



**DESIGN
ENVELOPE®**

Fire Pump

Self Regulating Variable Speed
Fire Pump Technology

In compliance with NFPA 20, 2022 Edition

SOLUTION OUTLINE

FILE NO: F100.10IEC
DATE: SEPTEMBER 2026

SUPERSEDES: F100.10IEC
DATE: JULY 2021

THE HEART OF FIRE SAFETY NOW HAS A BRAIN

A

rmstrong, the leader in intelligent pumps, offers innovative solutions that reduce costs dramatically, improve the safety of your tenants and protect your property and assets.

DESIGN
ENVELOPE

TECHNOLOGY®

Design Envelope Fire Pump

reduce the cost for the purchase and installation of sprinkler and distribution piping, while reducing associated design work. They also reduce ongoing costs for building operation and maintenance and maximise available space.

Armstrong Design Envelope Fire Pump are a complete solution for fire suppression systems

Integration of perfectly matched components :

controls, pumps, variable speed controller and safety auto bypass

Design Envelope demand-based technology meets the required flow demand of sprinklers.



FIRE PUMP MANAGER

Fire Pump Manager ensures reliable performance in fire suppression systems.

Ensure the safety of building occupants through fully transparent testing

Optional notifications of every operating instance and any issues, both existing and predicted

Easy access to test results and performance dashboards

Convenient review of data - at the pump, or remotely

Internet connection facilitated by an Armstrong Connectivity Kit (included)

Reminders and notifications regarding scheduled tests



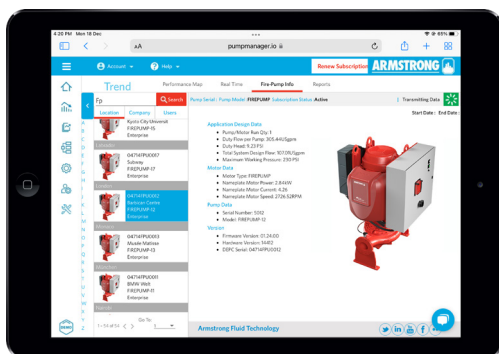
Step up to Active Performance Management

Fire Pump Manager is a secure cloud-based subscription service that connects to existing BAS, CMMS and EMS systems. Fire Pump Manager leverages deep analytics to assess pump status and identify trends.

Detailed performance insights and early diagnostic warnings

Reduced pump maintenance costs through predictive maintenance

Clear, accessible reports showing Suction, Boost & Discharge pressures, flow and motor rpm



30% INSTALLED COST SAVINGS

on your total fire pump system and PRV costs

D

esign Envelope fire pump bring designers installation saving opportunities, far beyond existing variable speed controller installations supplied with constant speed fire pumps.

Design Envelope Fire Pump save on installed costs with:

Smaller fire pump controllers: with soft-start features included in the onboard frequency converter

Precise adjustable speed pressure control: eliminates the requirement for pressure reducing valves (PRVs)

Complete solution including pump , bypass and adjustable speed drive at a fraction of the price of a traditional wall mounted AFD - Adjustable Frequency drive controllers

Design Envelope Fire Pump include the NFPA SRVSFP unit function of

Auto bypass

Adjustable frequency drives motor

Pump assembly

User interface display

Pressure transducers

Speed control logic

NFPA 20 compliant

Design Envelope Fire Pump comply with NFPA 20 as Self-Regulating Variable Speed Fire Pump Units

Project example of cost savings with Design Envelope Fire Pump



In high rise applications, sprinkler system designers can eliminate drain line piping parts and installation labour related to PRVs in branch lines, plus annual service for all those components.

ON FLOORS WHERE PRVS ARE ELIMINATED

Case Study for High Rise Building - 14 Storey Building

3785.4 l @ 10.3 bar

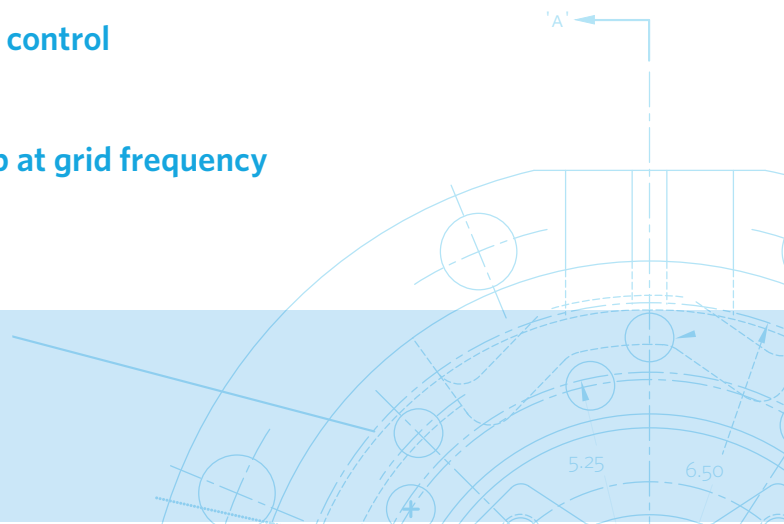
Suction Pressure Range: 3.45 - 5.51 bar

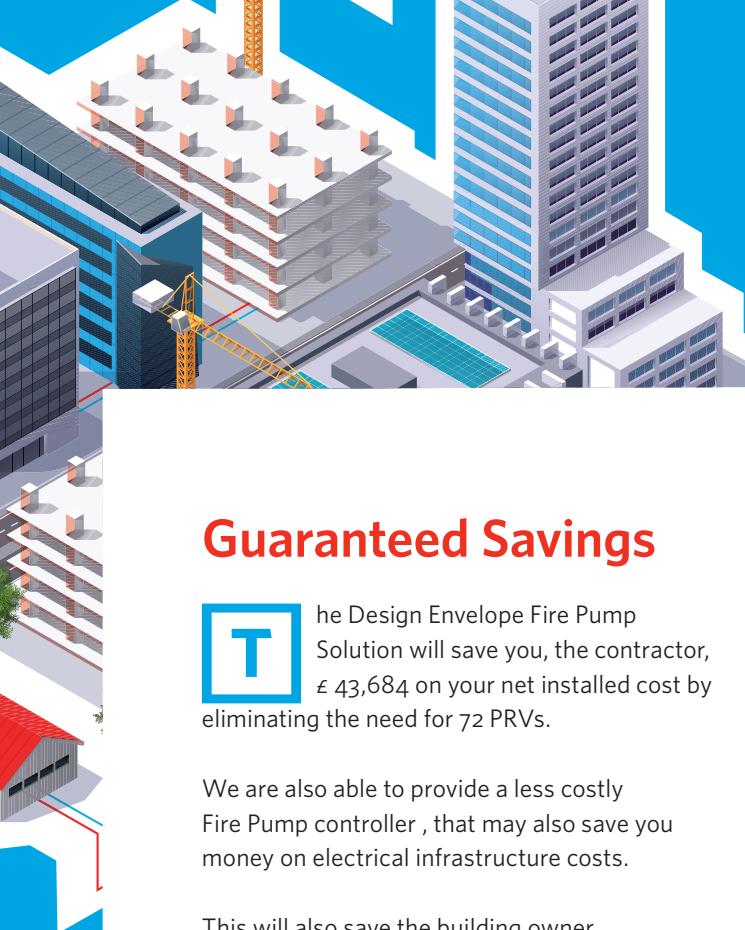
Fire Pump Controller: Soft Start with Transfer Switch

3 standpipe (Sprinklers), 3 wet risers (Fire Hose Cabinet),
assuming 1 PRV | Level of floor | riser

THREE OPERATING MODES FOR IMPROVED SAFETY AND SYSTEM PRESSURE CONTROL

- 1 Principal operating mode**
Constant discharge pressure speed control
- 2 Ancillary operating mode**
Constant boost pressure speed control
- 3 Bypass operating mode**
Auto bypass operates the pump at grid frequency





Guaranteed Savings

The Design Envelope Fire Pump Solution will save you, the contractor, £ 43,684 on your net installed cost by eliminating the need for 72 PRVs.

We are also able to provide a less costly Fire Pump controller , that may also save you money on electrical infrastructure costs.

This will also save the building owner an average of £9,890 per year in PRV inspection and maintenance.

Contractor

£ 43,684

Building owner

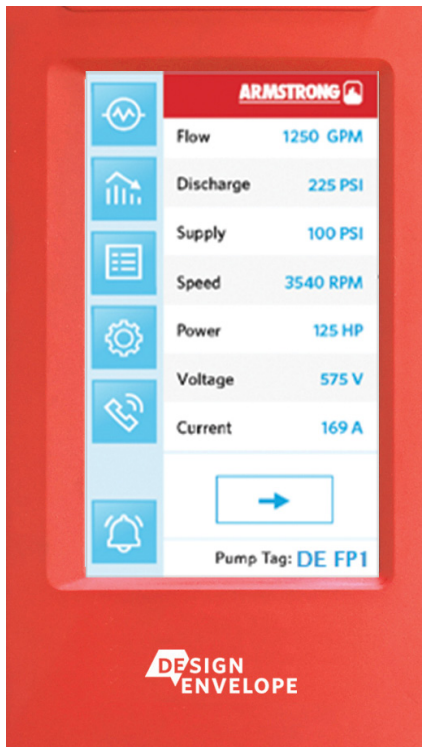
£ 9,890

LIFE CYCLE COST SAVINGS

ITEM DESCRIPTION	CONSTANT SPEED FIRE PUMP	DESIGN ENVELOPE FIRE PUMP	IMPACT
MONTHLY TEST	ON SITE	OPERATING DATA CLOUD CAPTURE	BETTER FEATURE
PRV QUARTERLY INSPECTION	£8,036	£618	↓
PRV REPLACEMENT	£3,214	£247	↓
ANNUAL PUMP FLOW TEST	£618	£824	↑
NET TOTAL COST	£11,869	£1,689	£10,179

The final value of savings may vary according to location , material cost and no. of floors.

VALUE PROPOSITION



More flexibility in piping system ratings and sizes

Reduction of PRV and associated drain lines

Increased safety by reducing failure points

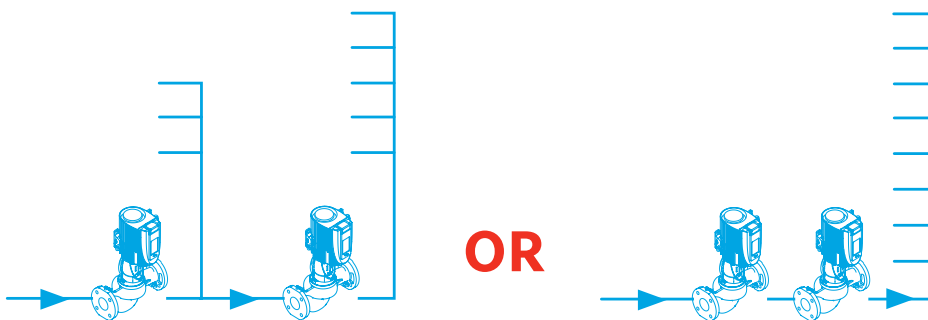
New self-diagnostic capability

Simpler installation with a fully factory integrated fire pump unit

Reduced site work scope for power cabling

Flow and boost pressure readings at the pump for easy reference during annual flow testing

More operating modes prior to reverting to constant speed, further protecting the sprinkler system



With the intelligent design and high performance Design Envelope Fire Pump in series typically require 25% smaller driver sizes than single hsc pump designs. On a 1000 USgpm application, this saves approximately 30% of the fire pump room floor space and eliminates up to 24 PRV mechanical closets on the higher building levels.

Design Envelope Fire Pump are pre-engineered to work in series configurations for the needs of today's taller buildings, with ratings up to 24 bar

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