



vee vue

Predictive maintenance software
for fleet operators and transport
companies



Let's talk maintenance!

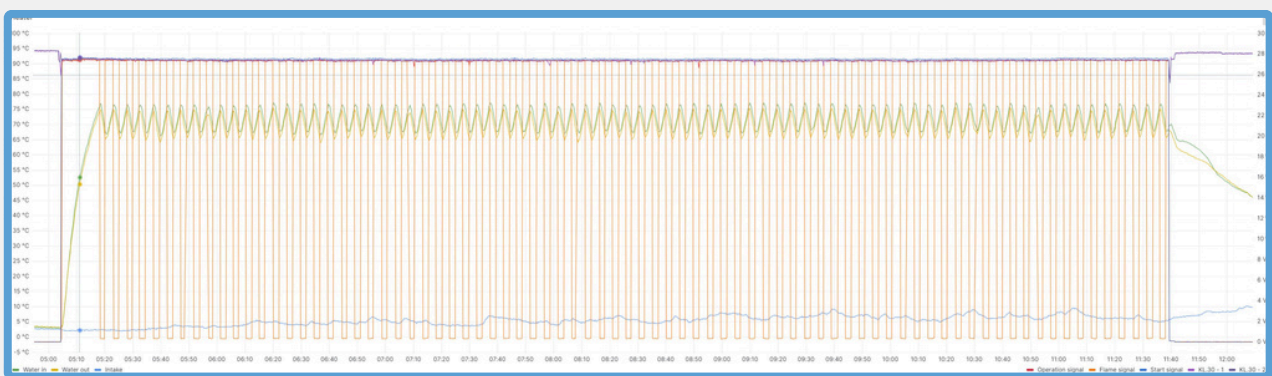
System description

- Stand alone system with independent sensors and separate IoT unit
- Retrofittable for all bus and train brands - compatible with all models of Valeo diesel heaters for busses and trains
- Direct data transmission - online readings of temperatures, current consumption of components, startsignals and finally readings of failure codes from the heater
- Monitoring the heater 24/7
- Alarms are generated automatically in case of a malfunctioning heater and the alarms are send directly to the customer
- Over the air updates of NEQ veevue functionality – no need to access the vehicle



Data collection

- Collecting data from the heater using our own Electronic Control Unit (ECU)
- Independant temperature sensors and clamps for measuring power consumption on components
- The use of independant ECU and sensors makes the NEQ veevue system flexible and easy to access with no dependency on OEM canbus data



#1 Graph from a Valeo heater on an electrical bus in Sweden. The graph is showing start signal, flame signal, temperature of the water which goes in and out of the heater and the intake temperature of the heater

Operator advantages.

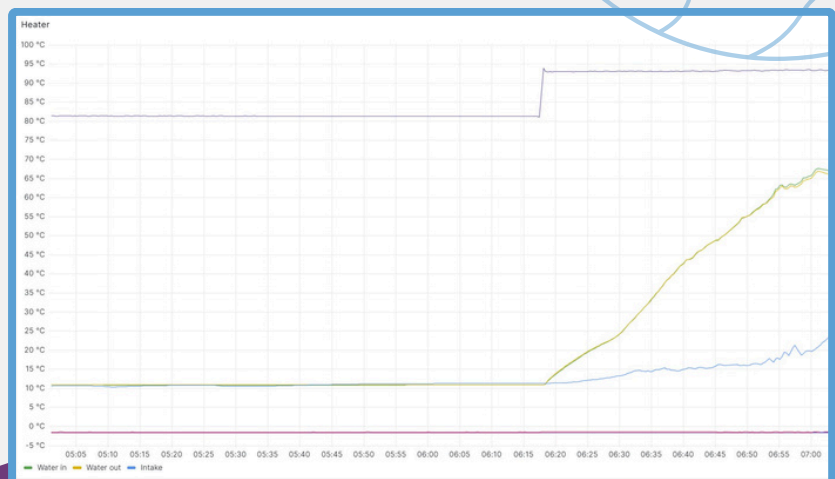
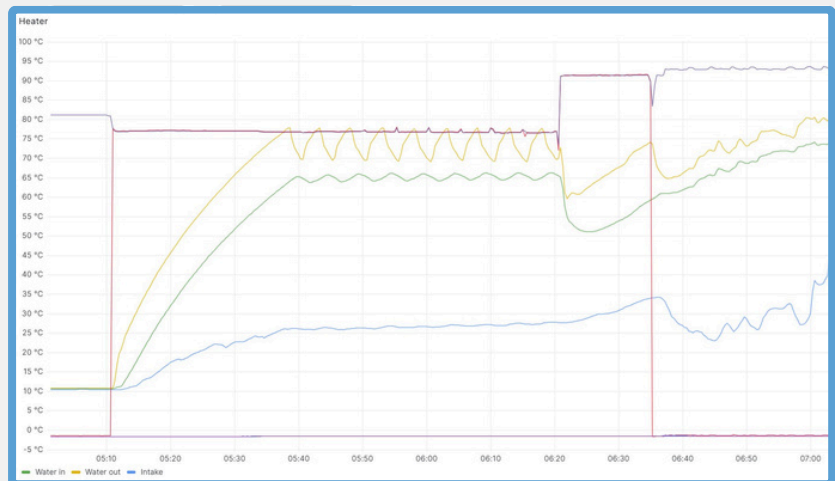
- Only one monitoring system for all types of diesel heaters of the fleet
- Direct monitoring of individual components possible
- Stand alone system without interaction with the control system of the bus
- Optimization of workshop processes through better advanced planning
- Reducing maintenance cost thanks to early fault warnings
- Monitoring difference in behaviour of drivers. This makes it possible to adjust unintentionally use of the system

#2 Graph from Valeo heaters on two electrical buses in Sweden. The difference in the heater activity is due to driver behavior.

The driver of bus no. 2 is starting up the heater 1 hour and 15 minutes before starting up the bus while the driver of bus no. 1 never starts up the heater before leaving the depot.

This difference in behaviour are costing the operator 1.000,- Euro per year on bus no. 2, since it is only nessecary to run the heater for 15 minutes before take off

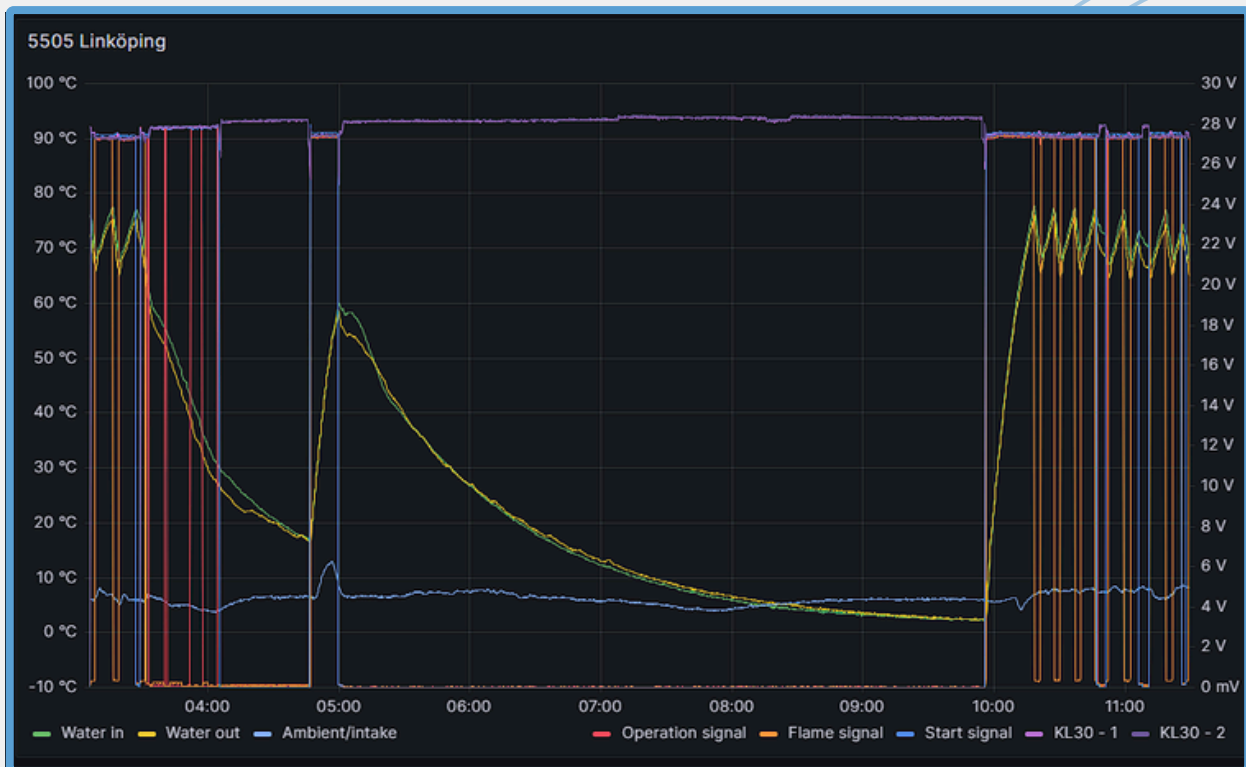
By using NEQ veevue it is now possible to detect this behaviour and take action accordingly.



*Headline of the cockpit of the NEQ veevue system including GPS tracking of the bus.

Service Partner Advantages

- Online readings of failure codes from the heater
- Optimization of the service business
- Basis for the development of predictive maintenance
- One system for all busses – possible to retrofit
- Add on services such as alarms and ESG data
- Easy to mount or replace components of the NEQ veevue system



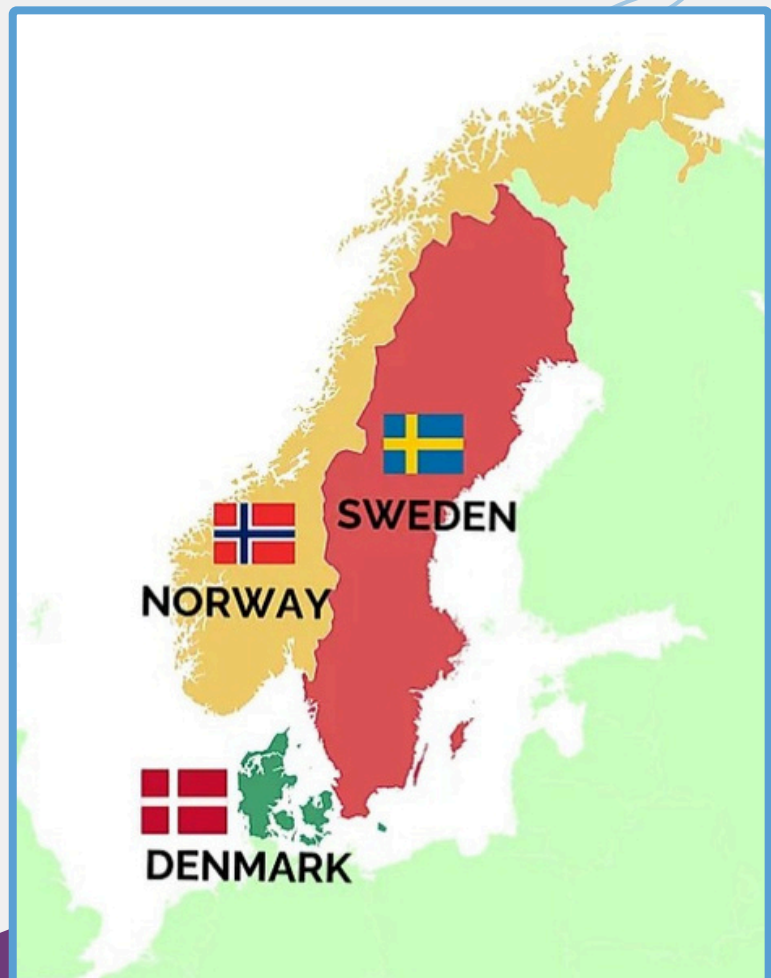
*Online readings of failure codes (red line) from a heater in Sweden. At 3.30 the heater stops working due to lack of fuel for the heater.

Credentials

- Initial development project started in 2019 with the assistance of Force Technology
- Test project with customers in Scandinavia on diesel busses, electric busses and on trains
- Currently the NEQ veevue monitoring system is a major part of an EUDP funded project, examining the impact of a malfunctioning HVAC system on the overall power consumption on electric busses
- First commercial order for over 150 city busses is being installed in the Copenhagen area since March 2024

Test sites for vee vue:

- Copenhagen
- Oslo (busses and trains)
- Hagesund (Norway)
- Jönköping (Sweden)
- Trelleborg (Sweden)
- Bodø (Norway)
- Bergen (Norway)
- Haderslev (Denmark)
- Tylstrup (Denmark)
- Venice (Italy)
- Thessaloniki (Greece)
- Dubai (UAE)



Getting started

- Subscription fee each year per unit
- Sales and handling support through our premium partner network in Europe
- No additional fee for firmware and software updates
- Three levels of system information:
 - Alarm level including 24/7 monitoring of HVAC systems incl. online alarms
 - Alarm +. All the above + a physical service of the heater each year
 - ESG level incl. data for ESG reporting on power consumption, CO2 equivalents due to leakages etc.
- Free online support



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vee vue packages

Description	veevue alarm	veevue alarm+	veevue ESG+
Visual inspection	✗	✓	✓
Read diagnostic printout	✗	✓	✓
Inspection			
Combustion chamber, heat exchanger, exhaust, flame sensor	✗	✓	✓
Cleaning			
Flame sensor tube, flame sensor, heat exchanger, combustion chamber, air intake	✗	✓	✓
Replacement			
Fuel filter, coupling, nozzle, fuel pump gasket, igniter, fuel sieve	✗	✓	✓
CO2 adjustment	✗	✓	✓
Digital documentation 2 times a year	✓	✓	✓
Function test	✗	✓	✓

vee vue packages

Description	veevue alarm	veevue alarm+	veevue ESG+
24/7 online overvågning			
Online readings of failure codes	✓	✓	✓
Flame signal, start signal, ambient temp., inlet water temp., outlet water temp., power consumption	✓	✓	✓
Automatic alarm generator	✓	✓	✓
Alarm notification via e-mail or text messages	✓	✓	✓
Fuel consumption	✗	✗	✓
Data for CO2 emissions	✗	✗	✓
Recomandation for reduction of environmental impact	✗	✗	✓