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**MiCRANE**



Ideas For Crane

**intelligent Oil  
Lubrication (iOL)**





### Brief Introduction:

Lubrication is the most important task to ensure the port equipment's proper operation. According to the statistics, most mechanical failures of port equipment are related to improper lubrication. Although lubrication may seem simple, its work quality and lubrication effect is very difficult to supervise and control (even if the equipment is equipped with an automatic grease lubrication system), which still brings a lot of troubles to the management of port equipment. Such a problem has become especially outstanding now as the automated container terminal and remote-control equipment has become the trend. Besides, the shafting system using traditional grease lubrication is not fully sealed, so the leakage leads to a lot of cleaning work and environmental pollution, especially the irreparable pollution to the ocean.



## Equipment Touch Control

设备管理易如反掌

## Ideas For Crane



The MiCRANE iOL uses the circulating lubricating oil instead of the traditional grease for lubrication. The iOL aims to solve the upper mentioned contradiction and helps the ports to achieve automation, high efficiency, energy conservation and environment protection. This system has redefined the lubrication concept of port equipment. It uses advanced sealing circulation technology, manufacturing technology, IoT and big data analysis technology to bring a more reliable, efficient, environmentally friendly and economic brand-new philosophy for the lubrication system and, at the same time, a phenomenal experience to users.

### iOL philosophy:

The iOL adopts the design philosophy of no-grease, fully sealed, intelligent, management platform and permanent life time. The iOL system mainly consists of the frame, the cover, the oil cup, the piping, the power cables, the vibration sensor (optional), the oil level sensor and the intelligent control chip. Its mechanical parts are all made of stainless steel. With a high design strength, it is suitable for the operation condition of the heavy industry. It has a compact structure and clean layout and occupies a small space.

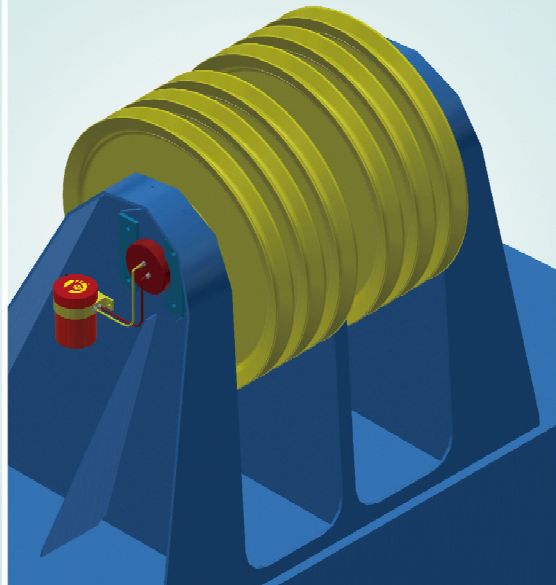
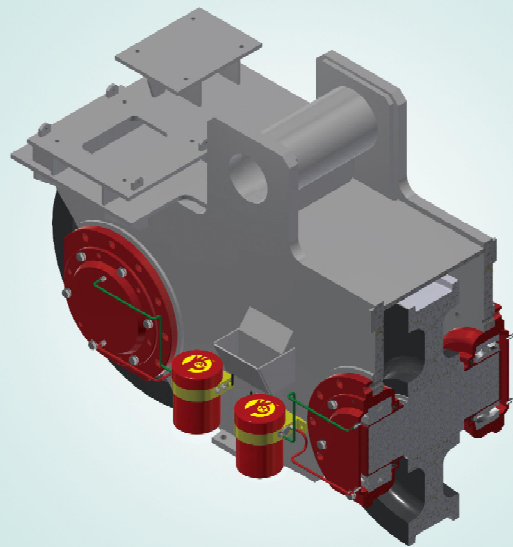
The installation of the system on-site is also very easy and reliable. Only 2 fixing bolts, 1 power cable with a plug-and-play socket, 2 pipes with quick connection couplers and 1 optional bearing vibration monitor with a plug-and-play socket have to be mounted.



Height: 195mm  
OD: 140mm



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### Application in wheel :

The lubrication piping is installed on the end cover of the wheel system. The oil seal shall be the dust-proof skeleton oil seal (NOK or other equivalent brands). The surface finish of the shaft shall be Ra0.6 or above, and its hardness 55HRC or above with a minimum depth of 0.5mm. The iOL unit is preferably installed below the inlet (red piping) of the end cover. It shall be installed a maximum of 150mm above the inlet of the end cover if the space is limited. The standard piping length of the iOL is 500mm, so a suitable position shall be chosen for its installation.

### Application in sheave :

The piping system of the lubricating oil shall be connected to the end of the shaft of the sheave system. The lubricating oil circulates via the passage inside the shaft. The oil seal shall be installed on the end cover of the sheave. The other technical requirements are the same as those for the wheel.

### Prevention against leakage, failure :

What the users worry about the most are oil leakage and system failure. The iOL prevents the problems with its five-fold protections: ① the seals are of high quality and shafting parts are of high precision machining, ② the design concept of permanent life is used, using such materials as SS316 and ceramic gears, ③ the precise oil feeding control can keep the lubricating oil level below the sealing ring, ④ the lubricating oil stored in the bearing box can ensure the long operation of the bearing in case of a system failure, and the system can be repaired after the bearing stops operation, and ⑤ the structure is designed suitable for both oil and grease, which enables the temporary grease lubrication for continuous operation in case of emergency.

### iOL features :



iOL has an intelligent starting system triggered by vibration detection, which will make sure simultaneous operation of the iOL and the crane.



The iOL has intelligent self adjustable operation circulation, to ensure reasonable scheduling of intervals.

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The optimal flow rate control logic ensures the optimal lubricating oil level for the bearing rollers.



A high-quality brushless motor, a pump casing completely made of stainless steel and a ceramic pump core, are supporting the permanent life design.



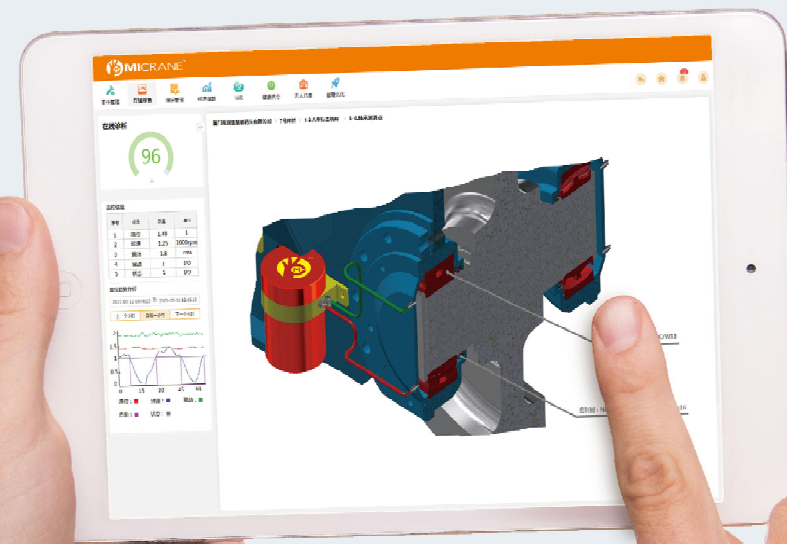
Monitoring of lubrication power system for timely detection of any power failure.



The oil level/leakage of the oil cup monitoring function.

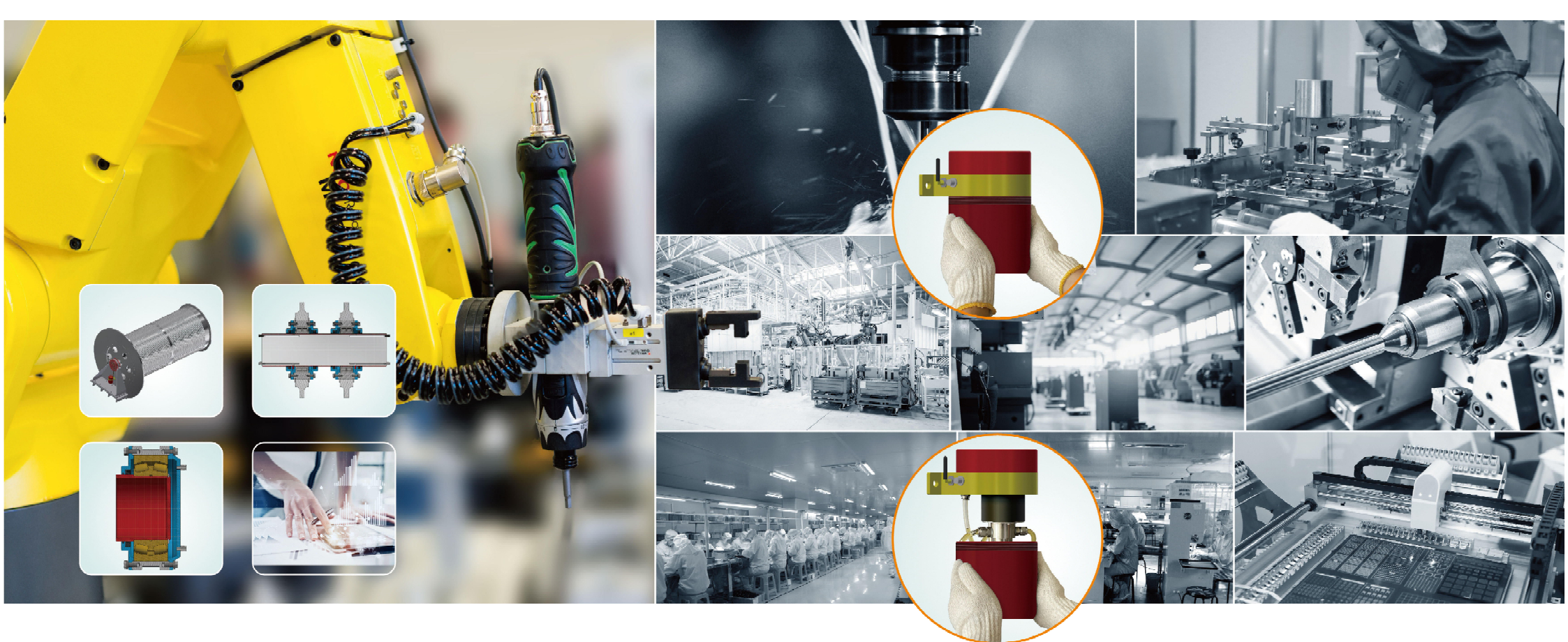
### iOL management system:

A lubrication management system MICRANE (for mobile devices and PCs) is provided for the iOL. MICRANE can monitor the operation of every lubrication point in real-time via the 4/5G IoT, and based on big data analysis sends alarms for any upcoming/existing failures. Thus the bearing lubrication condition is fully in control.



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### High quality machining parts:

The automatic lubrication system has high requirements for the dimension accuracy, surface finish, cleanliness and surface hardness of the shafting parts. Thanks to the fast development of the domestic basic industries in recent years, these requirements can be fully met with little additional cost. The cooperating shafting parts suppliers for MICRANE iOL are working with high-precision production equipment, in clean workshops and strict quality control systems. The MICRANE iOL can provide the customers with a complete system including the iOL and the corresponding shafting parts, which not only eliminates the trouble caused by the traditional lubrication but also greatly enhance the reliability of the equipment lubrication system.

### Change of oil:

The lubricating oil of the iOL is stored in a special designed container like an oil cup. The oil cup is connected to the frame with threads, so the replacement of lubricating oil is very easy. Just replace the oil cup containing old lubricating oil which has expired with the oil cup full of new lubricating oil. The replacement on site is easy and fast, and all the old lubricating oil in the cup can be recycled. Therefore, the process is easier, cleaner, and more environmentally friendly.

