

Success Story: SBB CFF FFS

Swiss railway company chooses **Danfoss for high-speed upgrade**



The capability to design a total hydraulic system solution around an outdated, competitive framework and deliver it within four months was instrumental in SBB's selection of Danfoss' products.

Location:

Berne, Switzerland

Segment:

Railroad

Challenge:

Provide a replacement hydraulic system solution that is the same package size as 15-year-old circuitry

Solution:

Vickers by Danfoss hydraulic power units

Results:

Train downtime due to hydraulic system failures and their associated maintenance requirements has been eliminated

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Background

Switzerland's national railway company —SBB CFF FFS—is getting people where they need to be on time, thanks to Danfoss components.

SBB's high-speed tilting train is bulleting between cities at speeds over 150 mph (241 km/h) with the aid of nine muscular hydraulic power units supplied by Danfoss in Pessano, Italy. The power units contain Vickers® by Danfoss PVM piston pumps, slip-in cartridge valves, screw-in cartridge valves, and servo valves, to control the train's rotation functions.

The high-speed train, however, hasn't always been highly reliable for the Berne, Switzerland-based railway company.

Challenge

When underpowered and unreliable hydraulic system circuitry began to cause train shutdowns, SBB knew it was time to upgrade the 15-year-old system. The company contacted Danfoss and other hydraulic component manufacturers for hydraulic system bids.

Danfoss' Application & Commercial Engineering (ACE) personnel learned that the replacement hydraulic system needed to be the same package size as the previous system, a tall order indeed.

"We traditionally work with train manufacturers to adapt our proven power unit architecture to the space, interfaces, and performance needs of each specific train," said Danfoss' Alessandro Piccolini, industrial application manager.

"In this case, we needed to develop a highly reliable solution entirely around an outdated, competitive framework, and deliver it within a short timeframe."

Solution

With parameters in hand, ACE members designed a "dummy" power unit prototype to verify connection positions. Their next step was to build in the same hydraulic circuitry as systems currently supplied to the train OEM.

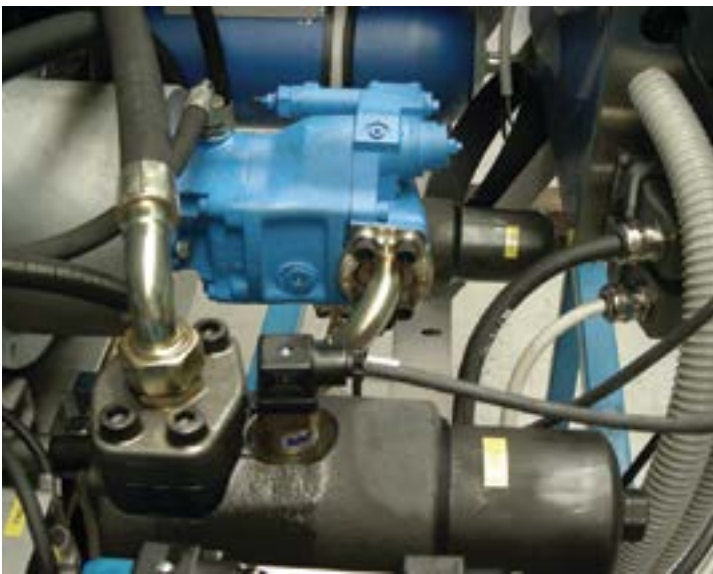
"We used the same pump and valves, but in a totally re-engineered layout with newly positioned hydraulic and electric connections so that it was 100 percent interchangeable with the previous power unit," Piccolini said.

The system's performance during fit and functionality testing and the four-month delivery for all nine power units—not 12 months required by the competition—prompted SBB to award the business to Danfoss.

Results

The total hydraulic system package was delivered to SBB in November 2011, and the train was up and running by year-end. The Danfoss system increased the train's efficiency by eliminating downtime due to hydraulic system failures and their associated maintenance requirements.

"Danfoss's experience with high-speed tilting trains, which includes hundreds of working systems in the field, was a key factor in winning the new business," said Danfoss' Alessandro Carmona, President, Industrial Division. "This project is another example of our world-class application engineering expertise and product offering coming together to deliver a complete, custom solution for our customers."



Danfoss ACE personnel designed a hydraulic power unit to fit the envelope of a 15-year competitive system that was underpowered and unreliable.



Vickers by Danfoss hydraulic power units are helping SBB's high-speed tilting train to be on schedule, day after day.



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