


# Cooling Fans

Liebherr-MCCtec Rostock GmbH, Germany



Efficient, low noise equipment cooling for a world-renowned crane brand

Image courtesy of Liebherr Group

Liebherr's cranes play an important role in the daily operations of their customers' business. Continuous reliable duty requires the selection of quality components. Integrating Howden's FPX fan ensures exceptional and durable performance while environmental noise is kept at the lowest level possible.

Liebherr MCCtec Rostock is part of the €12bn Liebherr group and focuses on the design and manufacture of ship cranes, mobile harbour cranes, and offshore cranes.

Liebherr equipment plays a key role in efficient cargo handling at both seaports and inland harbours as well as contributing to the successful implementation of offshore energy projects.

## Challenge

To maintain optimal operational performance, cranes require hydraulic oil systems kept within defined temperature ranges. The Liebherr cranes incorporate an integrated hydraulic oil cooler protecting against damage and failures caused by overheating and corrosion and thereby maximising reliability.

Engine efficiency is also a key concern. A crane's diesel engine requires the charge air to be cooled prior to the combustion chamber to achieve efficient operation.

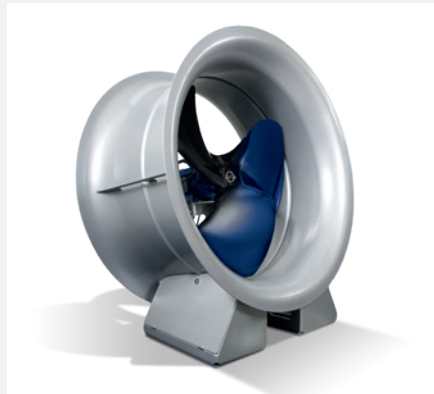
The cooling air for both these applications relies on fans to provide the required flow. When developing their system, Liebherr had to consider environmental concerns. This was driven by the move to higher standards for non-road diesel engine emissions.

The tier III and IV emissions standards pushed forward advanced engine designs to significantly lower levels of Nitrogen Oxide (NOx), Hydrocarbon emissions and particulate matter. Being vertically integrated, Liebherr's engine design team worked on system advancements including cooling mechanisms to address the associated heat output.

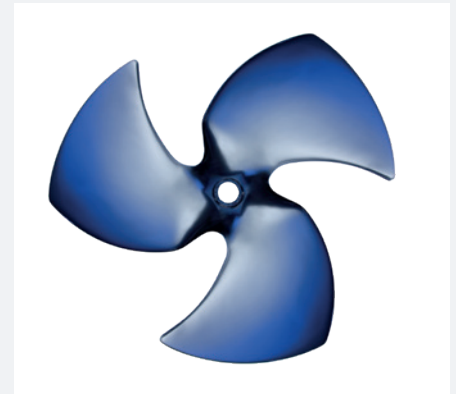
Added to the emissions-focused requirement, Liebherr sought to bring efficiency-based fuel savings to their customers and also ensure that acceptable levels of noise exposure were met to protect operators and the operating environment.



Fans are located in two cabinets on top of the crane motor compartment



The FPX is supplied with casing and connections to the hydraulic motor drive



The FPX is a single impeller unit

## The solution

As Liebherr's engineering team proceeded with their development, they needed to source fans primarily to provide sufficient flow; however, meeting the required noise levels was a clear challenge.

Howden was approached by Liebherr's technical team based on our expertise in designing industrial fans with a focus on low noise output. They needed to have a fan to assist with a test model of their newly developed system.

Howden has a wide portfolio of cooling fans developed in support of heavy and light industrial cooling applications. The FPX, in particular, is designed for light industrial applications such as HVAC-R and radiator or engine cooling. The FPX series uses fixed-pitch ultra-low noise blades. It is manufactured as a single-piece impeller unit, offering very easy assembly and minimal maintenance, combined with ultra-low noise design.

The FPX offered Liebherr the ability to get the best balance between cooling capacity, size and weight, and noise emission.

An FPX fan was provided for test purposes to Liebherr's facility in Austria and the results proved very convincing with Liebherr proceeding to integrate the FPX into their advanced system. The final solution involved a 60" (~1.5m) FPX 3 model fan with casing and connections to the hydraulic drive motor.

## The results

The FPX cooling fan was initially integrated into the Liebherr system design in support of the smallest mobile harbour crane model. Supply of fans started gradually in line with demand for this model. However, based on successful operation, Liebherr soon extended the FPX fan across multiple other mobile crane models with up to four units for each crane.

Over the last two decades, the FPX has been successfully operating in multiple crane systems enabling their effective and efficient use and contributing to a better operating environment.

Since introducing the design, Liebherr has purchased over 3000 FPX fans to support the successful growth of their mobile crane solutions worldwide.



For further information get in touch with our team today:

T: +31 74 255 6000 E: [cooling.fans@howden.com](mailto:cooling.fans@howden.com) | [www.howden.cloud/coolingfans](http://www.howden.cloud/coolingfans)

