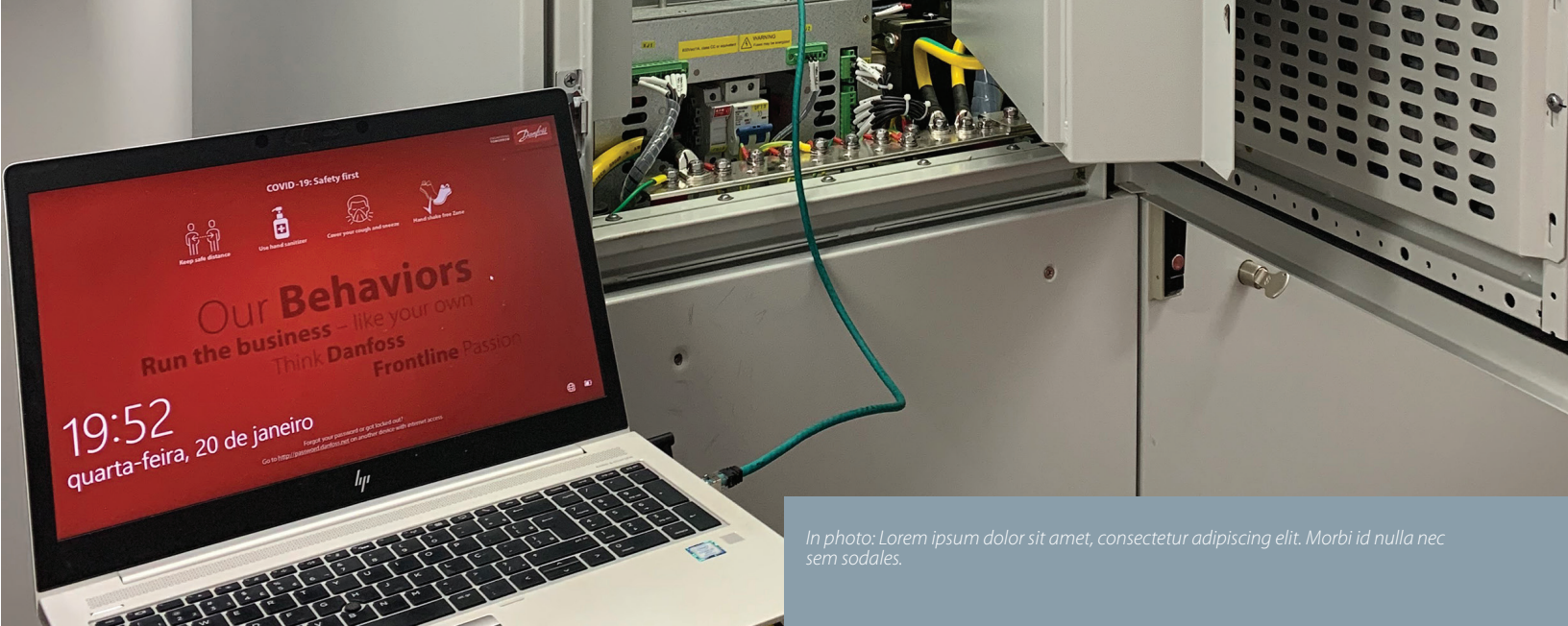
The Cerro Los Gatos Mine, the Esther Deposit and the Amapola Deposit are three silver-lead-zinc sites forming part of the fourteen mineralized zones of the Los Gatos District, the center of the Mexican silver belt.

The Cerro Los Gatos Mine is the first commercially successful mine in the region. Concentrated material is sold in Mexico, to foundry facilities in Japan, and to other locations through intermediaries. The annual production of the mine is about 9.2 million ounces of silver equivalent per year through the mine in stock. Cerro Los Gatos mine has one of the best total maintenance cost profiles (AISC) in the silver industry.

The mining industry operates 24/7, and this specific mine site includes several vertical shafts, which are connected, forming a network of galleries below the surface of the basin, where flooding naturally forms a large underground reservoir. For the Cerro Los Gatos mine to maintain excavation and production, it is necessary to pump out the underground water. With stagnant water at more than 400 meters deep, the Mine Cerro Los Gatos decided to specify two air-cooled VACON® 1000 standalone 128 A / 4160 V medium voltage drives.

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VACON® 1000 is a general-purpose drive suitable for a wide range of medium voltage applications. It is easy to integrate into the main control systems and adapts quickly to the specific needs of each situation.

These MV drives offer high environmental resistance to operate under harsh conditions, with high temperature, dust and humidity inside an electrical room. The VACON® 1000 drive complied with customer requirements such as compact

footprint, low harmonic emission, high energy efficiency, and motor dU/dt requirements. Another relevant characteristic appreciated by the customer is the comprehensive connectivity options, the simple installation requirements, the intuitive and safe operation.

Availability of local technical support was also important for the customer.

## Successfully pumping water from 400 m depth

This new generation of drives was installed in Mexico, and the mine became one of the first in the country to implement a solution of this nature to deal with pumping water from great depth.

Installing an effective water pumping system became a multi-phase project. Firstly, the diagnosis was made following on-site visits, then evaluation and selection of solutions commenced. Finally, the solution was installed and commissioned. In each of the phases, Danfoss worked together with the solution integrator and business partner Autronic. Their combined talents formed a multidisciplinary technical and commercial team, which initiated a process of constant communication with users to analyze the various phases of the implementation of the solution.



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## 14 weeks from concept to commissioning

Thanks to this collaborative approach, the delivery and installation time was 14 weeks from factory acceptance testing to commissioning, a record time for projects of this magnitude. One of the great contributions to achieving this goal was the knowledge and experience of the Mexican technicians. Thanks to their flexibility, availability, and teamwork with the end users, it was possible to complete the project fast.

**Danfoss technology** was adopted immediately thanks to the fact that the technical doubts were resolved in their entirety: Working together with a multidisciplinary team of engineers, geologists, technicians and operators specializing in mining was one of the key factors for Danfoss, as an OEM supplier cooperated with solution integrator Autronic throughout the process: first providing training

to the client and then in the delivery, installation and commissioning of the equipment earlier than predicted.

Generally, these types of solutions are carried out by foreign personnel, so the implementation and service times are extensive. In this case, Danfoss offered immediate response, reducing delivery times due to the availability of local technicians in Mexico.

## How fast can we help?

With focus on exceptional customer service, Danfoss completed in two days what other providers normally take 3 or 4 days to achieve. The team had a straightforward way of working, open communication, and total transparency with the customer. Complete alignment with high expectations made it possible to halve the time required for installation supervision, commissioning, and start-up.

## About Autronic

This Mexican automation company and solution provider has extensive experience in the mining sector. Autronic is a large company with more than 25 years in the national and international markets, offering great experience and commitment.

