CONTROL TECHNIQUES

OPTIMIZED AIR CONDITIONING SYSTEM

NATIONAL LIBRARY OF FRANCE | FANS AND PUMPS

DRIVE OBSESSED

ENHANCED EFFICIENCY OF UP TO 96%

The National Library of France (BnF) is the country's biggest library. Its collections comprise fourteen million books and periodicals, as well as a variety of other materials including manuscripts, prints & maps. To protect its valuable collections, BnF must operate an extremely reliable air conditioning system.

Overview

- **Enhanced efficiency**
- **Reduction in number of components needed**
- **Guaranteed operational reliability (performance warranty)**

The Challenge

BnF had decided to replace an asynchronous variable speed drive assembly with a new drive system that would be used to power an air conditioning pump responsible for half of the library's reading rooms.

This decision was made after an energy optimization study showed that the existing application's operating efficiency fell to just 50 % in winter.

The Solution

"The ROI calculation showed that it would make far more sense to swap the asynchronous drive system for the Dyneo® high-performance synchronous technology from Leroy-Somer", explains Jérôme Hardy from GED ADREM, a partner company of the Leroy-Somer service network.

To handle the variable torque load of the pump and ventilation applications, a solution was implemented comprising a Leroy-Somer Dyneo® LSRPM 250 (85 kW) motor and a Control Techniques Unidrive M600 variable speed drive unit.

The Benefit

The Leroy-Somer permanent magnet synchronous motor offers enhanced efficiency of up to 96 % over the whole operating speed range.

Another cost advantage comesfrom the sensorless control which simulates an encoder input with a high degree of precision.

"With this solution, not only do we eliminate the cost of the encoder, but we also reduce the number of components and thus the probability of a breakdown", says Hardy.

BnF commissioned Leroy-Somer as the sole supplier on the strength of its ability to guarantee operational reliability, including a performance warranty.

"We applied Leroy-Somer's premium service centre procedure. This extremely rigorous method uses multiple control points during installation and start-up. Operations such as alignment control, dielectric measurements and phase balancing offer real benefits in terms of both reliability and power consumption", adds Hardy.

Since then, the equipment has been monitored and compared with the data collected during commissioning. This makes it easier to detect drift, premature wear and overconsumption.

The assembly is connected to the BMS (building management system), an automated, centralized supervision system that gives the speed setpoint.