

# FPX Series Cooling Fans

The optimum in efficient cooling  
air provision for low noise environments



# Ultra-low noise fan delivering high efficiency with low maintenance

Howden, a Chart Industries Company, has been at the forefront of cooling fan technology for over 60 years and continues to innovate through our centre of excellence and R&D facility based in the Netherlands.

Our manufacturing facilities maintain the highest levels of excellence with modern equipment and strict quality controls accredited to international standards.

With over 50 operational sites globally we have the largest coverage for sales and service. This means we can respond swiftly to our customers' needs in the project stages as well as through the operational lifetime of equipment.

**Fixed Pitch (FPX) selections in Howden Select**  
Howden Select for Cooling Fans software assists experienced and inexperienced users in finding cooling fan selections. The tool includes the latest information on all our fan series.

Our fans lead the way in high efficiency and low noise operation. A full test capability based on mechanical, aerodynamic and acoustic criteria ensures confidence in the performance quality of each unit.



## FPX Series

The FPX is one of a series of cooling fans designed to serve a diverse set of sectors from the energy industry in oil & gas facilities and power plants through to light industrial manufacturing plants, datacentres and commercial buildings.



The FPX Series uses fixed-pitch blades, manufactured as a single impeller unit that offers very easy assembly and minimal maintenance, combined with ultra-low noise design.



**Low to ultra-low noise performance** enabling reduced footprint or more capacity potential



**High efficiency** with greater flow at lower absorbed power



Single piece fan unit **for ease of installation**



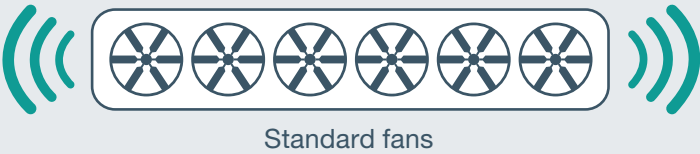
**Large, customisable fan range** flexible to all application duties

# The design advantage

The FPX Series gives operators and system designers unique flexibility to address the demands of noise, cooling capacity, efficient performance and system footprint.

## Lead criteria: Noise

Typical installation using standard 6ft fans:



Standard fans

Installation using equivalent number of 6ft FPX fans:



FPX fans without silencers

### Using FPX Series delivers:

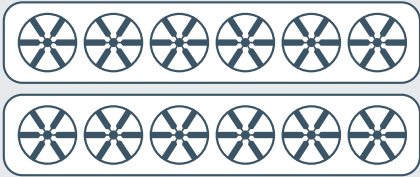
Potential for 15-20 dB(A) reduction in noise level

More elegant system design with no requirement for silencers and acoustic screens

Tackling the noise issue at source

## Lead criteria: Energy efficiency

Typical installation using standard 3ft fans:



Large number of standard fans

Installation using equivalent number of 6ft FPX fans:



Small number of FPX fans

### Using FPX Series delivers:

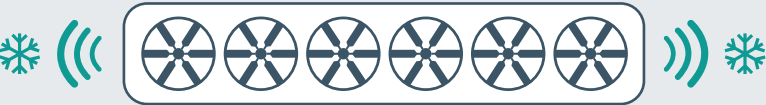
Potential for 30% power energy savings while maintaining same cooling capacity

Less components and less maintenance

Using high efficient fans ensures maximum cooling capacity and minimal footprint

## Lead criteria: Cooling capacity

Typical installation using standard 6ft fans:



Standard fans for an air cooler

Installation using equivalent number of 6ft FPX fans:



FPX fans for an air cooler

### Using FPX Series delivers:

Potential for more than 30%-40% increase in flow giving over 15% increase in cooling capacity

Lower relative noise output of up to 5-10 dB(A)

More flexibility in design to reach desired performance

## Lead criteria: System scale/footprint

Typical installation using standard fans:



Standard fans for an air cooler

Installation using reduced number of FPX fans:



FPX fans for an air cooler

### Using FPX Series delivers:

Potential for 25% reduction in number of fans while maintaining capacity

Lower relative noise output of up to 10 dB(A)

More compact overall system with smaller heat exchanger

Lower capital cost due to smaller heat exchanger

Less maintenance



# FPX Series designed for performance and low long term costs

**The FPX Series delivers high performance while ensuring running costs are kept low. Each fan is manufactured as a single impeller unit with fixed pitch blades.**

**This provides high efficiency, which results in long term cost savings based on reduced fuel and fan power requirements.**

As each fan is delivered statically and dynamically balanced as a single piece unit, no fan assembly is required.

This ensures easier integration and also reduces the risk of unbalanced fans and associated performance and cost implications. The single unit eliminates wear sources and removes the need to re-torque blade attachments. This minimises maintenance requirements and associated costs.

The damping and chemical resistance properties of the fan leads to smaller tolerance on natural frequencies values and reduced risk of resonance. As a result there is an increased range of available operating speeds enabling optimised performance for selected fans as well as more precise control of cooling.

Long operational life is ensured due to our high quality product manufacture with minimal service requirements keeping maintenance costs low. All fans are ATEX compliant to give assurance of reliable performance wherever located.

-  **High efficiency**
-  **Precise control**
-  **Easy integration**
-  **Low maintenance**



## Large range to meet the demands of all HVAC and refrigeration applications

The FPX Series features an ultra-low noise blade shape suitable for induced draft temperatures, allowing operation in most outdoor locations as well as indoor. The low speed variant provides additional temperature allowance to reduce drive failures in emergency situations; this means the whole

range can operate at -20°C to 80°C (-4°F to 176°F).



A wide variety of diameters from 914mm (36 inches) to 2234mm (84 inches) ensures high efficiency and low noise no matter what system design is selected. Vertical or horizontal configurations give additional flexibility to application requirements.

Fans can be built-up to suit specific light-weight or heavy duty requirements based on multiple tip speed classes to suit various



customer duty requirements. The low speed FPX offers the use of a light-weight fan alternative for extreme low noise, low tip speed and low power consumption applications.

Additional upgrades for materials and coatings offer a high degree of flexibility to client specifications and less restrictive design. These options enable performance at higher temperatures than standard models and protection against erosion in wet applications (leading edge upgrades).

-  **Wide range**
-  **Flexible to application**





# FPX Series fans are designed to meet stringent technical standards

The FPX Series can bring noise level improvements of up to 20 dB(A) against a standard fan.

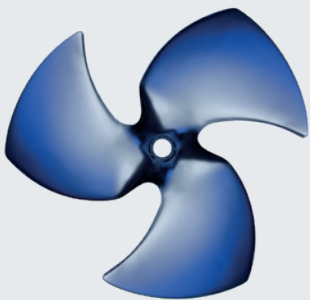
The ultra-low noise operation at a basic level means conformance with local regulations.

However, further advantage is gained from the ability to meet very stringent low noise regulations without the need for additional noise reduction components. A system using the FPX Series provides for a more elegant solution for engineers and end-users with minimised footprint.

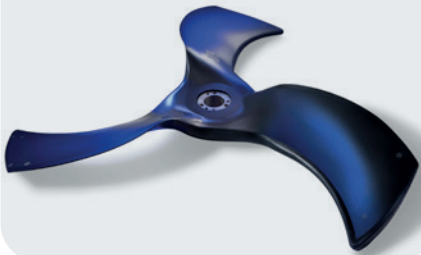
Our specialised project engineering provision gives flexibility to meet non-standard engineering requirements. This means we have the ability to satisfy a wider range of client specifications with minimised disruption to standard procedures.

- Ultra-low noise
- Assured performance
- Compact system design

FPX fan



FPXM fan



## Flexible scope of supply

Howden strives to provide fans aligned to customer demands.

This translates into a flexible approach to supply. The FPX Series can be pre-assembled into cooling units that include the drive, fan casing and suspension. As a 'plug and play' solution, only mechanical and electrical assembly is needed resulting in speedier installation with less potential for issues.

As a global organization, manufacturing is also flexible to location of site using either our European or Chinese production plant. Consequently project delivery can be streamlined with minimised delivery costs and timescales.

- Ease of doing business



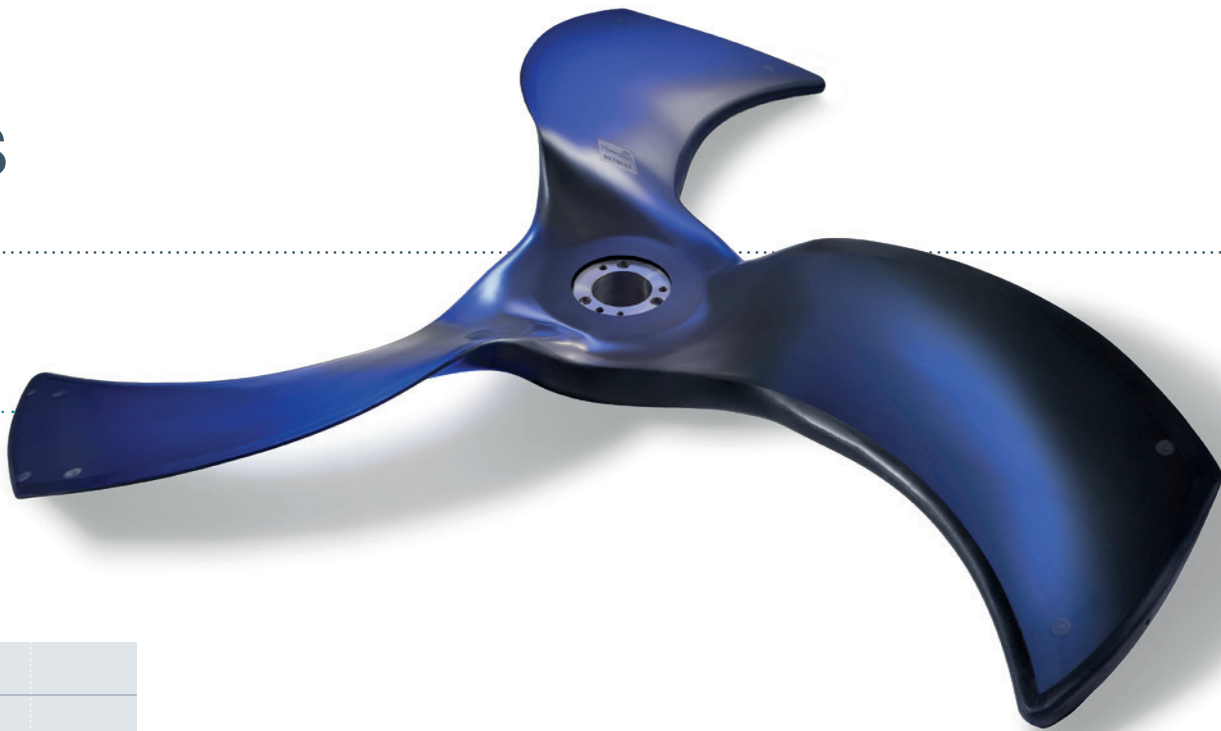
Once installed customers can be assured of actual operational performance in accordance with design specification, due to Howden's aerodynamic testing of fans.



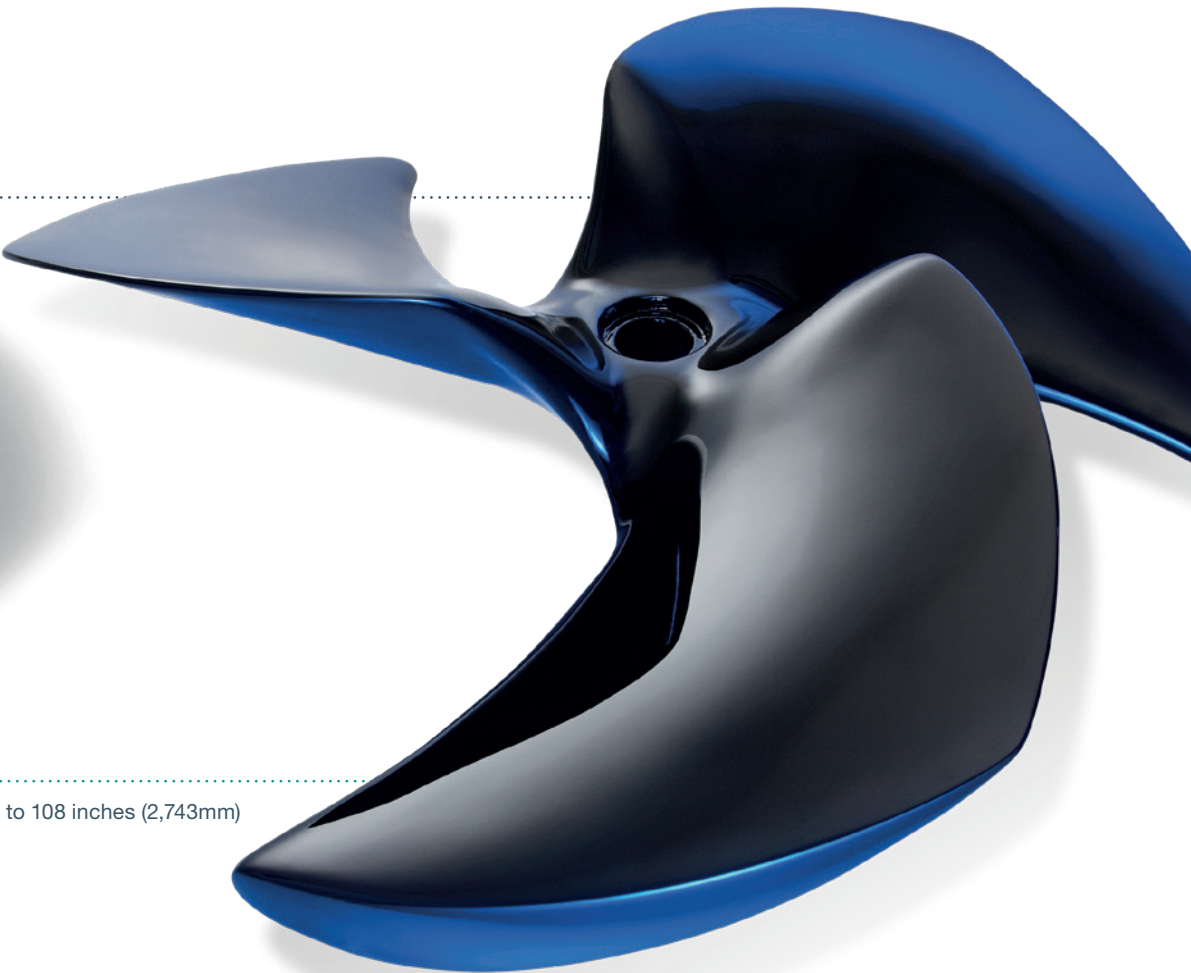
# FPX Series Fans



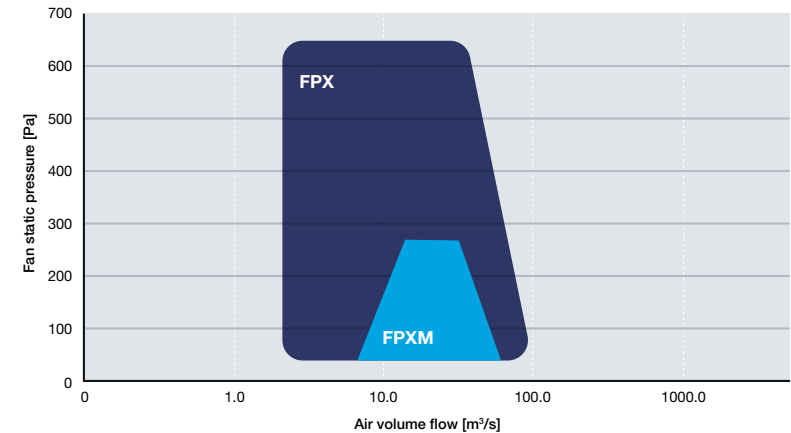
**FPXM fan**  
60 inches (1524mm) to 92 inches (2337mm)



**FPX fan**  
28 inches (710mm) to 108 inches (2,743mm)

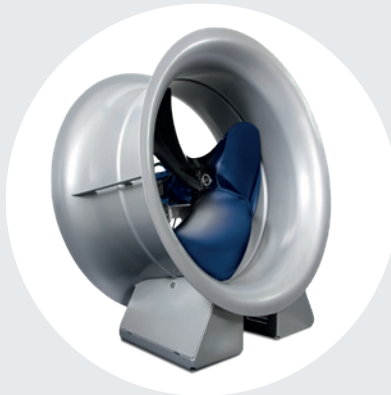


FPX Series chart



|                           | FPX   | FPXM  |
|---------------------------|---|---|
| Manufacture and materials | Fixed-pitch forward swept curved blades   |   |
|                           | Fixed-pitch blades manufactured as a single impeller unit                                     |   |
|                           | Full composite technology - fibreglass reinforced polyester                                   |   |
|                           | Steel or polyester fan housing with bell inlet  |   |
|                           | Stiff single piece body   |   |
| Sizing and duties         | No components sensitive to corrosion  |   |
|                           | Diameters from 28 inches (710mm) to 108 inches (2743mm)                                       | Diameters from 60 inches (1524mm) to 92 inches (2337mm)                                       |
|                           | Operating temperatures from -20°C to 65°C (-4°F to 149°F) as standard (extendable on request) | Operating temperatures from -20°C to 80°C (-4°F to 176°F) as standard (extendable on request) |
|                           | Noise savings up to standard fans +/- 15-20 dB(A)   |   |
| Drive                     | Available in Standard, Low Duty and High Duty - up to 100 m3/sec and 400 Pa for High Duty     |   |
|                           | Suitable for high power drives up to 55 kW  |   |
| Implementation            | Direct drives or belt drives  |   |
|                           | Suitable for either vertical or horizontal configurations                                     |   |
|                           | Suitable for dry and wet, induced and forced draft configurations                             |   |

## Options



### Available supply options



Impeller only



Impeller with casing



Impeller with casing and motor

### Additional options



**Leading edge protection** - special layer to protect against erosion in wet applications



**Low and high strength variations to the standard** to optimise performance relative to cost



# Howden Experience

The FPX Series was developed over 20 years ago and has built up a broad installation base of over 30,000 fan impellers.

## Sample projects

### Data Centre

A new centre was required to support the extension of cloud services. The server room required almost 22 MW of cooling capacity.

Energy efficiency was a key objective with a target of 27% reduction in overall energy consumption when compared to similar data centres. To achieve this a dry cooling plant was designed with free cooling to reduce the

refrigeration demand by almost 8,000 hours per year. In this state, the hybrid dry coolers dissipate more than 12 MW.

The FPX was able to support the high efficiency targets while also enabling environmental noise limits to be met due to its ultra-low noise performance. Howden supplied the fans, motors and fan casings.



### Gas Engine Power Plant

De-centralized power plants pay an important role in the world of power generation as changing energy demands and flexibility increase their use. The supplier of a plant based on gas fired reciprocating engine technology required fans for radiator cooling.

Noise emission was a key factor as the plant had to meet very stringent

country specific regulations; typically below 70 dB(A). FPX was selected as the fans enabled the plant to comply even without the use of sound attenuators. By removing the need for attenuators the energy consumption of the fans can be reduced by more than 25% while maintaining or even lowering the specified noise level.



### Construction Cranes

A major crane manufacturer required fans to provide essential cooling of the radiator of the internal combustion engine that powers the crane. Keeping the coolant at the optimal temperature is critical for operational performance and economy.

There were a number of criteria identified for the selection of the best fan. Efficiency of the system within a defined footprint was a major driver of fan choice as well as

keeping the noise to an acceptable level. As these machines have to operate in potentially harsh working conditions, the fans also need to be highly durable and shock resistant.

The FPX was able to meet all the key criteria combining the necessary flow, robust construction and ultra-low noise performance. As a result the FPX is integrated in multiple models for use across the customers' global construction base.



## Multiple applications

Our customers supply a global market with the fans integrated in their cooling equipment.

The FPX is mainly used in small standardised package Cooling Towers, Air Cooled Heat Exchangers and Radiators. The FPX is also able to be deployed in Hybrid Coolers, meaning that the FPX fan can satisfy cooling demands within heavy process industries and well as HVAC-R applications.





# Aftermarket services

Howden has a well-established global aftermarket network providing a permanent presence across every continent

With access to specialist engineers, we can bring quick resolutions to unexpected issues minimizing downtime and ensuring reliable long-term performance through expert operation and maintenance (O&M) services.

Our services in support of our cooling fans range from servicing and parts supply through to performance upgrades and retrofits. The more advanced services can maximise the life of the fans in each system as well as keep their operation aligned to the latest technical parameters.

## Services to maintain reliable operation

- Maintenance and inspections
- Vibration analysis, alignment and balancing
- Spare part supply
- Troubleshooting and commissioning
- Service agreements
- In-house fan blade refurbishments
- On-site FRP fan repair
- Fan Scan



## Services to improve performance



Aerodynamic/acoustic measurements, and performance tests



Upgrades and retrofit

## Services related to projects



Turnkey installation works



Supervision and turnkey project execution

Services are delivered either on-site or in our workshops depending on the nature of the service and customer requirement.

## Howden Uptime

Howden Uptime gives our customers another option in optimising the performance of our fans throughout their lifetime of operation.

Howden Uptime provides a unique and innovative platform for gathering, interpreting and analysing fan data on a real time basis.

The constant recording of operating parameters provides insight into the overall health status of the fans and prompts operational adjustments where beneficial to maximise performance.





## Howden, a Chart Industries Company

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