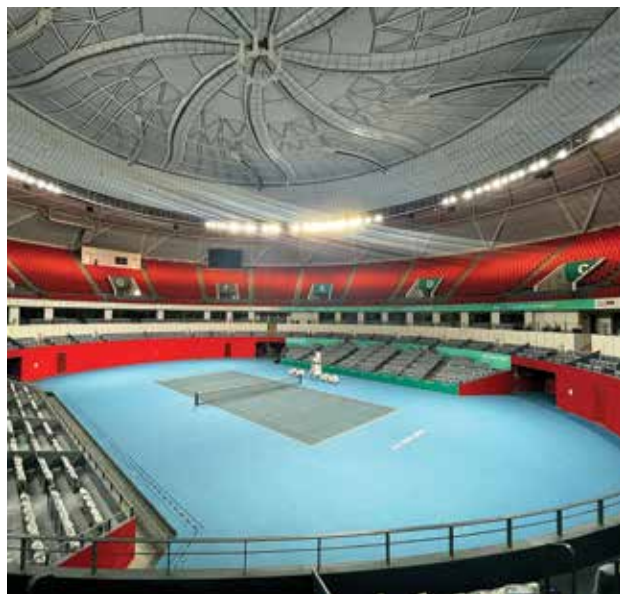
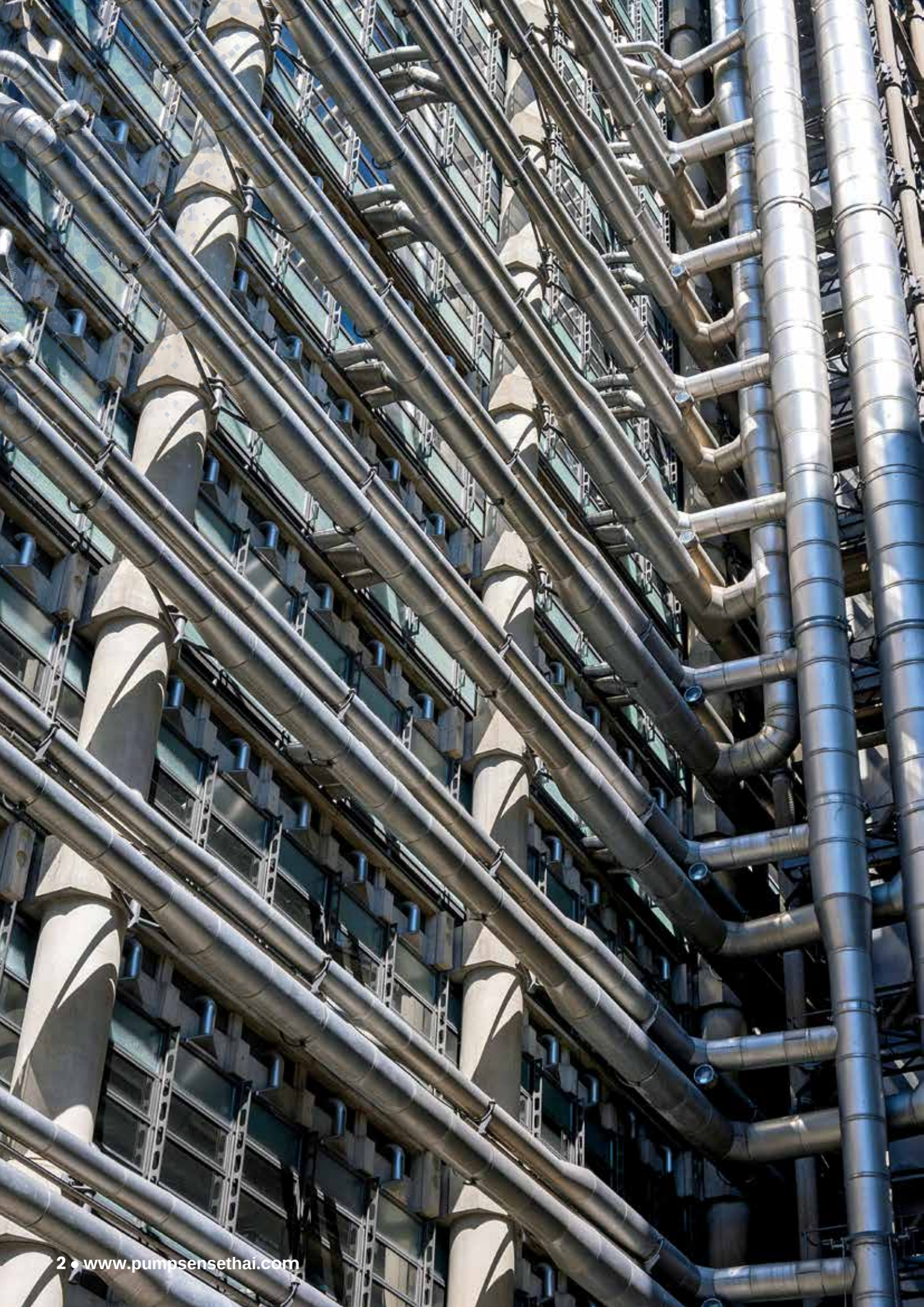




PUMPS FOR CENTRAL
AIR CONDITIONING
AND DISTRICT
COOLING SYSTEMS

**SERVING
HVAC
PUMPING**

www.pumpsensethai.com



THE BEGINNING

The history of Pumpsense goes back to 1995, when a group of professionals working in large international pump companies decided to team together. At PUMPSENSE, we are united through a shared vision to build an excellent pump company through which we can express ourselves fully and freely. Each one of us has an abiding interest in one aspect or the other of the pump business —right from hydraulic design to applications engineering, product development to marketing. We also share a common conviction that with our skills, passion and commitment, we can redefine the existing norms and standards of customer satisfaction. We wish to work, learn and create value in a nourishing and fulfilling environment for our customers, business associates and ourselves. Pumpsense exists to fulfil this collective dream, based on a core set of values which are our guiding philosophy in creating this organisation.



THE GUIDING PHILOSOPHY

Pumpsense's business is to provide centrifugal pumps and related services. We will constantly strive to increase the delivered value to our customers by careful attention to details, by continuous improvement of our core capabilities and by our commitment to delight the customer at every point of contact. The quality of our products and services will reflect the improvement in the quality of life that we can bring to our employees – we will provide them with an informal and liberal work environment, where they can constantly learn and grow. We recognise that our suppliers play a key role in the quality of our products and services. We will work closely with our suppliers so that they share our energy and focus to serve the customer with excellence. Above all, we will strive to create an organisation where there are no barriers amongst customers, employees and suppliers, and all of us work together to create value, to grow, to learn and to enhance the quality of our lives.



CERTIFIED PERFORMANCE

At Pumpsense, HVAC pumps are designed for the lowest life-cycle costs, the highest reliability, and the smallest environmental footprint. This is done by optimising pump efficiency over the preferred operating range. This is done by careful hydraulic design supported by CFD simulations. In addition, all components are carefully designed to minimise leakage, disk friction and mechanical losses. Pump efficiency is verified in our Hydraulic Institute-certified pump test laboratory, where efficiency verification is done in accordance with HI-40.6.

FACILITIES: TEST BED

- Flow- Up to 4500 m³/hr
- Pressure – Up to 300 meters water column
- Speed- Up to 3600 RPM
- 5 Test Lines
- Flow measured by – 6”, 8”, 10”, 12”, 16”, 20” electro-magnetic flow meter
- Real-time data acquisition – SCADA system
- Test bed volume - 58000 gallons / 220 m³

The testbed is fully equipped for multiple validations of pump efficiency



Horizontal Split Case Type-HS



Vertical Split Case Type-HSV

PRODUCTS – SPLIT CASE FOR AIR CONDITIONING APPLICATIONS

RANGE OF OUR SPLIT-CASE PUMPS:

- Flow: up to 2500 m³/hr
- Head: up to 80 m
- Speed: up to 1800 rpm

FEATURES:

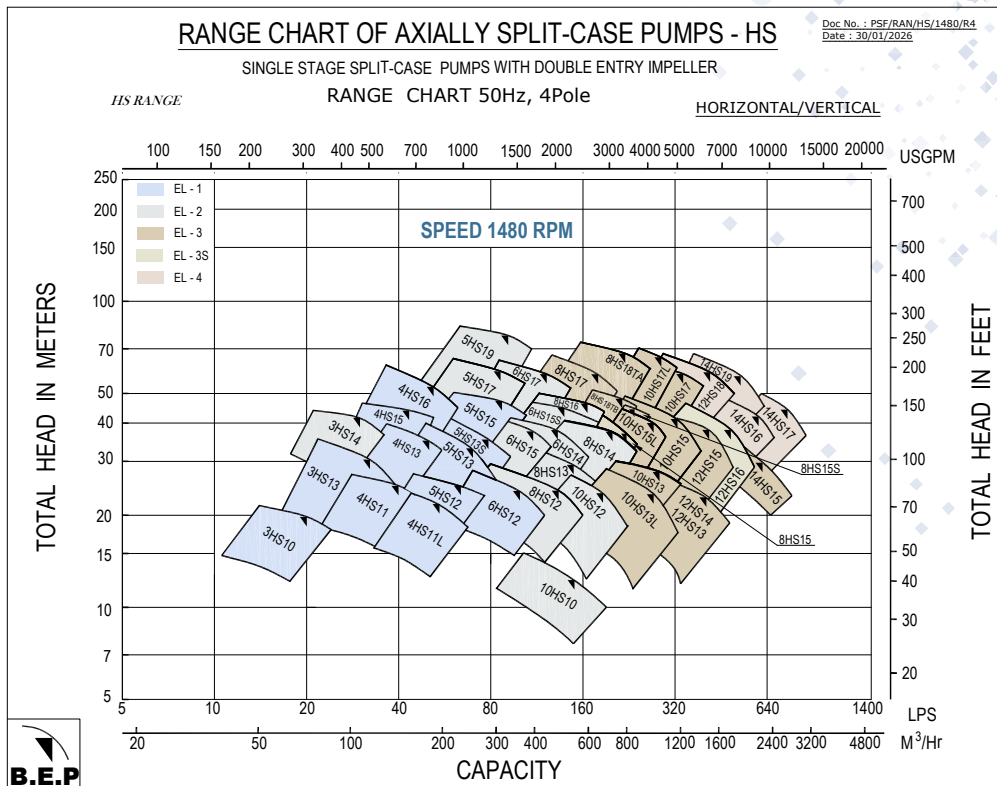
- Optimum efficiency
- Low NPSHr
- Stable Characteristics H-Q for all duties
- Over 80 sizes ensure optimum selection for all duties
- Quick customisation is possible to meet special system requirements
- High head units have double volute casings to reduce radial thrust

PRODUCT VARIANTS:

- Single Stage Pumps
- Two-Stage Pumps
- Packed Gland Pumps
- Mechanical Seal Fitted Pumps
- Side Suction – Side Delivery Pumps
- Side Suction – Top Delivery Pumps
- Bottom Suction – Top Delivery Pumps
- Vertically Mounted Pumps And more

PUMPS FOR AIR CONDITIONING

SERIES HS – SINGLE STAGE SPLIT CASE PUMPS – HORIZONTAL/VERTICAL



PUMPS FOR AIR CONDITIONING PRODUCTS – END SUCTION PUMPS



RANGE OF OUR END SUCTION PUMPS:

- Flow: up to 1100 m³/hr
- Head: up to 120 m
- Speed: up to 1800 rpm

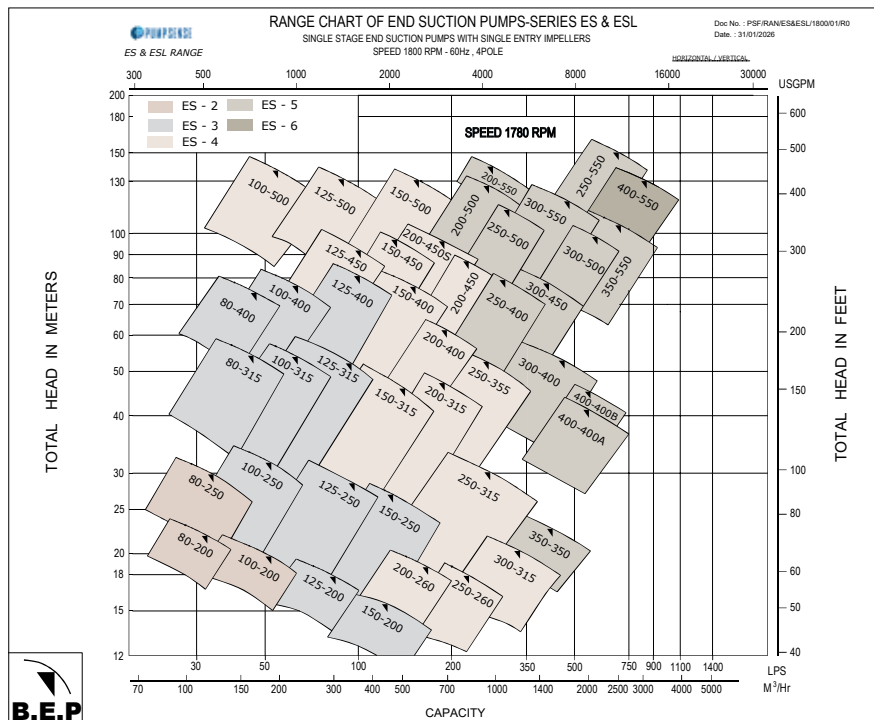
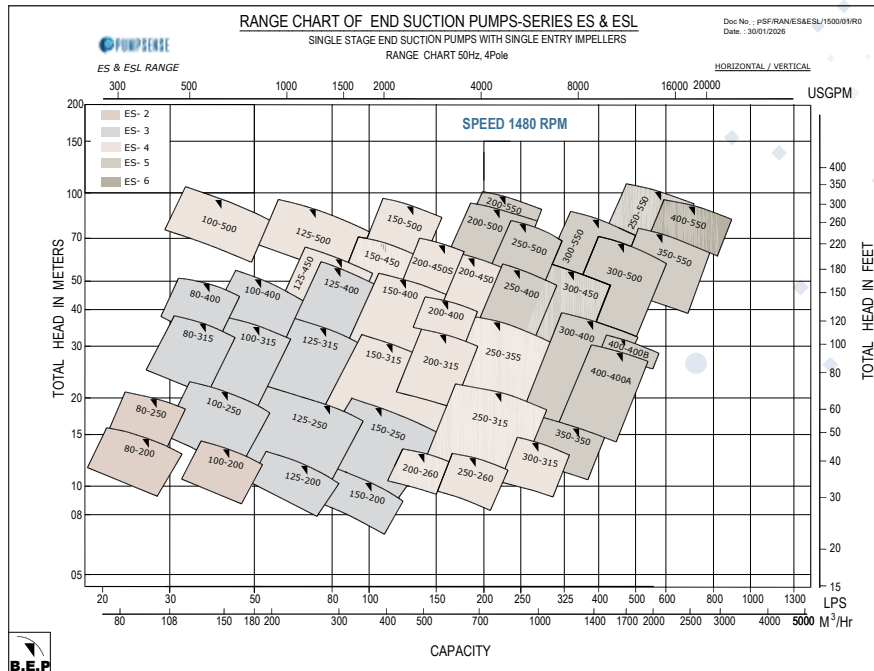
FEATURES:

- Small end Suction range conformsto ISO 2858/ ISO 5199
- Design optimised to produce maximum flow fo a given size
- Efficiency optimised as per Hydraulic Institute & Europump Norms
- Customised units for higher speed and special applications
- Many material and flange options
- High head pumps incorporate a double volute design to reduce radial load and improve seal /bearing lives

PRODUCT VARIANTS:

- End Suction Range ISO 2858 Compliant
- Large End Suction Pumps – up to 16" size
- Packed Gland Pumps
- Mechanical Seal Fitted Pumps
- Centreline Mounted Pumps.
- Pumps with Strengthened Bearing
- Bottom Suction – Top Delivery Pumps, etc
- Vertically mounted pumps in OH3A configuration

SERIES ES/ESL – ISO 5199 END SUCTION PUMPS/LARGE END SUCTION PUMP



NOTE

For duties not covered in this range chart, please write to us, and we will find the right end suction back pull-out pump for you. Our combined range of ES/ESL/EMF pumps has over 70 sizes covering most air conditioning duties.

PRODUCTS – SERIES IL – VERTICAL INLINE PUMP



RANGE OF OUR VERTICAL INLINE PUMPS:

- Flow: 2500 m³/hr
- Head: 20 m
- Speed: Up to 1800 RPM

FEATURES:

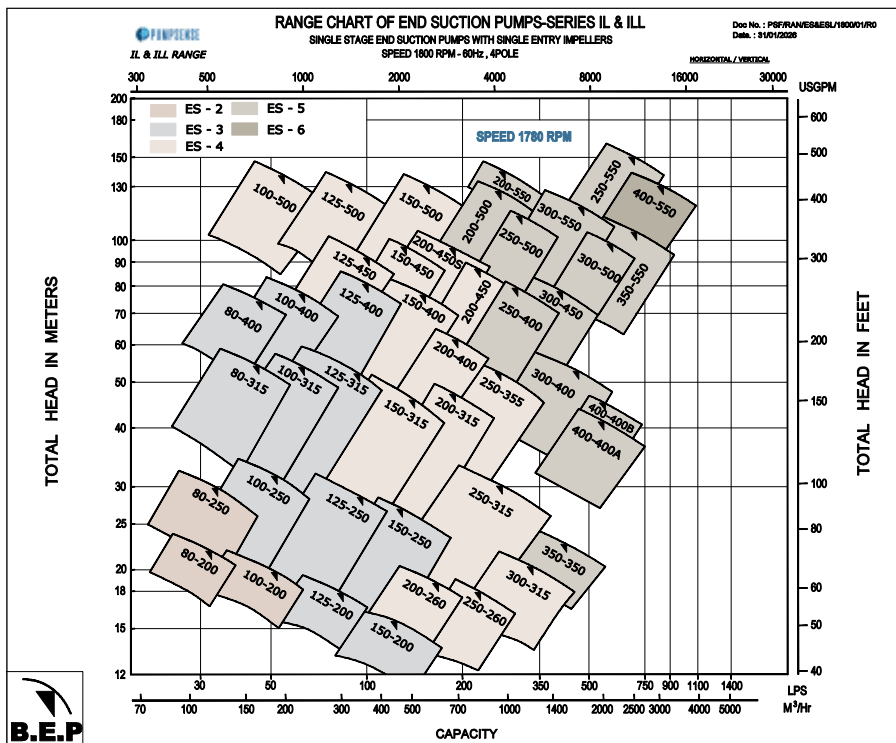
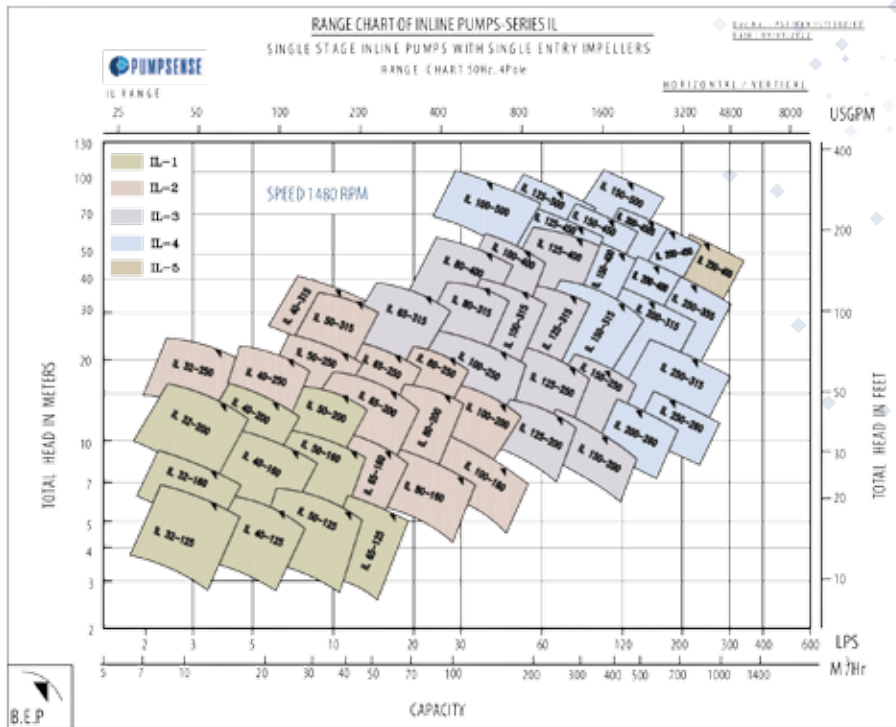
- Suction and discharge connections are in-line, enabling simplification of piping. This enables easy installation and minimises installation space.
- Pump is provided with its own independent thrust bearing and is flexibly coupled to the motor shaft
- Smallest footprint – utilises the least amount of floor space.
- Quick Customisation is possible to ensure optimum operation.

PRODUCT VARIANTS:

- Materials – CI, DI, Bronze, SS, Ni Resist
- Stung Box – Packed Gland, Mechanical Seal
- Constructional Features
 - Horizontal & vertical orientation, Compact close-coupled design is an optional construction

PUMPS FOR AIR CONDITIONING

SERIES IL – VERTICAL INLINE PUMPS



NOTE

for duties not covered in the range chart, please refer to Pumpsense. For the section of pumps at 60Hz (1800 rpm/1200 rpm), please visit our webpage www.pumpsensethai.com

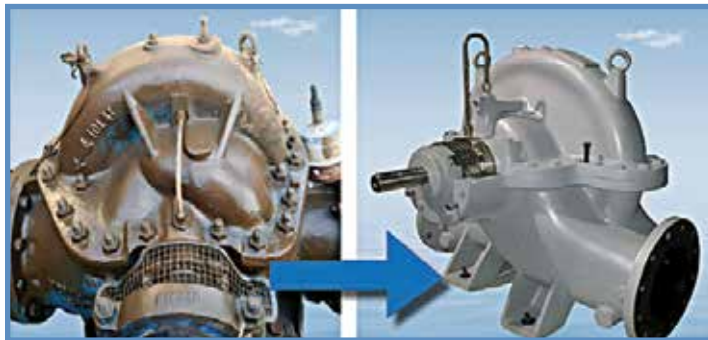
SUSTAINABILITY, ENERGY EFFICIENCY & CENTRIFUGAL PUMPS INITIATIVE BY PUMPSENSE



Refurbishment



Retrofit



Drop-In Replacement



**Research Programs for
Efficiency / Power**



Awareness Initiatives



Training, Webinar, Podcast

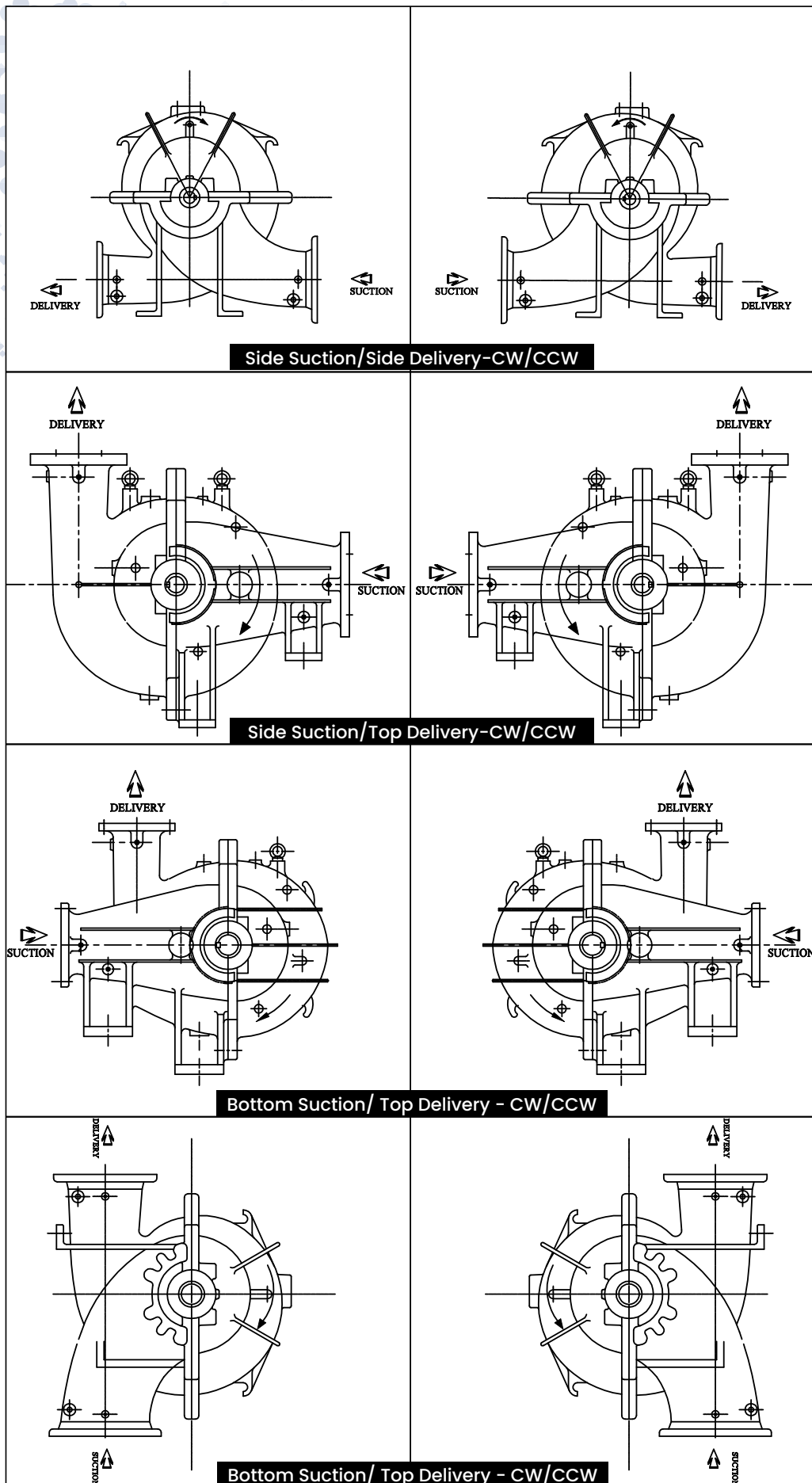
PUMPSENSE USP FOR AIR-CONDITIONING PUMP APPLICATIONS

Product variants and customisation capabilities

- Vertical Split Case/Vertical End Suction Variants
- Pumps Designed for High Suction Pressure
- Orientations Offered to Suit Installation Requirements
- Different seal and flange options
- Different material options
- 1:1 Replacement of existing Pump

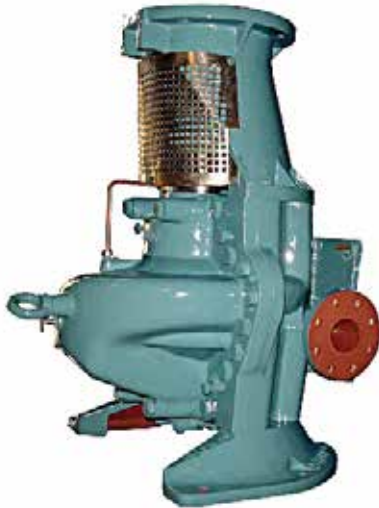


PRODUCT VARIANTS



CUSTOM-BUILT SPLIT CASE PRODUCTS

Various Suction/Delivery Orientation



AXIALLY SPLIT CASE
TWO-STAGE VERTICAL



AXIALLY SPLIT CASE BOTTOM SUCTION/
SIDE DELIVERY



AXIALLY SPLIT CASE SIDE SUCTION/
TOP DELIVERY



AXIALLY SPLIT CASE
SINGLE STAGE VERTICAL



AXIALLY SPLIT CASE SINGLE STAGE



AXIALLY SPLIT CASE SIDE SUCTION/
TOP DELIVERY

IDEAL ATTRIBUTES OF A GOOD AIR-CONDITIONING PUMP

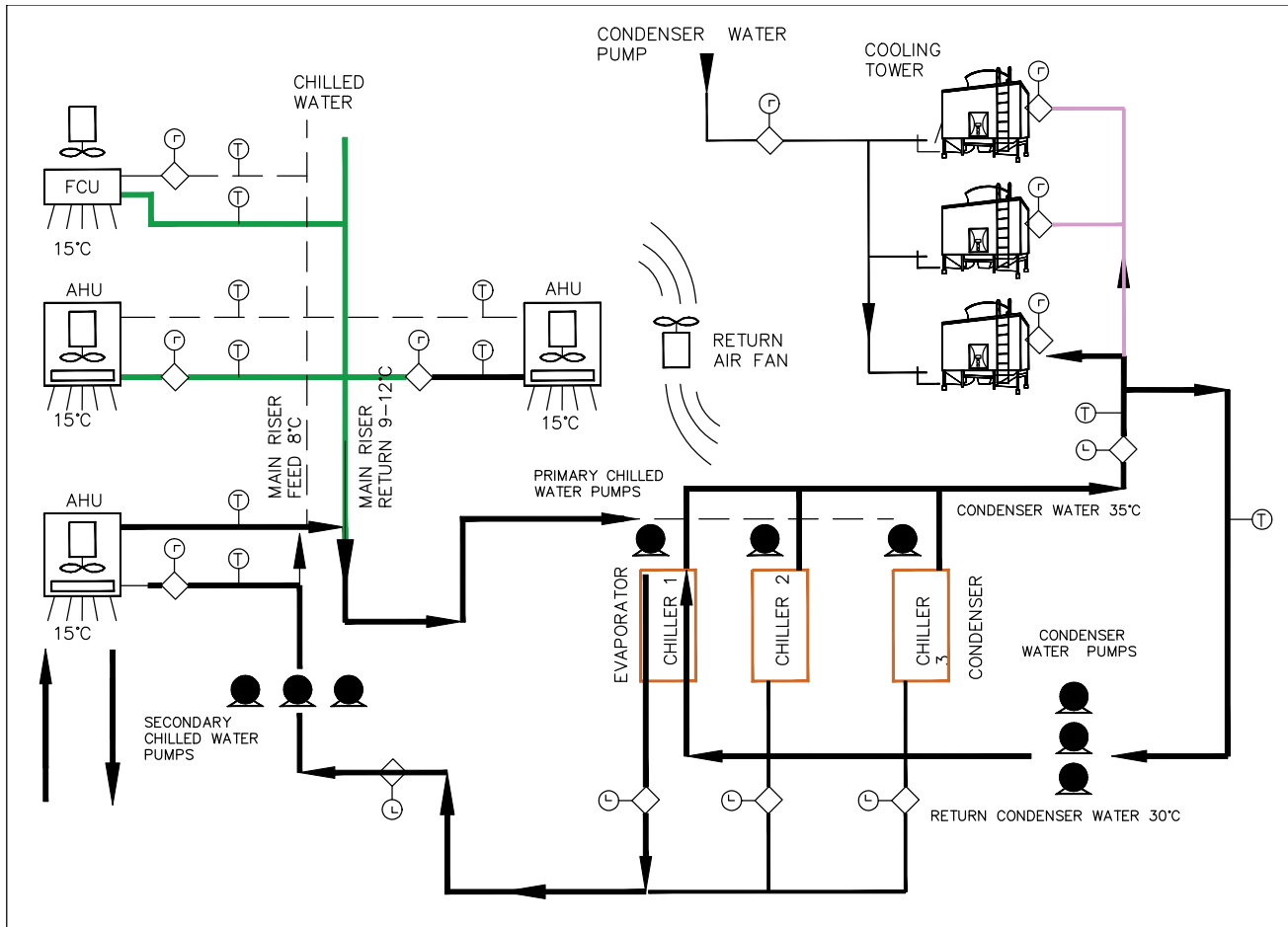
ENERGY EFFICIENCY- Pumps for air-conditioning must achieve the highest possible efficiency on a sustained basis. Pumps must be designed to leave the lowest carbon footprint

RELIABILITY- These pumps must run continuously and, therefore, must be designed to ensure the highest reliability. A good guideline is to design the pump so it can run continuously for 4 years without requiring impeller removal

SPACE- Pumps must be as compact as possible so that the pump room does not occupy much of the expensive commercial/public space

QUICK/INEXPENSIVE CUSTOMISATION- It should be possible to offer variants of the basic products to suit specific requirements of the site- pump with vertical shaft, pump with different flange construction, pumps suitable for very high working pressure, pumps with different materials specifications etc

HVAC SYSTEMS



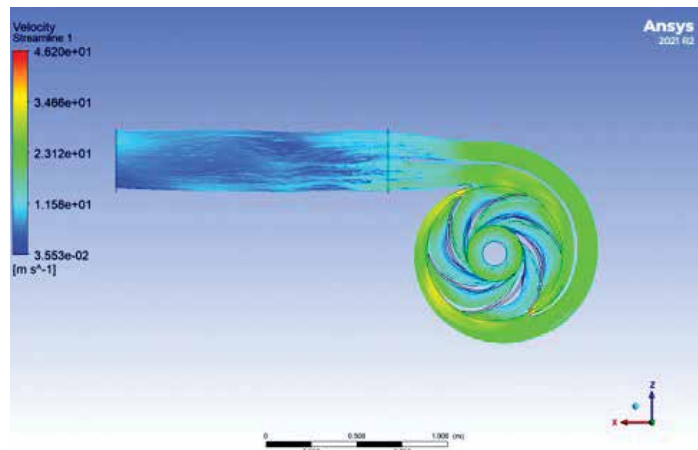
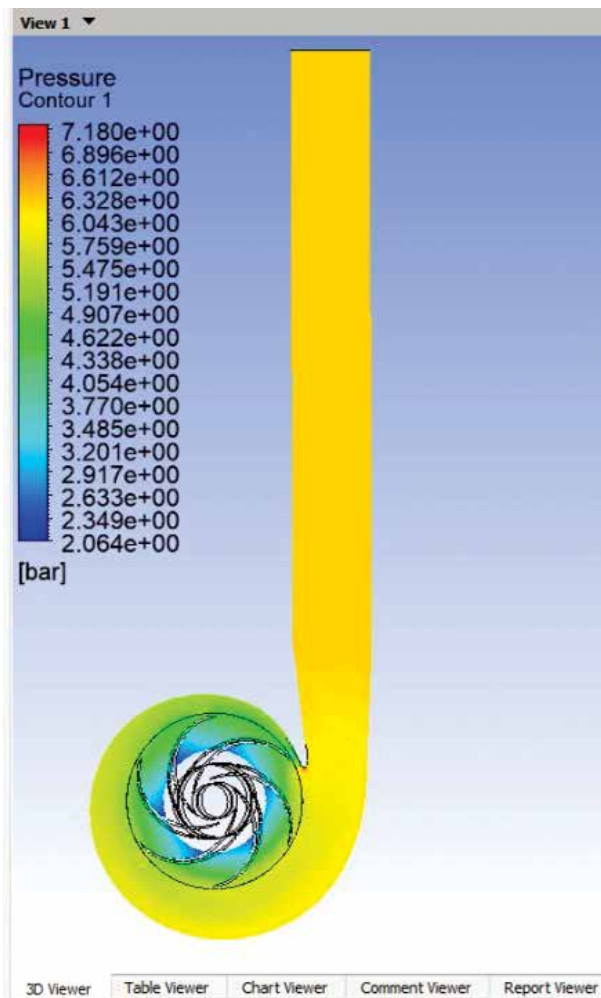
UNDERSTAND SYSTEM DEMANDS

- Pumps operate in an "all-friction" system
- Head is often overspecified
- Working pressure can be high for tall buildings
- Pumps work with ample NPSH
- Variable demand is catered by VVFD
- Energy efficiency is of primary importance
- Design Pumps to meet the system demands
- Design for steeper H-Q characteristics in the operating zone
- Design for highest efficiency by optimising
- Hydraulic, leakage, disk friction and mechanical losses
- Achieve flat Q-efficiency characteristics in the operating zone to optimise energy efficiency index
- Design for 30,000 hours of uninterrupted bearing and seal performance

COOL THE SPACE BUT SPARE THE ENVIRONMENT

HOW HAVE WE ACHIEVED EFFICIENCY GAINS WITH OUR AIR CONDITIONING PUMPS?

Design parameters were carefully selected to optimise hydraulic efficiency, and we conducted extensive CFD analysis to verify and confirm our design. We also built the prototype with extreme care so that the mechanical, leakage and disc friction losses remain low.



IMPORTANCE OF HIGH EFFICIENCY FOR HVAC SYSTEMS

These systems run continuously and are a major contributor to global warming due to their large carbon footprint. High-efficiency pumps leave a significantly smaller carbon footprint while ensuring the lowest life-cycle cost. Therefore, developing air conditioning pumps with the highest operating efficiency is a matter of global priority.



PUMPSENSE

PUMPSENSE THAILAND CO.,LTD.

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