

SYSTEM ENVELOPE

Energy Transfer Station

with cloud-based
Active Performance
Management®

SOLUTION OUTLINE

FILE NO: 91.13
DATE: SEPTEMBER 2025

SUPERSEDES: NEW
DATE: NEW



Residential and commercial markets require performance, efficiency, and excellent lifetime value in HVAC systems and components.

Project objectives for cost reductions, efficiency, maintenance savings and carbon abatement can make equipment selection challenging.



To address these challenges, Armstrong offers a fully integrated, packaged, fluid-flow and heat-exchange solution that delivers unmatched value and reliability.



Performance, efficiency and value through integration and intelligence

The system envelope energy transfer station (SE-ETS) is an innovative packaged heat transfer solution. Advanced control modes maximize system performance at the lowest first cost, maintaining heat transfer, redundancy, and turndown, while seamlessly integrating with BAS. Simply define system temperatures, flows, pressures and ADEPT will identify between all embedded performance envelopes the best suited for each application.

A WINNING HVAC SOLUTION

1

Easy subsystems, selection, and specification | UP TO 80%

2

Lowest installed cost | UP TO 50%

3

Lowest life cost | UP TO 40%

4

Lowest embodied carbon | UP TO 75%



EASY SUBSYSTEM SELECTION & SPECIFICATION

UP TO
80%

**ENERGY
SAVINGS**

The heart of the solution

Traditional solutions assemble individual components on-site, creating systems with minimal intelligence and limited equipment integration. Armstrong leverages its expertise to deliver a groundbreaking solution that redefines industry standards in:

Heat transfer

Fluid flow

Variable speed

Digitalization

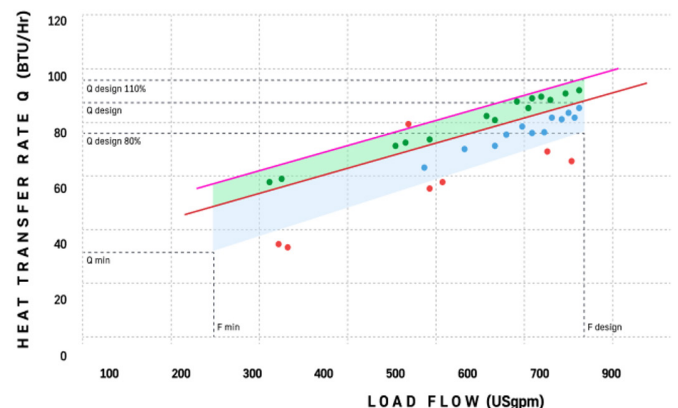
Armstrong's Envelope technology treats the HVAC system as an integrated, intelligent network, delivering greater value than standard solutions. Embedded performance envelopes align system operation with pumps, while proactive flow adjustments cut energy use by over 30%.

DESIGN ENVELOPE

Optimized selection and operation ensuring maximum energy transfer efficiency and built-in redundancy through Armstrong's Envelope Platform.

Performance optimization starts at selection by simply defining system temperature, flows, and pressure. ADEPT Selection Software seamlessly delivers an optimized solution with a comprehensive System Performance Envelope.

Performance envelopes extend to operation. Quickly identify operation outside of limits and identify patterns and failure modes.



Adept Selection Software enables selection of the Systems Envelope - Energy Transfer Station in minutes, optimizing components for the lowest first and operating costs.

Redundancy inputs design the system to maintain sufficient backup in case a heat exchanger or pump requires maintenance.

Building type and location inputs ensure accurate load profiles, reducing both initial and lifecycle costs.

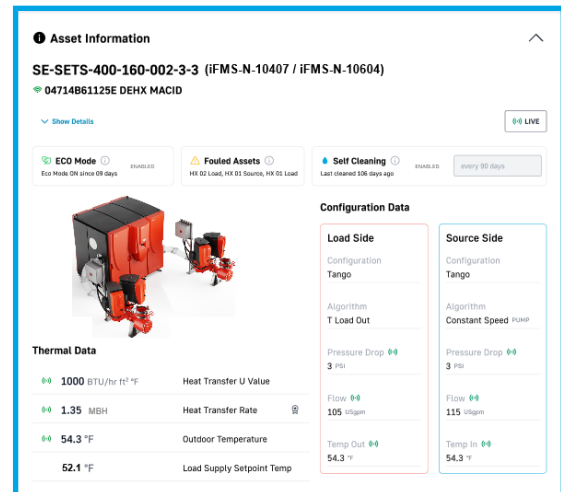
ENVELOPE CORE (COMING SOON) - ACTIVE PERFORMANCE MANAGEMENT



The energy transfer station connects directly to the Envelope platform, for actionable insights regarding the operation and condition of network assets. Envelope CORE enables visibility and control through the lifecycle of equipment and helps operators address issues before they become urgent.



Accessing Envelope CORE is simple and convenient. Operators can view system status from any connected device.



DESIGNED AND BUILT FOR YOUR SPECIFIC APPLICATION

Systems Envelope - Energy Transfer Station units can serve many applications, including district energy, pressure and glycol breaks, closed loop waterside economizers, boiler heating and tertiary loads. For every application, tailored algorithms and control sequences optimize operation for best efficiency and reliability, reducing the need for custom designs and programming.

District energy

Precise control of temperature differential on the load side maximizes energy transfer and prevents utility back charges. Optimized, sizing and component efficiency minimize overall power consumption. Options are available for pressure in independent controls.



Fluid breaks

Standard pressure ratings of 250 psi ensure easy installation and commissioning. Advanced algorithms enable precise control about temperature, low side, temperature, differentials, and supply side temperatures. Minimum and maximum flow parameters, safeguard, chillers, and boilers enhancing system reliability.

2 LOWEST INSTALLED COST

Lowest first cost

Automated selection processes based on detailed performance, maps, optimize, sizing, and configuration of heat, exchangers and pumps for every scenario

Performance flexibility by design

Your configured Systems Envelope - Energy Transfer Station will manage room temperature within arranged limits. Appropriate heat load redundancy is available in a range from 50% to 100%

Plug and play startup with easy commissioning

New digital tools simplify commissioning and start up, providing field technicians and building operators with easy access and flexibility

75%
LESS FLOOR
SPACE

Space saving

Systems Envelope - Energy Transfer Station the modular design approach uses up to 75% less floor space than traditional systems. Reduced height means systems fit in a standard room with 8 foot ceilings

Packaged system value

Systems Envelope - Energy Transfer Station is a complete package solution, assembled and tested at an ISO 14,001 certified facility and certified by ETL, to ensure reliability and performance

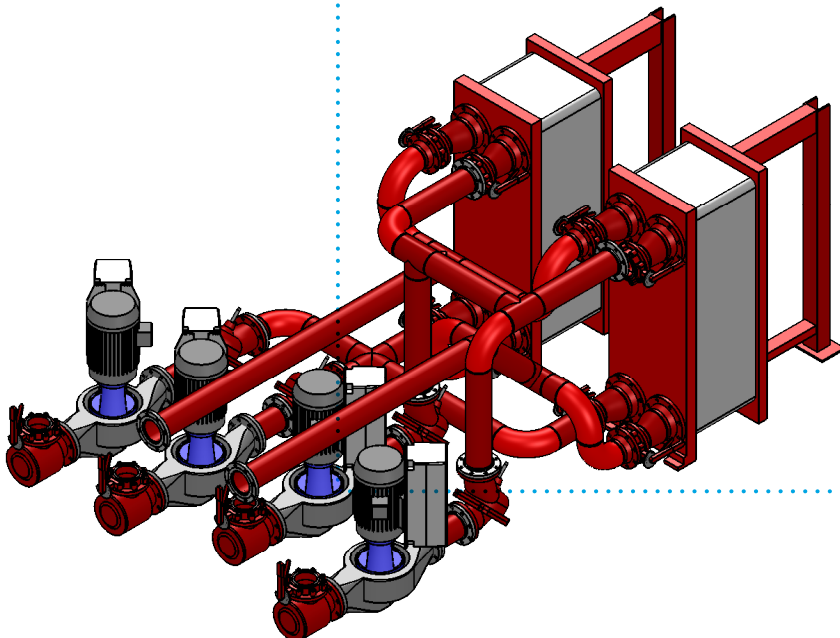
BAS ready

Compatibility with BACnet and MQTT makes the Systems Envelope - Energy Transfer Station easy to integrate with existing systems

Modular, scalable design

Units are delivered as factory-built modules, small enough to pass through a regular elevator door and ready for easy assembly. Modules can be added as needed, so your installation is future-proofed against changes to HVAC loads

TRADITIONAL APPROACH



ENVELOPE™ By Armstrong Fluid Technology®



**SIMPLIFIED
SYSTEM LAYOUT**

③ LOWEST LIFE COST

AUTOMATED SELF-CARE

Systems Envelope - Energy Transfer Station includes an industry leading self monitoring and self-cleaning capability, keeping the brazed plate heat exchangers, clean. Automated cleaning maintains optimal heat transfer efficiency and reduces maintenance costs.



Performance management

Internal sensors and performance tracking functions record flow and heat transfer, vibration, power, draw abd RPM. They also detect and diagnose early signals related to sensor failure, heat imbalance, clogging, or communications errors.

Proactive management minimizes the possibility of a system outage and the related emergency service costs.

Pre-programmed optimization algorithms are available for select applications.

Algorithms are currently available for:

Maintaining return temperature on the source side

Maintaining supply temperature on the lower side

Flow match: matching the source side mass flow with the low side mass flow

Capacity matching: maximizing source side, delta T with constant temperature approach and constant low side delta T

Customized optimal mode: maximizing source side, delta T with variable temperature approach and variable load side delta T

System Envelope Energy Transfer Station



Heat Transfer module

| | HEAT TRANSFER MODULE | NO. OF HEAT EXCHANGERS | MAXIMUM HEAT LOAD AT $\Delta T = 10^{\circ}\text{F}$ (5.5°C) | | CONNECTION SIZE |
|---------|----------------------|------------------------|--------------------------------------------------------------------------------|-----------|-----------------|
| | | | MBH (kW) | GPM (L/S) | |
| SIMPLEX | SE-ETS-400-90-01 | 1 | 950 (278) | 190 (12) | 3" (DN80) |
| | SE-ETS-400-120-01 | 1 | 1250 (366) | 250 (16) | 3" (DN80) |
| | SE-ETS-400-160-01 | 1 | 1600 (469) | 320 (20) | 3" (DN80) |
| | SE-ETS-400-200-01 | 1 | 1850 (542) | 370 (23) | 3" (DN80) |
| | SE-ETS-600-202-01 | 1 | 2375 (696) | 475 (30) | 4" (DN100) |
| DUPLEX | SE-ETS-400-90-02 | 2 | 1900 (557) | 380 (24) | 4" (DN100) |
| | SE-ETS-400-120-02 | 2 | 2500 (733) | 500 (32) | 4" (DN100) |
| | SE-ETS-400-160-02 | 2 | 3200 (938) | 640 (40) | 6" (DN150) |
| | SE-ETS-400-200-02 | 2 | 3700 (1084) | 740 (47) | 6" (DN150) |
| | SE-ETS-600-202-02 | 2 | 4750 (1392) | 950 (60) | 6" (DN150) |
| TRIPLEX | SE-ETS-400-90-03 | 3 | 2850 (835) | 570 (36) | 6" (DN150) |
| | SE-ETS-400-120-03 | 3 | 3750 (1099) | 750 (47) | 6" (DN150) |
| | SE-ETS-400-160-03 | 3 | 4800 (1407) | 960 (61) | 6" (DN150) |
| | SE-ETS-400-200-03 | 3 | 5550 (1627) | 1110 (70) | 8" (DN200) |
| | SE-ETS-600-202-03 | 3 | 7125 (2088) | 1425 (90) | 8" (DN200) |

Pumping module

| PUMP MODULE | PUMP FLOW RANGE | PUMP HEAD RANGE | NPSHR |
|--------------|-------------------|-----------------|--------|
| | GPM (L/S) | FT (M) | FT (M) |
| iFMS-N-10104 | 30-300 (2-19) | 20-120 (6-37) | 16 (5) |
| iFMS-N-10304 | 50-600 (3-38) | 30-120 (9-37) | 12 (4) |
| iFMS-N-10204 | 100-500 (6-32) | 50-160 (15-49) | 17 (5) |
| iFMS-N-10407 | 200-1300 (13-82) | 30-130 (9-40) | 18 (5) |
| iFMS-N-10504 | 200-1400 (13-88) | 40-160 (12-49) | 20 (6) |
| iFMS-N-10604 | 300-1900 (19-120) | 30-130 (9-40) | 26 (8) |
| iFMS-N-10704 | 300-1600 (19-101) | 50-190 (15-58) | 27 (8) |
| iFMS-N-10804 | 400-2200 (25-139) | 45-170 (14-52) | 29 (9) |

PICV module

| PICV MODULE | PICV FLOW RANGE |
|-------------|------------------|
| | GPM (L/S) |
| PCVM-0401 | 60-250 (4-16) |
| PCVM-0405 | 100-370 (6-23) |
| PCVM-0402 | 150-500 (9-32) |
| PCVM-0602 | 200-740 (13-47) |
| PCVM-0603 | 300-570 (19-36) |
| PCVM-0604 | 225-960 (14-61) |
| PCVM-1004 | 345-1425 (22-90) |

TORONTO

23 BERTRAND AVENUE,
TORONTO, ONTARIO,
CANADA, M1L 2P3
+1 416 755 2291

BUFFALO

93 EAST AVENUE, NORTH
TONAWANDA, NEW YORK,
U.S.A., 14120-6594
+1 716 693 8813

DROITWICH SPA

POINTON WAY, STONEBRIDGE CROSS
BUSINESS PARK, DROITWICH SPA,
WORCESTERSHIRE,
UNITED KINGDOM, WR9 0LW
+44 8444 145 145

MANCHESTER

WOLVERTON STREET, MANCHESTER
UNITED KINGDOM, M11 2ET
+44 8444 145 145

BANGALORE

#18, LEWIS WORKSPACE, 3RD FLOOR,
OFF MILLERS - NANDIDURGA ROAD,
JAYAMAHAL CBD, BENSON TOWN,
BANGALORE, INDIA 560 046
+91 80 6510 3555

SHANGHAI

UNIT 903, 888 NORTH SICHUAN RD.
HONGKOU DISTRICT, SHANGHAI
CHINA, 200085
+86 21 5237 0909

BEIJING

ROOM 1612, NANYIN BUILDING NO.2
NORTH EAST THRID RING ROAD
CHAOYANG DISTRICT, BEIJING,
CHINA 100027
+86 21 5237 0909

SÃO PAULO

RUA JOSÉ SEMIÃO RODRIGUES
AGOSTINHO, 1370 GALPÃO 6 EMBU
DAS ARTES, SAO PAULO, BRAZIL
+55 11 4785 1330

LYON

93 RUE DE LA VILLETTE
LYON, 69003 FRANCE
+33 4 20 10 26 21

DUBAI

JAFZA VIEW 19, OFFICE 402
P.O. BOX 18226 JAFZA,
DUBAI - UNITED ARAB EMIRATES
+971 4 887 6775

JIMBOLIA

STR CALEA MOTILOR NR. 2C
JIMBOLIA 305400, JUD.TIMIS
ROMANIA
+40 256 360 030

FRANKFURT

WESTERBACHSTRASSE 32,
D-61476 KRONBERG IM TAUNUS
GERMANY
+49 6173 999 77 55

For more information, contact your
Armstrong representative or visit us at
ArmstrongFluidTechnology.com/ContactUs



Scan for
more details
online



ARMSTRONG FLUID TECHNOLOGY®
ESTABLISHED 1934

ARMSTRONGFLUIDTECHNOLOGY.COM