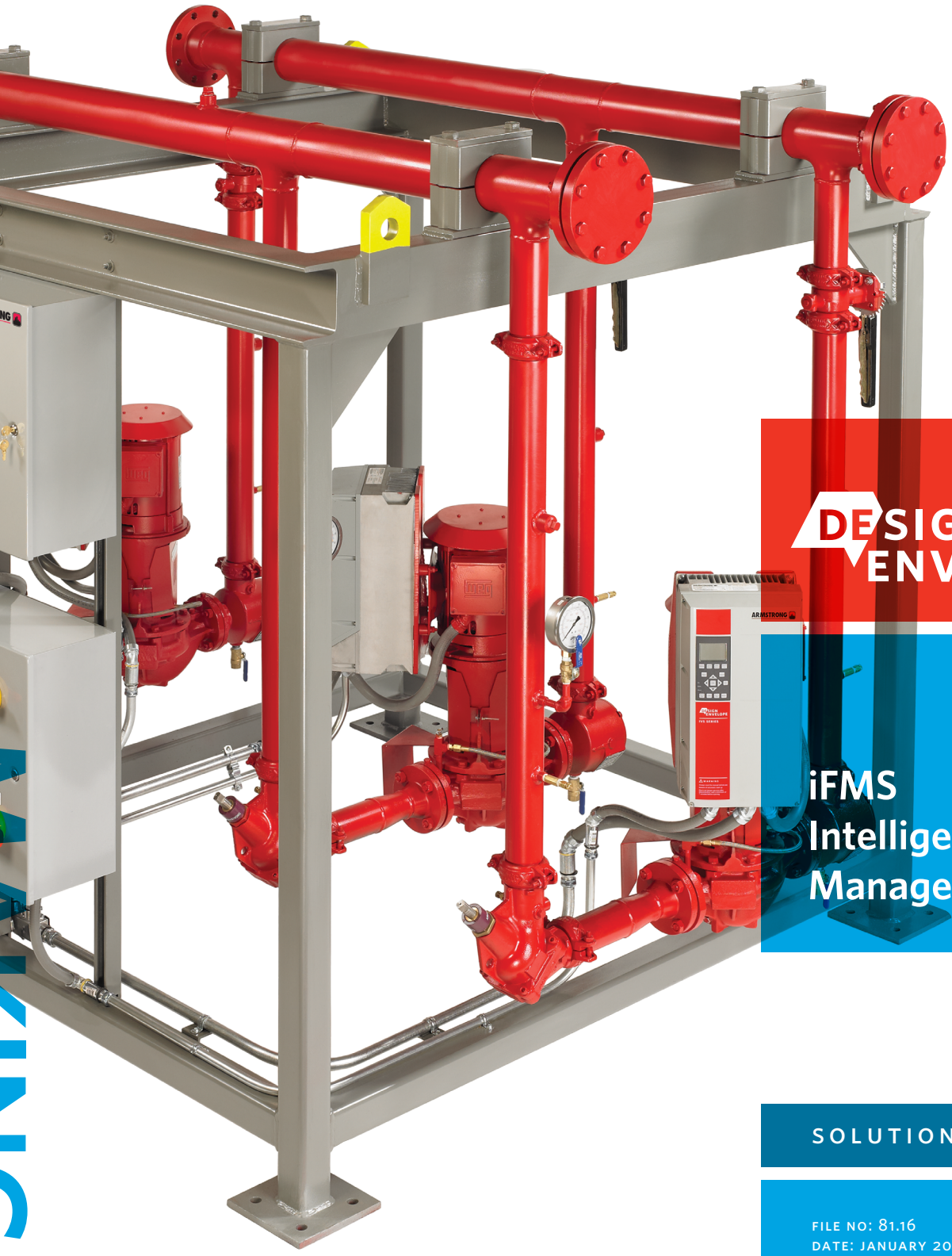
ARMSTRONG



DESIGN ENVELOPE

iFMS Intelligent Fluid Management System

SOLUTION OUTLINE

FILE NO: 81.16
DATE: JANUARY 2020

SUPERSEDES: 81.16
DATE: MAY 2013

Your projects deliver enduring value. Long after the work is finished, a successful high-profile building represents your company and stands as a testament to your commitment to adding value.

DESIGN ENVELOPE

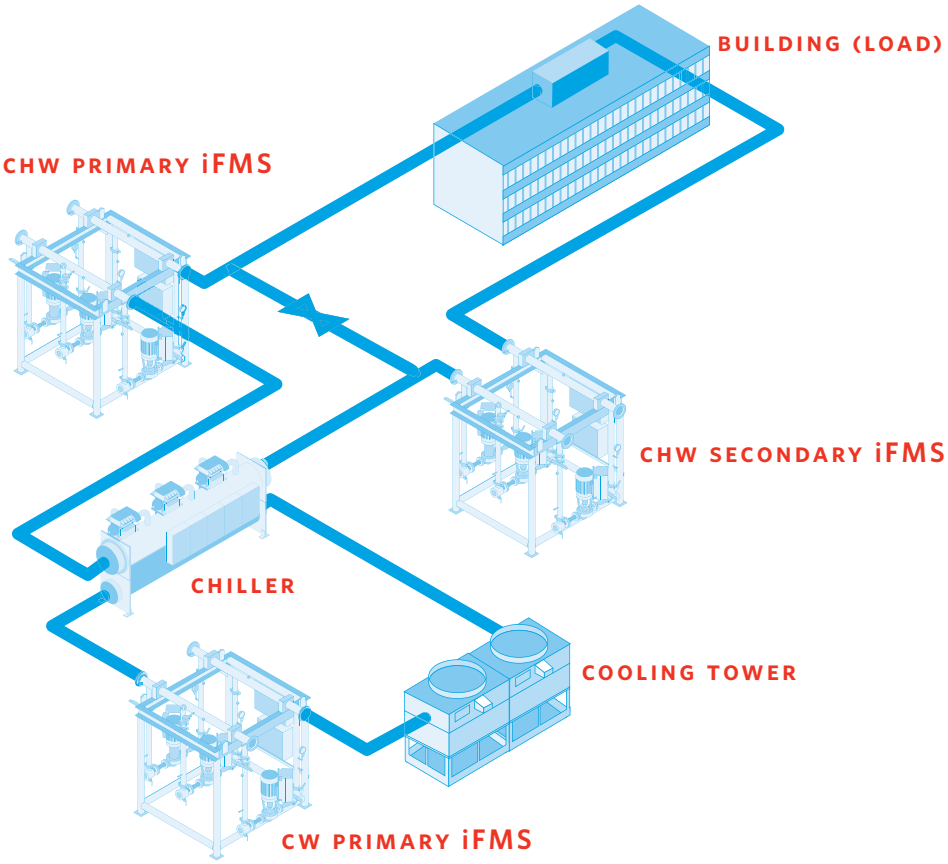
To make your next project an even greater success, Armstrong offers a solution for both commercial and industrial facilities: the Design Envelope iFMS.

Serving both chilled water and hot water applications, the Design Envelope iFMS is a prefabricated all-variable pump station that offers value to all members of the community in a new-build or retrofit project.

UP TO 50% LOWER LIFE CYCLE COST

THE VALUE	THE RESULT
Simplified mechanical room design through drag and drop of 3-D CAD models	More than 20% faster design • Savings on design time and component selections
Modular construction approach offering greater design flexibility	Project risk reduced by more than 30%
Fast and easy installation	Lowest installed cost
Energy savings	Lowest life cost
Confidence in system design and manufacturing quality	Reduced risk with ensured quality and performance

SYSTEM INTEGRATION



ENERGY SAVINGS

UP TO **70%**

DESIGN ENVELOPE

Drawing on Armstrong's Design Envelope technology, the pumps in an iFMS system integrate a perfectly matched Vertical In-Line pump, motor and intelligent controller. Armstrong has re-invented and redesigned pumping solutions to include connectivity and performance management services. Design Envelope pumps deliver optimal lifetime efficiency through:

- Expanded performance range and options
- One-touch auto-flow balancing
- Pump speed modulation based on an adjustable quadratic control curve for best part-load efficiency
- Flow measurement accuracy (+/- 5%)
- On-board data and diagnostics to provide performance information

The Design Envelope approach to sizing uses a combination of **OPTIMIZED IMPELLER SIZE AND SPEED CONTROL** to establish a range or envelope for most efficient operation.

FOR DETAILS ON

- Design Envelope selections
- Demand-based variable speed operation
- Sensorless technology

please see the Design Envelope IVS solution outline (FILE NO. 100.11)

	CONTROL CONFIGURATION	SCOPE OF CONTROL	SYSTEM INTEGRATION
1	Design Envelope pumping system integrated with IPC 9500 controls	All variable speed chiller plant — including multiple pumps, chillers, cooling towers and valves	Advanced chiller plant controller, independent of BAS systems
2	Design Envelope pumping system integrated with IPS 4000	Optimized control of multiple parallel pumps	Dedicated/Standalone pump controller that easily integrates with major BAS system
3	Integrated Design Envelope Control	Individual pump control in Sensorless mode	Integration with major BAS systems

① Integrated controls with Design Envelope IPC 9500

The Armstrong Design Envelope Integrated Plant Controller (IPC) 9500 is a dedicated chilled water plant automation system designed for occupant comfort and energy efficiency. The IPC uses patented control technology that allows typical chiller plants to operate at 0.5 kW/ton (7.0 COP) on an annual average basis*.

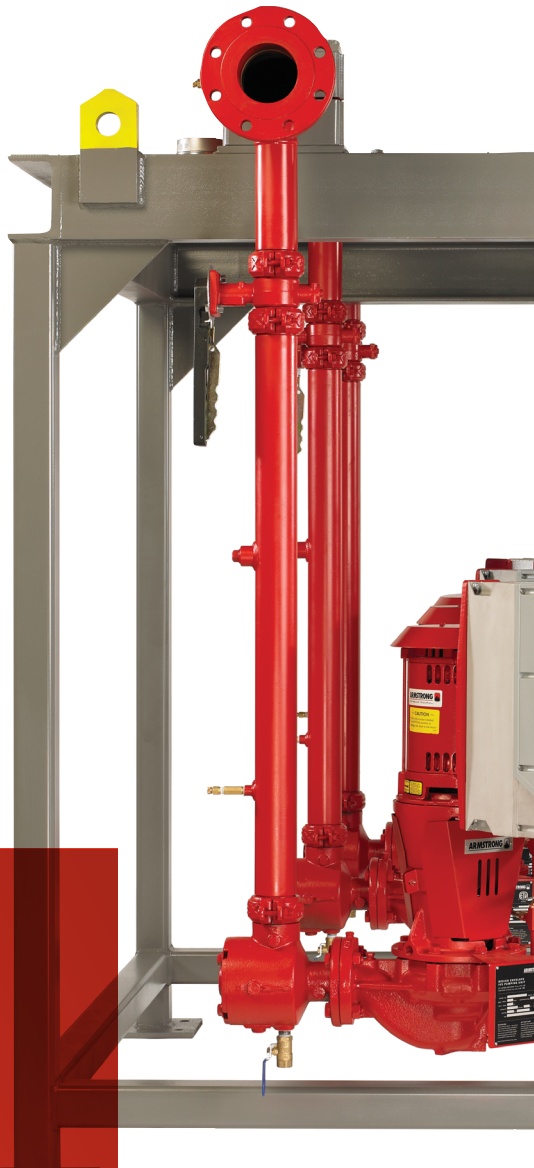
② Integrated controls with Design Envelope IPS 4000

The Armstrong Design Envelope IPS 4000 is a high-value controller solution. The IPS 4000 provides control of multiple parallel pumps in Sensorless mode, optimized pump efficiency and seamless compatibility with major BAS systems.

③ Integrated controls with Design Envelope Sensorless technology

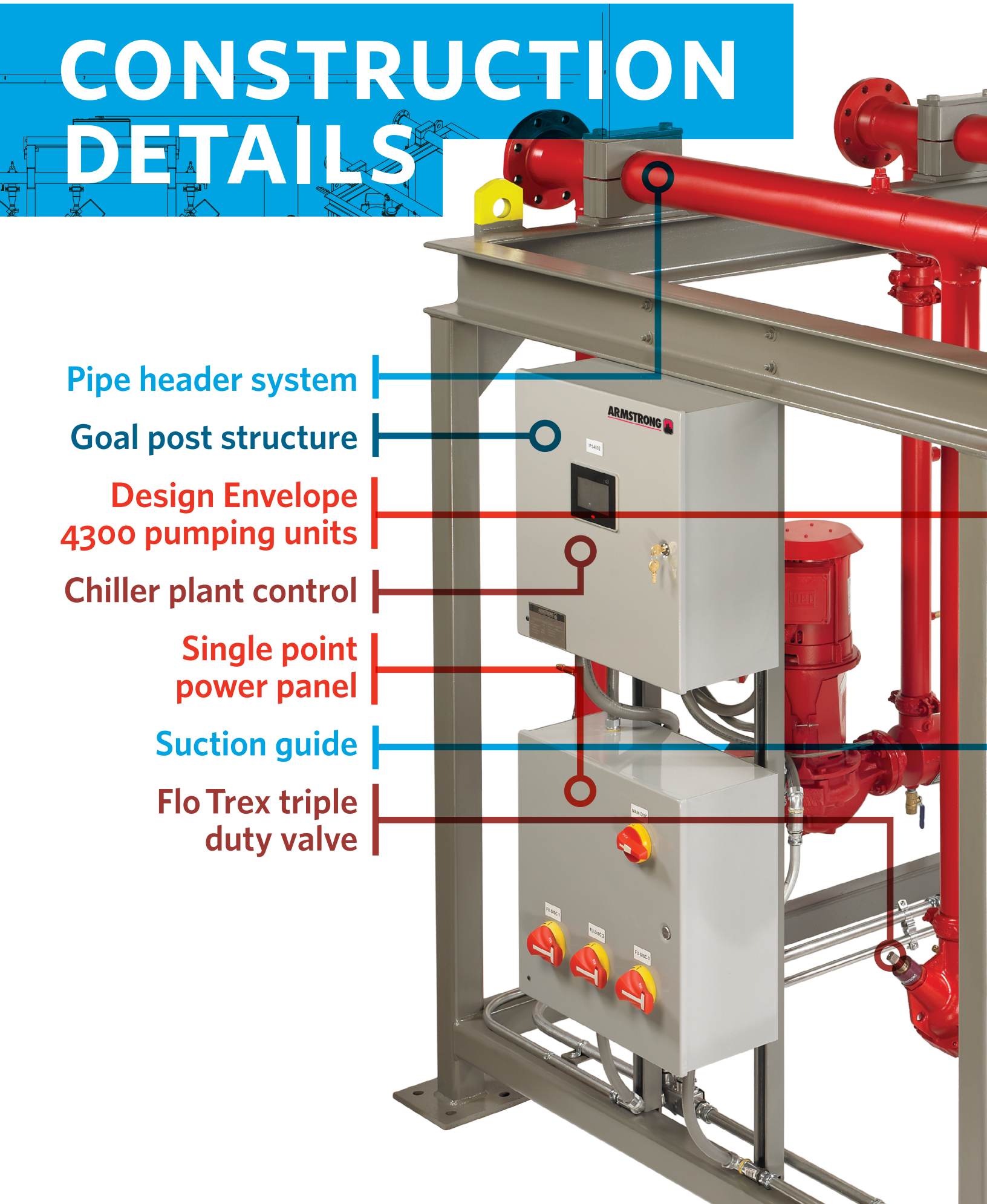
The Sensorless intelligence embedded in Armstrong Design Envelope pumping units can adjust output to meet the immediate load on the HVAC system without relying on external sensors.

* And by including connectivity and performance management services with Eco*Pulse helps your chilled-water plant to maintain optimal operating efficiency and minimize unexpected maintenance costs.

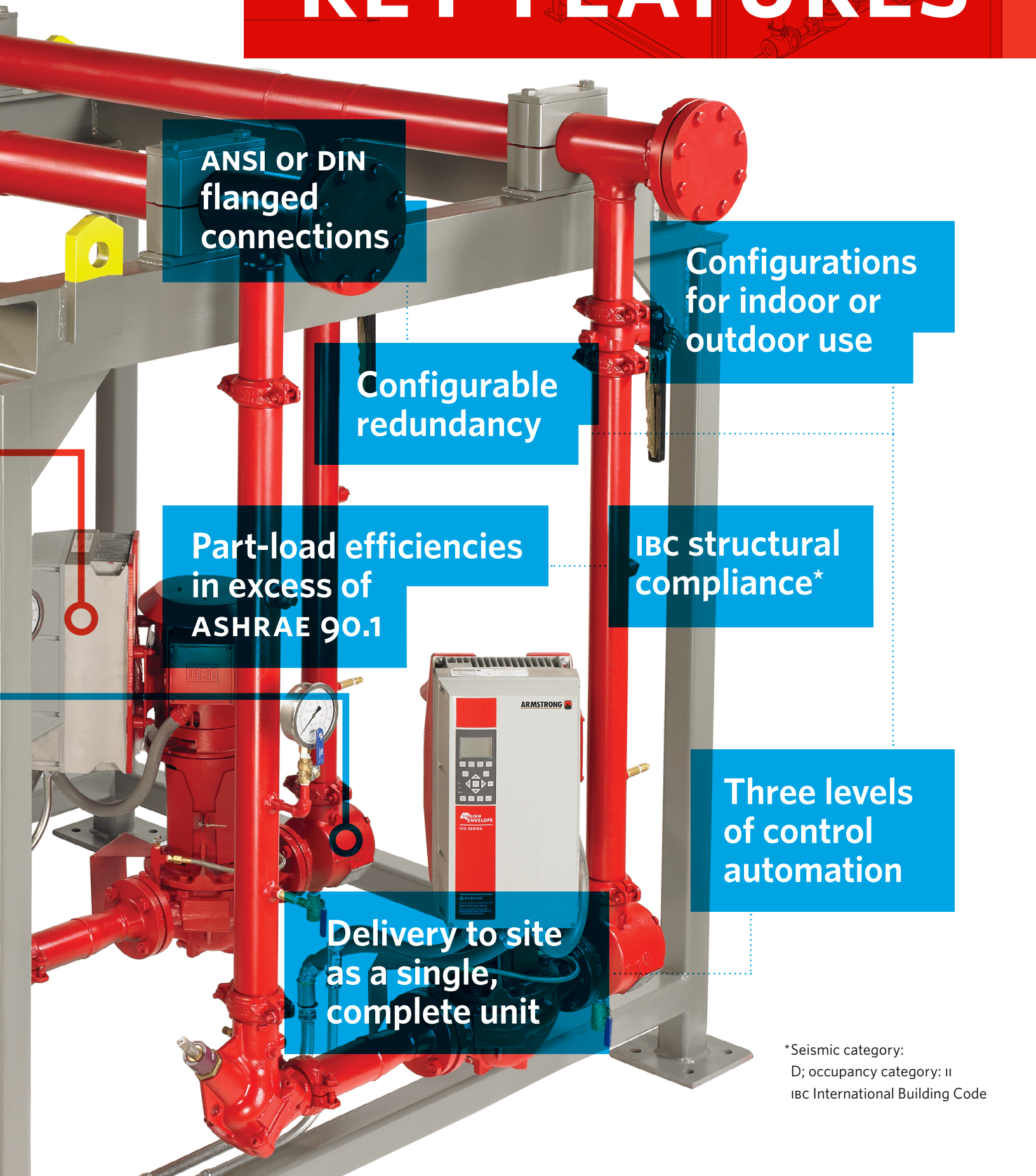


Armstrong Design Envelope iFMS packages provide value far beyond a pumping system assembled from loose components. For savings in design time, installation and related project costs, as well as energy and maintenance costs, talk to your Armstrong representative about the Design Envelope iFMS.

CONSTRUCTION DETAILS



KEY FEATURES



ANSI or DIN flanged connections

Configurations for indoor or outdoor use

Configurable redundancy

Part-load efficiencies in excess of ASHRAE 90.1

IBC structural compliance*

Three levels of control automation

Delivery to site as a single, complete unit

*Seismic category: D; occupancy category: II
IBC International Building Code

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ARMSTRONG FLUID TECHNOLOGY
ESTABLISHED 1934

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iFMS APPLICATION RANGE

Chilled water systems	Chilled water primary, chilled water secondary and condenser loop
	District cooling
Hot water systems	Hot water distribution loop
	District heating

PERFORMANCE RANGE

CAPACITY RANGE	1000 TONS (3516 kW)
MAX FLOW RATE	3400 USgpm
HEAD PRESSURE	150 ft
CONFIGURATION	DUPLEX/TRIPLEX
MAX HEADER SIZE	12 in
TOTAL MAX hp	450 hp

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

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MAKING ENERGY MAKE SENSE™