

Oil Status Sensor (Hydraulic Oil Hue Judgment Function)

Maintenance Function Option for Hybrid Hydraulic Equipment

Shown fitted on ECORICH-R

Prevents Hydraulic Equipment Trouble due to Hydraulic Oil Deterioration

- The sensor installed on the tank and Daikin's unique color determination algorithm **judge deterioration of hydraulic oil that may cause trouble with hydraulic equipment, based on color.** This means that the hydraulic oil can be changed before the hydraulic equipment stops.

Quantifies the Deterioration of Hydraulic Oil

- By quantifying its degree of deterioration using a sensor, **hydraulic oil can be managed unaffected by factors such as the operator's level of expertise in making determinations by eye.**

Reduces Management Man-hours

- Centralized management for a machine or the entire factory is possible by using the communication function of Daikin hybrid hydraulic equipment.**



Oil status sensor

Color							
ASTM value	1	2	3	4	5	6	7

Color standard for hydraulic oil [ASTM D1500]

Equipment Trouble due to Hydraulic Oil Deterioration

- Age-related deterioration of hydraulic oil** Oxidation of base oil, consumption and degeneration of additives
 - Corrosion and abrasion of pump/valve metal parts due to oxidation products
- Contamination of the hydraulic oil** Inclusion of solid foreign matter (abrasive particles, water, other oil)
 - Damage to the sliding parts of pumps and valves or clogging of filters due to metal abrasive particles
- Generation of sludge due to the above**
 - Clogging/damage to the hydraulic parts such as pumps and valves

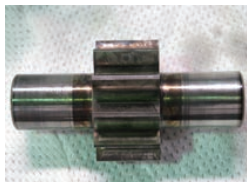
Decreased energy saving performance
(increased internal leakage)

- Valve spool wear


Unit stoppage, pressure rise faults, decreased energy saving performance
(increased internal leakage)

Example on
ECORICH

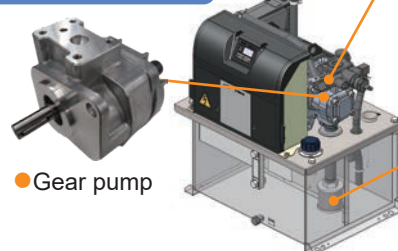
- Gear wear



- Side plate erosion



- Sludge clogging



- Gear pump

Unit stoppage

- Suction filter clogging



What this Function Detects

Hue of hydraulic oil

The color of the hydraulic oil is digitized as a value from 1.0 to 7.0 in accordance with the ASTM D1500 standard.
* Values at the first decimal place are Daikin's own supplementary reference values.

When additional optional functions are featured

- Water inclusion** Water inclusion from water-soluble cutting fluid or the water cooler is detected.
- Low tank oil level** The lower limit for the oil level is detected.

* This function prevents damage to the pumps and valves due to hydraulic oil deterioration. It is not possible to quantitatively detect abrasive particles that are generated due to inclusion of solids from external sources or abnormal abrasion of sliding parts, etc.

* The applicable hydraulic oil is mineral-based hydraulic oil. The function cannot be used with water-glycol hydraulic fluid or hydraulic oils that use coloring agents, etc.

Daily Inspections

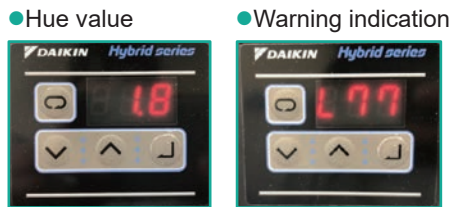
The current hue value is displayed on the ECORICH-R control panel.

When the hue value exceeds the threshold value, the operator can be notified that the hydraulic oil should be changed by the following means.

▶ Warning indication

▶ Digital output by contact signals

* The threshold value can be set to any required value by the customer.



Machining center

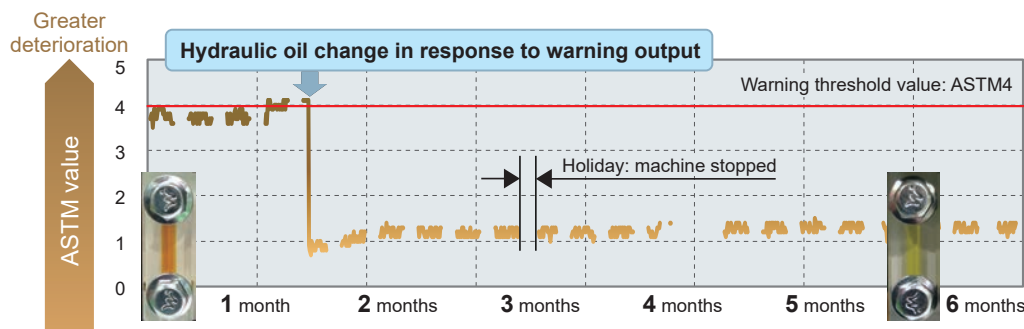


Status Monitoring

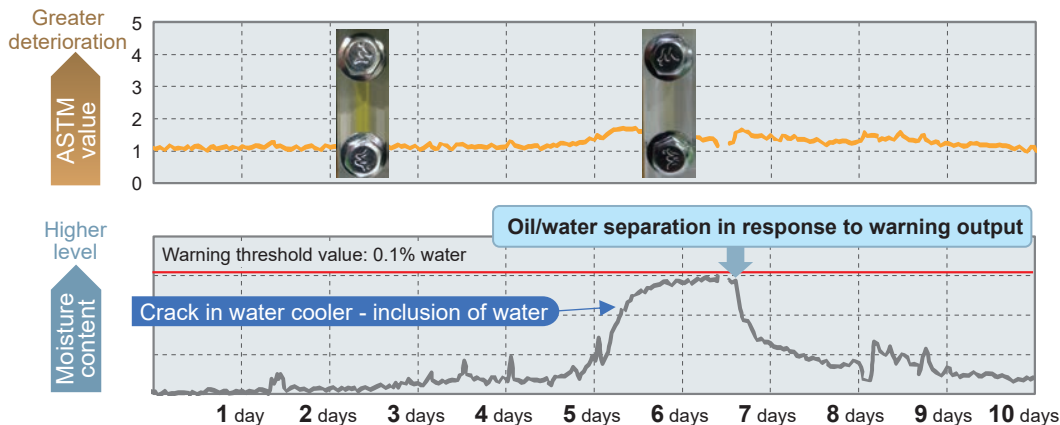
Equipping the optional communication function enables scheduled maintenance for hydraulic oil changes through constant monitoring of the hue value by connection to a PLC or other device.



1 Example of Hue Detection



2 Example of Hue Detection and Moisture Detection (Additional Option)



Normal Water inclusion



This function can also detect water inclusion that is difficult to judge visually.

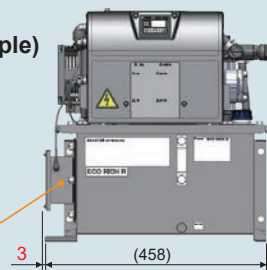
Models that Feature this Function

This function is optional for ECORICH-R models. Please consult us if you wish to use it on SUPER UNIT, ECORICH, or other models.

EHU30R0702-40-M (typical example)

Function option in the model code
M: Oil status sensor

Oil status sensor



Unit width increases by 3 mm. No additional wiring is required due to installation of this function.

If you have any questions about the product or if you would like to install this function in the SUPER UNIT or ECORICH, please contact the following sales bases.

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