

## CASE STUDY | Texas Christian University



**T**exas Christian University (TCU) is a private university in Fort Worth, Texas. Established in 1873, TCU now enrolls over 10,000 students per year. Athletics is a key focus for the university, so the TCU Horned Frogs compete in the Big 12 conference of the NCAA in most sports.

In 2018 Armstrong approached TCU with a proposal to upgrade 3 constant-speed pumps in the Recreation Center. As a result of the retrofit project TCU is saving over \$7,500 per year.



**FACILITY TYPE**  
Recreation center



**LOCATION**  
Fort Worth, Texas



**SIZE**  
179,831 ft<sup>2</sup>

### SITE CHALLENGES

Limited access for removal and installation of pumps.



**ANNUAL ENERGY SAVINGS**

**63%**



### ANNUAL ENERGY COST

BEFORE

**\$12,106**  
USD

AVERAGE

AFTER

**\$4,525**  
USD

AVERAGE

ANNUAL COST SAVINGS

**\$7,581** USD



### CO<sub>2</sub> EMISSIONS

BEFORE

**80,792**  
kg CO<sub>2</sub>

AVERAGE

AFTER

**30,193**  
kg CO<sub>2</sub>

AVERAGE

ANNUAL CO<sub>2</sub> EMISSION REDUCTION

**50,599** kg CO<sub>2</sub>



TO GET YOUR ENERGY UPGRADE PROJECT STARTED, CALL:

**ANNUAL  
ENERGY  
SAVINGS**

<b>ANNUAL kWh</b>	<b>TOTAL kWh BEFORE</b>	<b>TOTAL kWh AFTER</b>
3 chiller water pumps	973,110	433,889

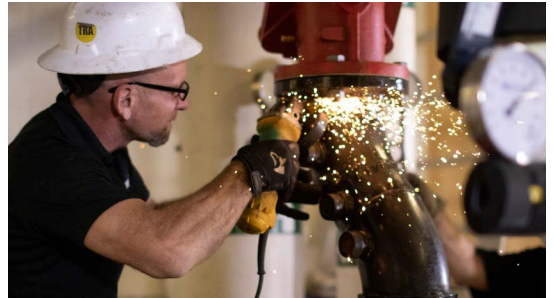
# KEY OUTCOMES:

- ✓ 63% efficiency improvement
- ✓ Annual savings approximately \$7,581
- ✓ Energy savings and reduced CO<sub>2</sub> emissions
- ✓ Easy access to pump operating data showing flow, head, power usage and rpm
- ✓ Constant data-logging and performance monitoring



**Equipment included** 3 × 4200H Design Envelope Horizontal End-Suction Pumps

**Site Specifications** Replacement for existing pump set  
3 × 500 USgpm 85 feet of head, 20hp



## SOLUTION EMPLOYED

# DESIGN ENVELOPE

## END-SUCTION PUMPS

**A**rmstrong maps each individual pump's hydraulic, motor and inverter variations at the factory to achieve exceptional accuracy throughout the flow range. With this calibration, Armstrong Design Envelope pumps also serve as

flow meters, providing reliable system flow data (+/- 5%). The testing ensures optimal performance efficiency at start-up, while Armstrong's Pump Manager helps maintain and extend efficiency throughout the pump's operating life.