

RESCUED FLIGHT PLANS

A TRANSPORTATION
FACILITY CASE STUDY



The Edmonton Regional Airport Authority chose Armstrong VIL pumps for their expansion project. The choice of Design Envelope technology was prescient, as the pumps were able to serve the installation despite substantial changes in HVAC load.

“The engineers on the project estimate that they saved approximately \$12,000 in design related time.”

Vic Carriere
DC Sales

Edmonton International Airport - Expansion project

Armstrong Design Envelope pumps adjust operating speed in response to system demand. The Design Envelope selection methodology guides designers to size the pumps on the basis of an operating range rather than a single design day performance point.

Background

Edmonton International Airport is the primary air passenger and air cargo facility in the Edmonton region serving over 6.6 million passengers in 2012.

In 2009, the Edmonton Regional Airports Authority launched an expansion project aimed at increasing capacity. The project involved fast-tracking the development of the HVAC system to accommodate new construction.

Armstrong approached the designers and the contractor involved in the project and explained the Design Envelope benefits. Managers involved in the project agreed to go ahead with purchase of Design Envelope pumps based on the energy efficiency offered by Intelligent Variable Speed technology. In hindsight it was fortunate that the contractor choose Design Envelope pumps, because partway through the project, designers made a number of changes that affected the heating and cooling systems including:

- Revisions to the original piping design resulting in load changes to several zones
- Reduction in project scope, leaving out one major section of the expansion
- Changing air handlers from constant speed to variable speed

In the process of preparing the original HVAC plans, estimates for required head and flow were generated using a formula involving square footage. Reviewing the updated building plans, the designers realized that the system flow and head requirements were substantially lower. It appeared that project managers might need to revise their order, even though the pumps had been completed and shipped to site. However, because the Armstrong Design Envelope technology provides excellent efficiency across a range of operation, contractors were able to 'turn down' the operating speed of the pumps, rather than replace them with new units.

Benefits

The net result of the design changes and the inaccurate flow and head estimates was that the pumps, as originally selected, were oversized. Because of the flexibility of Design Envelope pumps, the actual duty points were within the performance envelope of the originally selected pumps.

In all, only 12 of the original 90 pumps had to be changed for smaller units. All of the other pumps automatically adjusted to the required head and flow, using the Intelligent Variable Speed capability that constantly adjusts pumping performance to match flow requirements.

The system designers and contractors in the project were understandably delighted that the originally purchased equipment would serve the building so efficiently, even though there was a mismatch in sizing.

The engineering firm involved estimated they had saved approximately \$12,000 in design related time, because there was no requirement to revisit the pump selections.

The Edmonton Regional Airports Authority still has the available land for expansion, and should they require added facilities, the pumping capacity to serve expanded heating and cooling systems is already in place.

Tech-facts

Equipment list

Design changes: 8

Design hours saved: 24

Design cost savings: \$12,000 CAD

Equipment cost savings: \$50,000 CAD

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