



Kixx Hydro HX

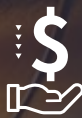
The Perfect Fit for Your Machinery

Kixx
All Ways with You

Kixx Hydro HX

Hydraulic fluids circulate within hydraulic systems and serve a variety of functions and roles, including energy and heat transfer mediums, lubricants and sealants. Hydraulic fluids are used in a wide range of industries – including manufacturing, construction, mining and forestry – and have a significant impact on the operational reliability and durability of hydraulic systems, so choosing the right product is crucial. Kixx Hydro HX, powered by Kixx's innovative technology, is designed to be highly versatile and to meet the numerous requirements of equipment managers.

BENEFIT from Kixx Hydro HX



Reducing
Maintenance Costs



Improving
Durability



Improving
Operational Reliability

FIELD TEST

Verifying strong performance through injection molding machine application tests

During tests, Kixx applied Kixx Hydro HX to an injection molding machine used in the manufacture of plastic injection molded parts. Changes in the physical properties and performance of the lubricant were then observed carefully for roughly 550 days. Kixx Hydro HX's physical properties remained very stable for the duration of the test period.

Field Tested Equipment

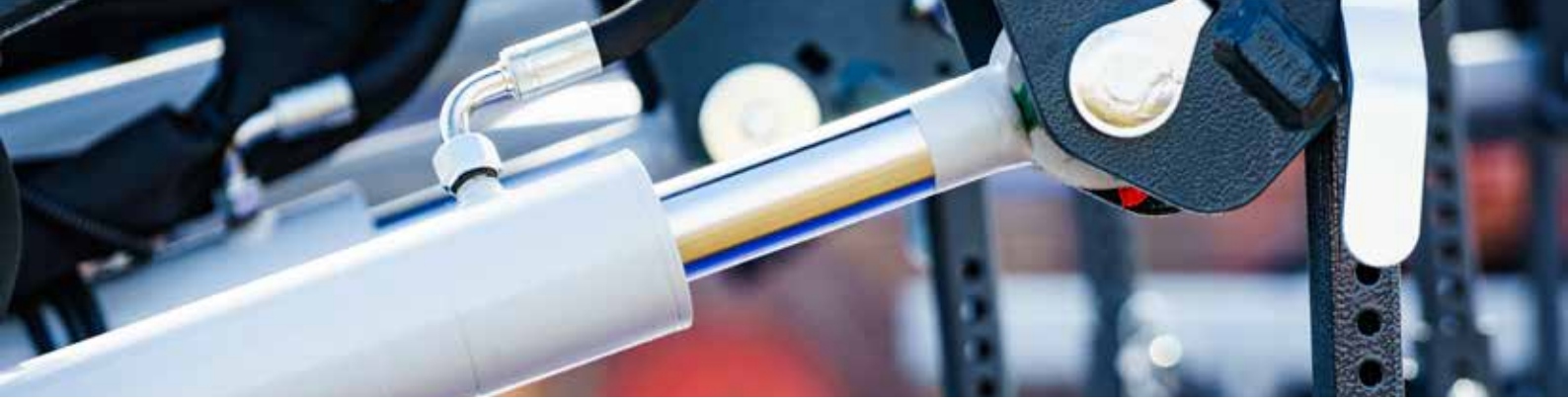


• Equipment information

Two injection molding machines of LS Mtron Ltd. (Clamping Force 250 ton and 350 ton)

• Test Method

Kixx Hydro HX was applied to two injection molding machines used in the manufacture of plastic injection molded parts (HVAC control panels for passenger cars). Changes in kinematic viscosity, thermal stability, oxidation stability and more were all closely observed for roughly 550 days.



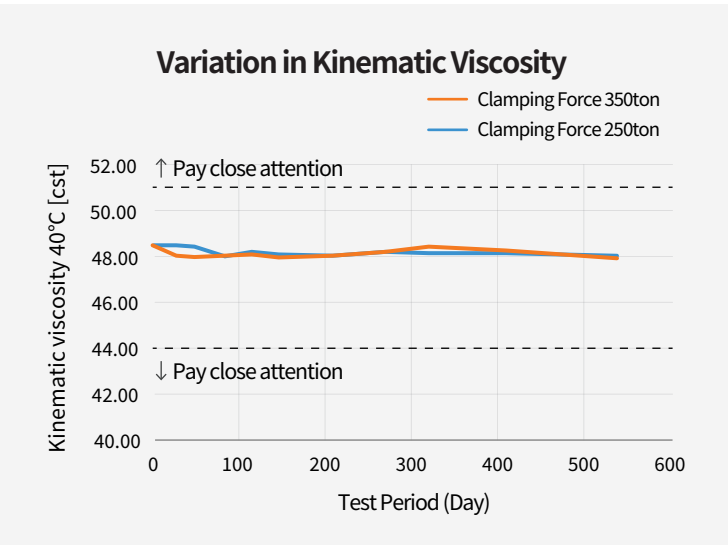
Kixx Hydro HX Field Test

Reducing Maintenance Costs

Functioning in a range of work sites, hydraulic fluids get oxidized by air exposure, long-term use in high-temperature conditions and the presence of impurities. Issues like these can cause problems, like performance degradation and the shortening of the life of equipment. Through excellent oxidation stability, Kixx Hydro HX can be used for a long time while maintaining its physical properties. This helps cut back on the costs of maintenance and the purchasing of new lubricants, as well as reducing equipment downtime.

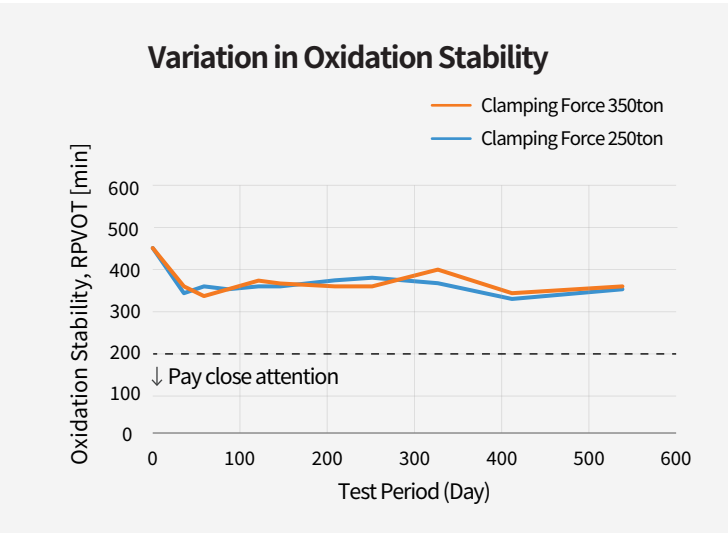
Suppressing Changes in Kinematic Viscosity

Kinematic viscosity is a measure of internal resistance to flow. When change in the molecular structure of base oils or additives occurs due to oxidation, kinematic viscosity generally increases. This disrupts the stable operation of equipment, so it is important to minimize changes in kinematic viscosity over long periods of time. Thanks to its excellent oxidation stability, Kixx Hydro HX maintained a similar level of kinematic viscosity to brand new lubricant in field tests, even after roughly 550 days.



Excellent Oxidation Stability

Roughly 550 days after the start of field tests, Kixx Hydro HX showed excellent oxidation stability and remained consistently clear of all “Pay close attention” thresholds.



* RPVOT: Rotating Pressure Vessel Oxidation Test



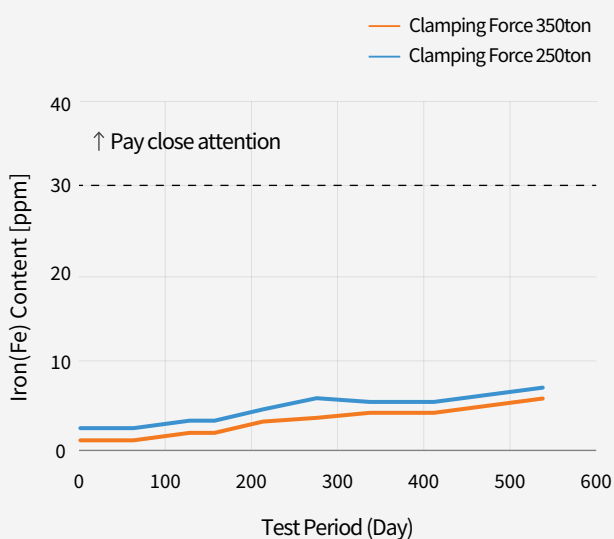
Improving Durability

Improving the durability of machinery by suppressing the wear of hydraulic parts is critical in preserving equipment value and minimizing downtime. Kixx Hydro HX's strong wear prevention performance improves the durability of hydraulic components and offers strong protection to equipment.

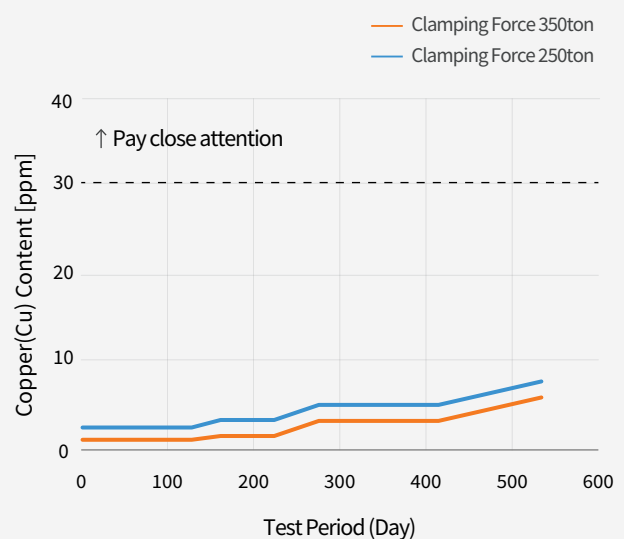
Superior Wear Prevention Performance

Roughly 550 days after the commencement of field tests, results showed that detected amounts of iron and copper due to the wear of hydraulic components were less than 10 ppm – a very low level. These results verified that Kixx Hydro HX contributes to improved equipment durability and powerful wear prevention performance.

Variation in Iron(Fe) Content



Variation in Copper(Cu) Content





Improving Operational Reliability

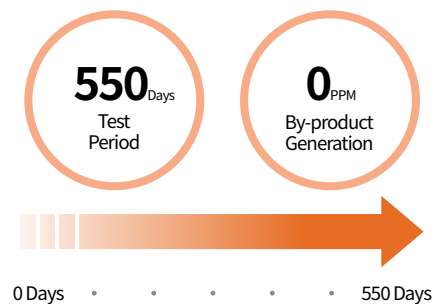
When hydraulic fluids are exposed to high-temperature operating environments for a long time, base oils and additive molecules may decompose or become radicals¹⁾. This generates by-products that are not dissolved in the base oils and accumulate on the surface of hydraulic components, clogging orifices²⁾, causing components to stick, risking malfunction and degrading operation. Kixx Hydro HX contributes to the reliable operation of equipment by suppressing the generation of by-products thanks to excellent thermal stability.

- 1) Due to the existence of radicals, the creation of by-products is generally promoted. In most cases, by-products are insoluble, and cause various problems in hydraulic devices.
- 2) In hydraulic devices, most orifices are used for operation control. When some orifices are clogged, stable operation and precise control become impossible.

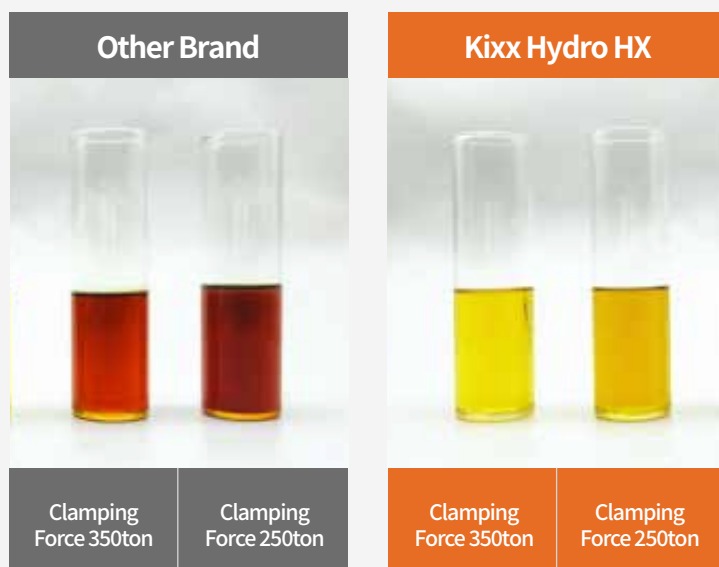
Outstanding Thermal Stability

When hydraulic fluids are exposed to high-temperature and high-oxidation environments for a long time, by-products are generated and performance is reduced. These by-products can be detected by dissolution tests of insolubles using pentane and toluene.

These dissolution tests confirmed that Kixx Hydro HX – used for 550 days after the start of the field test – did not produce any by-products. Kixx Hydro HX contributes to maintaining the reliability of the long-term operation of equipment with outstanding thermal stability.



Change in Color of Hydraulic Fluids



When the thermal stability of hydraulic fluid is low, the color of the hydraulic oil can change to dark brown within a short period of time.

Since Kixx Hydro HX has excellent thermal stability, there was very little change in color compared to competitor products.

*Use images 210 days after test start date



Kixx: The Most Trusted Lubricants Brand in Korea

Recognized by First Brand Awards as Korea's No.1 lubricants brand, Kixx's lubricant products are trusted by consumers and partners all over the world. Leading the Korean lubricants market and backed by 50 years of extensive research and innovation, Kixx is recognized for its superior products made with premium base oils produced through GS Caltex's cutting-edge development methods.



Application

- Industrial hydraulic equipments (especially, specified to use hydraulic fluid whose flash temperature exceeds 250 degree of Celsius) Plastic injection molding machines
- Marine deck equipment, steering gears, bow thrusters and automatic controls
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or anti-wear oil is required

Performance Standard

- ISO 11158 HM
- ASTM D6158
- DIN 51524 Part 2 HLP
- GB 11118.1-2011, L-HM
- SAE MS 1004 HM
- Bosch Rexroth Spec. RDE 90235
- Eaton M-2950-S / Vickers I-286-S3
- Parker Denison TP30560 HF-0, HF-1, HF-2
- Fives Cincinnati Machine P-70
- GM Hydraulic Anti-Wear LH-04
- JCMAS P041 HK Normal Temperature Use
- AIST 126, 127
- David Brown Industrial Gears 0A, 1A, 2A, 3A, 4A, 5A

Key Properties

ISO VG	46
Density(kg/L @15°C)	0.853
Flash Point(°C)	254
Pour Point(°C)	-36
Kinematic Viscosity(mm ² /s) @40°C	48.30
Kinematic Viscosity(mm ² /s) @100°C	7.634
Viscosity Index	124
Rust Preventing Characteristics(D665)	PASS
Cooper Plate Corrosion (3hrs@100°C)	1a