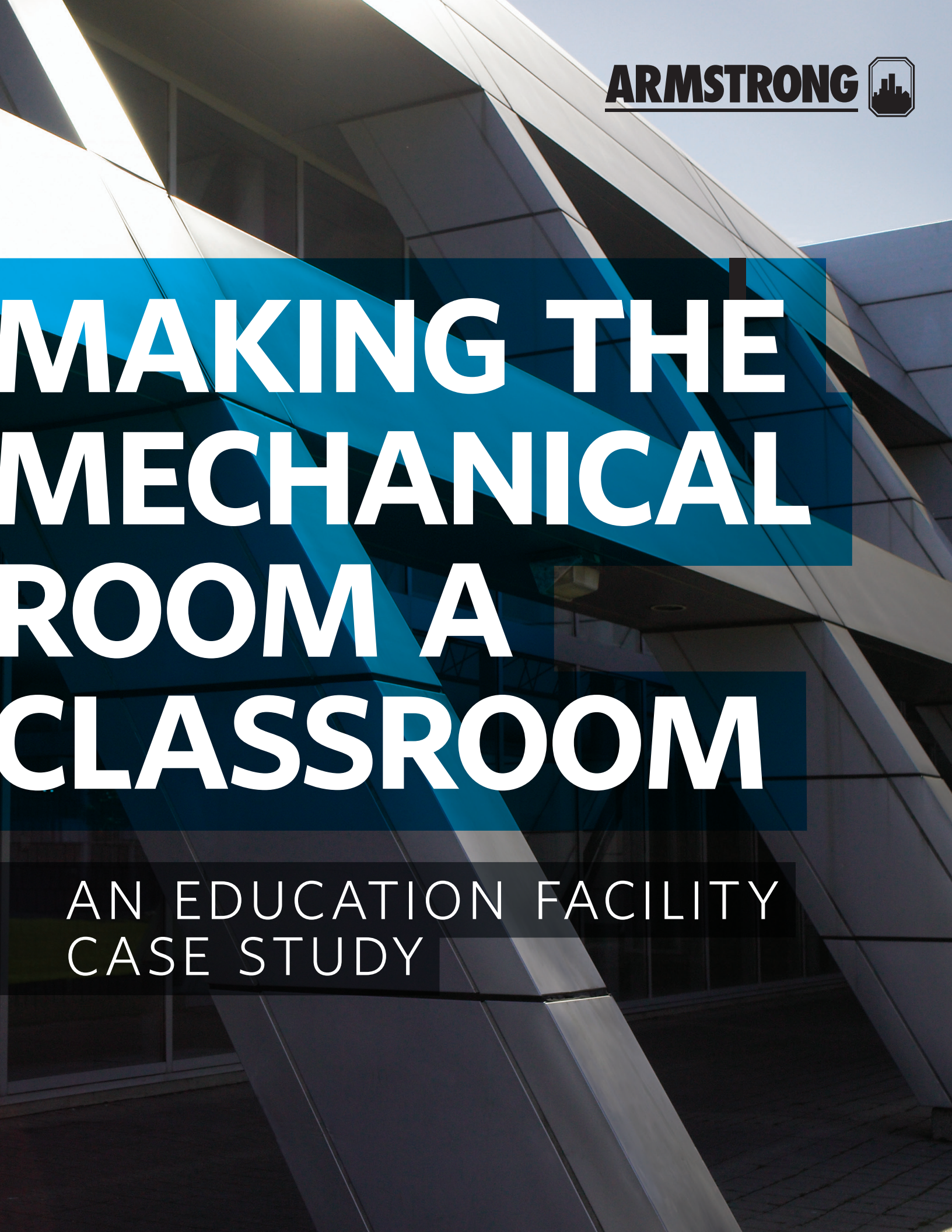

ARMSTRONG

MAKING THE MECHANICAL ROOM A CLASSROOM

AN EDUCATION FACILITY CASE STUDY

Humber College

Humber is reducing greenhouse gas emissions by almost 2,500 tons/ year. This is equivalent to taking 335 cars off the road permanently.

The original cooling plant was operating at 1.3 kW per ton. Now the efficiency is 0.55 kW per ton, and the college is saving an average of $100,000 a year through reduced energy usage.

"You can have the energy savings. You can reduce your carbon footprint, and it's not going to cost you more money"

Spencer Wood
Manager of Maintenance and Operations

Background

Humber College is a post-secondary college located in Toronto, offering full-time and part-time courses in a wide variety of subjects for over 80,000 students. Most of the campus buildings were constructed in the early 1970's, and the technology behind the HVAC systems reflects the design thinking of that era. The original cooling plant included two chillers: one 950 ton and one 750 ton. But those two chillers were no longer able to meet the cooling needs of the buildings.

Spencer Wood, Manager of Maintenance and Operations explains, saying, "Over the years we'd found that we could just about get by on the hottest day with the 950 ton machine. But our occupancy load has changed, so we were running into a lot of problems with occupant comfort in May and October. We were planning on building another 80,000 square foot building that we wanted to tie into the central plant and we definitely wanted to reduce energy consumption. We also needed a solution that would provide flexibility because we don't know what the college is going to look like 20 years from now."

Benefits

The chiller plant energy optimization delivered by Armstrong's IPC 11550 solution turned out to be a great choice for the customer. The system has performed as intended and is generating huge savings over the previous installation. "Our efficiency for 2007 was about 0.58 kilowatts per ton with cost savings of $104,000 a year over the original plant" Spencer says. Spencer also likes the automation of the new system. "You don't have to go to the machine to physically turn the thing on now. We can do it remotely if we want and it optimizes the efficiency all by itself. We can also track the performance now, and if there's ever a problem, Armstrong can view the system remotely, and tell us what's going on."

The occupant comfort has probably been the biggest impact. The college no longer has to worry about getting by on hot days. The new system provides enough cooling capacity to keep the buildings at a comfortable temperature.

Spencer adds "As we develop our sustainability plan for Humber, this system has certainly been a centerpiece that we can point to as an example of how you can have it all. You can have the energy benefits, you can have the CO_2 benefits, and it's not going to cost you more money."

Tech-Facts

Project conditions

Cooling 800,000 ft^2 of the campus

Energy impact

0.55 kW/ton* (COP > 7.5)*

Main equipment

- Chilled water pump skid c/w
  - VIL pumps (3)
  - Suction guides (3)
  - Flo-Trex valves (3)
  - Chiller Plant Optimization system: IPC 11550
- Condensed water pump skid
  - VIL pumps (3)
  - Suction guides (3)
  - Flo-Trex valves (3)
  - ITC 3600 tower panel
- 18" vortex separator, Evapco cooling towers

Technical details

- 550 ton Chillers (3)
- Chilled water pumps: 1320 USgpm at 260 ft each
- Condenser water pumps: 1280 USgpm at 93 ft each
- 800,000 ft^2 of campus cooled

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