

Easylube® Total Patrol Management System (TPMS)

Before entering industry 4.0 intelligent management, the lubrication standard may be inconsistent from the manufacturing plants, the engineering company that sells machinery, the bearing supplier, or grease suppliers. Each is in its own position to elaborate on different maintenance concepts. Even if under the same operating conditions, maintenance engineers in the factory still have different methods and results of operating, due to personal knowledge, experience and arguments.

Based on a large number of unsettled factors, each factory began to develop a **Standard Operating Procedure (SOP)** or implement the **quality management of International Standards Organization (ISO 9000)** in order to achieve a certain quality target of lubrication management, and achieve a quality assurance certification and management system of the factory. However, this is still be controlled by humans.

Al (Artificial Intelligence) has been developing rapidly in recent years. The intelligent management of Industry 4.0 has begun to change people's thoughts and operation modes. It has become much easier in terms of application, operation requirements and management. No matter how experienced or inexperienced people are, anyone can still follow the procedures of industry 4.0 and get the job done right away. Once the unstable factors are eliminated, the procedure and results of one's experience can be under the same working conditions, and the same work target can be completed effectively and reliably.

Easylube® RFID Total Patrol Management System (TPMS) can help you to simplify your lubrication maintenance. With the help of AI software, you can monitor the state of each lubrication point and monitor the patrol mission progress of each technician easily. In addition, TPMS provides graphical user interface to intelligently guide a technician to perform patrol missions step by step. Even if the mission is assigned to inexperienced technicians, they can still perform the lubrication maintenance. Moreover, the routine inspection can be carried out easily and correctly. At the same time, the lubrication status of each bearing can be monitored remotely, and it can be seen whether or not patrol missions have been completed. Thus, the goal of preventive maintenance is implemented.

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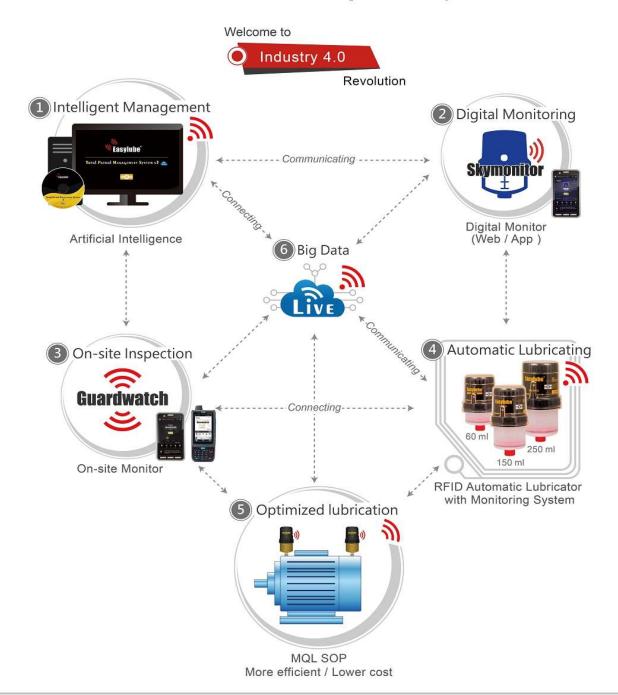
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Easylube® RFID Total Patrol Management System (TPMS) consists of three components:

1. Lubrication Standard Operating Procedure (SOP):

How to lubricate a bearing properly? The first thing to do is to calculate the bearing's **greasing volume**, **re-greasing interval** and **proper lubricant** based on the bearing's model, operating speed (rpm) and operating environment, which are required by the SOP. (You can also compare this data with the lubrication instructions on the original maintenance manual or the nameplate on the mechanical equipment)

Based on professional lubrication science formula and with 20 years of expertise in bearing lubrication and maintenance, the Easylube® R&D team has used AI and industry-leading innovation to develop professional computing software (MQL calculation), for "general bearings" and "electric-motor bearings" lubrication operating specifications. This calculation program has been added free of charge to Easylube® Total Patrol Management System (TPMS), Easylube® Guardwatch, Easylube® Skymonitor. Even inexperienced technicians can easily use AI as their guidance and enjoy the modern technology of Industry 4.0 intelligent management.

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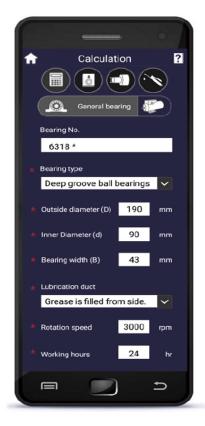


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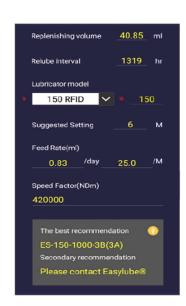
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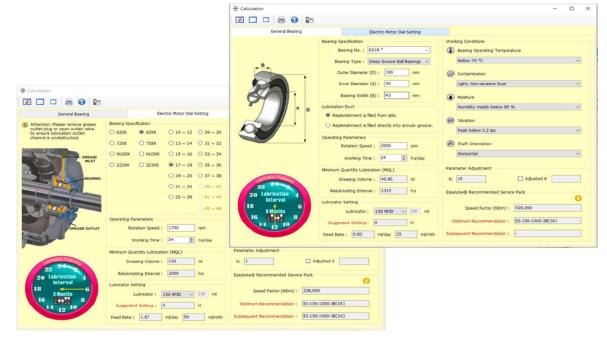
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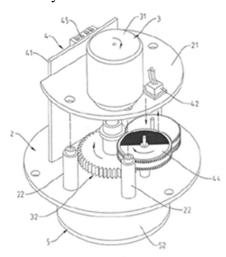
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2. Optimize lubrication method (Lubrication Maintenance):

▼ Easylube[®] Patent Construction



Using grease guns, air pressure tools or electronic tools to fulfill the lubrication standard for each bearing are very common maintenance practices. However, it is difficult for people without professional training to control the amount of grease and greasing pressure when greasing bearings, and it is far more difficult to judge whether the grease is smoothly injected into the bearing or not.

Especially in harsh working conditions, punishing operating environments and areas of serious dust pollution. Considering the safety of the workforce, it is usually only possible to carry out regreasing during a factory's downtime, which cannot meet each bearing's lubrication requirements. Therefore, the problem of mechanical failure or equipment shutdown are completely common and unpredictable.

Easylube[®] intelligent management automatic lubricator is a patented product based on these key concepts. Its function is to ensure that the regreasing of a bearing can be automatically completed through a gear transmission mechanism following the lubrication Standard Operating Procedure (SOP) of the bearings.

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At the same time it also has an intelligent detection system, utilizing an infrared pulse wave program, to monitor "greasing pressure" and "blocked pipeline warning". When your device is installed, the automatic lubricator can help you prevent abnormalities constantly, and can actually perform the bearing regreasing while the machinery is still working.

Easylube® intelligent management automatic lubricator

Easylube® RFID automatic lubricator is equipped with an RFID (NFC) wireless sensor tag. During the inspection, the technician only needs to bring the NFC reader-equipped mobile phone or personal digital assistant (PDA) to the wireless sensor tag on the automatic lubricator to view the current status of the lubricator and to perform the routine inspection. The system helps prevent inspections being missed, time wasting on paper reading and many possible human errors are avoided. Thus, the goal of preventive maintenance is implemented.



3. Monitoring management software (Monitoring Program):

Even if the automatic lubricators are installed with the bearings, not having monitoring software cannot fulfill the requirements of reliability with regards to lubrication.

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Easylube® 's users can enjoy the technical support of remote monitoring, which includes Easylube® Total Patrol Management System (TPMS), Easylube® patrol software (Guardwatch), Easylube® monitoring management (Skymonitor). Even inexperienced technicians can easily use AI to guide them and enjoy the incorporation of Industry 4.0 into their working lives. Easylube® software can help you to set up the lubrication SOP, simplify operating management, build maintenance record reports, eliminate possible maintenance problems in the factory, and simultaneously reduce the cost and risk of labors.













▲ Patrol Inspection Points

▲ Greasing Situation

▲ Replacements
Changing Time

▲ Error Report

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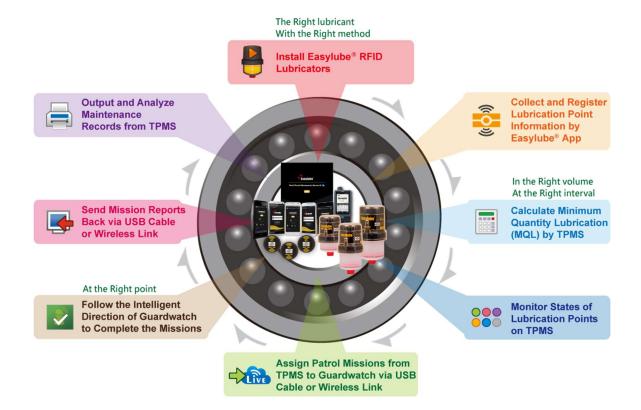
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Operation Process Flow Chart:



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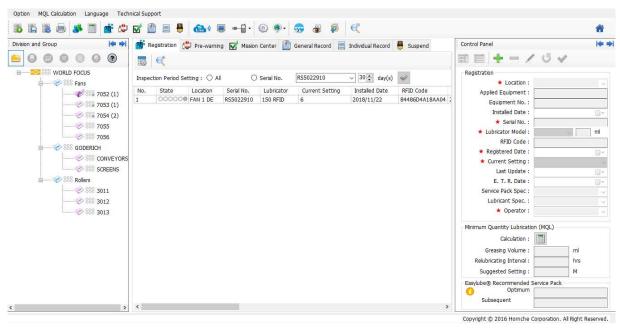
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System Requirements:

TPMS		
Operation System	Windows 7, 8, 10	
CPU	1G Hz (or above)	
RAM	2G Bytes (or above)	
Hard Disk Space	2G Bytes (or above)	

Skymonitor Website		
Best browsing environment	Firefox 3.6、Google Chrome 5.0 (or above) and support JavaScript	
Screen resolution	1024 x 768 (or above)	
Website	Skymonitor for web	

Skymonitor for Smartphone		
Operation System	Android 4.0 (or above)	
Resolution	1920 x 1080 1280 x 720 960 x 540	
Download Link	Skymonitor for Android Smartphone	

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Guardwatch for Smartphone		
Operation System	Android 4.0 (or above)	
Resolution	1920 x 1080 1280 x 720 960 x 540	
Other Module	NFC Support	
Download Link	Guardwatch for Android Smartphone	

Guardwatch for Rugged PDA		
Operation System	Windows Mobile 6	
Resolution	320 x 240 640 x 480 800 x 480	
Supported PDA	Unitech PA692, PA690, PA600	
Unitech Model Supporting Languages	English、繁體中文、簡體中文、日本語、 한국어 Español、Français、Deutsch、Italiano	

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