VOLVO CONSTRUCTION EQUIPMENT

MATRIS REPORT

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

Company name	Dealer	Report Issuer
ALTA EQUIPMENT COMPANY		
Contact name	**Technician**	**Primary Application**
	ANTHONY MESSINA	Earth moving construction
Site	**Workorder**	**Ground Condition**

MATRIS Reading, Summary / Recommendation

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Main equipment	Type	Equipment
	Tyre size/class	Sold without tyres
	Body extensions	Not mounted
	Tail-gate	Not mounted
	Extra spillguard	Not mounted
	Wear plates	Not mounted
	Pattern	None

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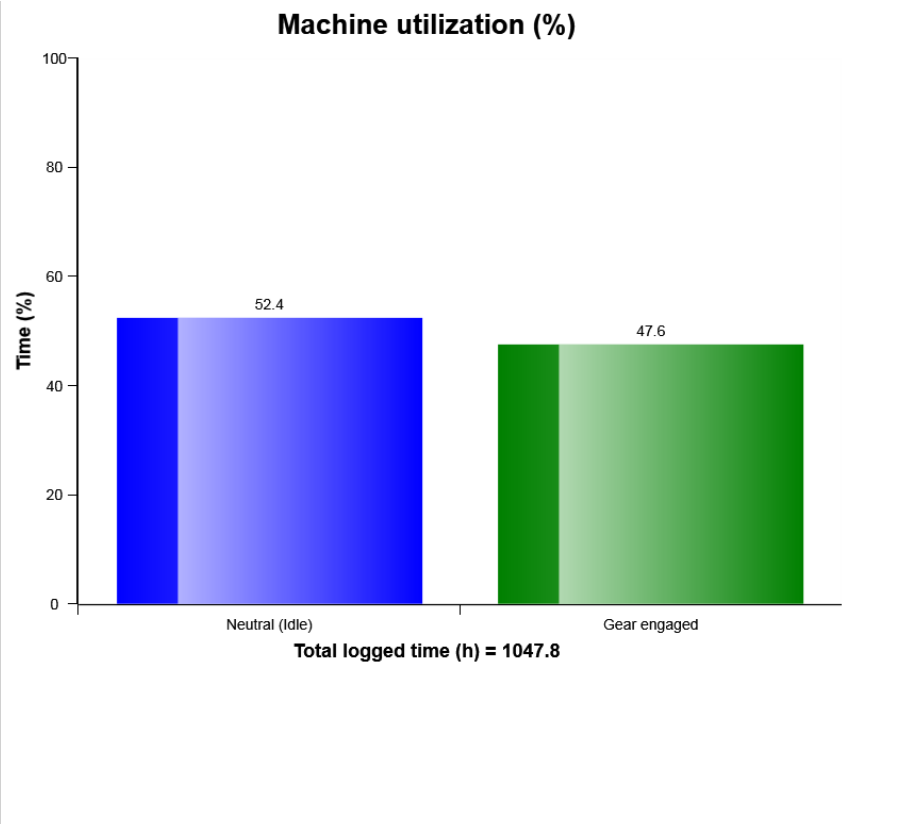

The diagram shows a simplified presentation of the machines utilization based on the relation between time in gear and time in neutral. The "Gear engaged " includes both forward and reverse gears.

This presentation of the machines utilization can only be seen as a guideline value since a full calculation of the machines utilization is more advanced. E.g. "Neutral" includes time for loading and dumping which should be seen as operating time.

High percentage of neutral time may indicate that the machine is underused due to e.g. under dimensioned loading tool or oversized hauler fleet

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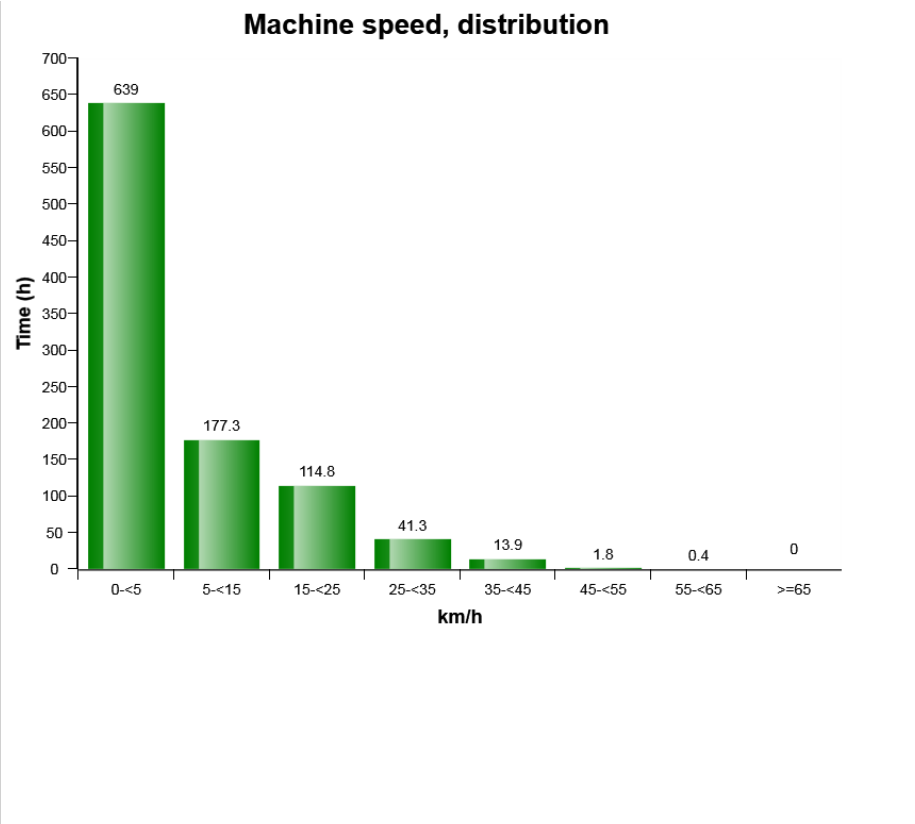

The presentation shows the time in hours in speed-intervals for the vehicle

Note that the interval 0-5 km/h includes machine not in motion. If the machine has been operated above 55 km/h there is a risk of engine over speed.

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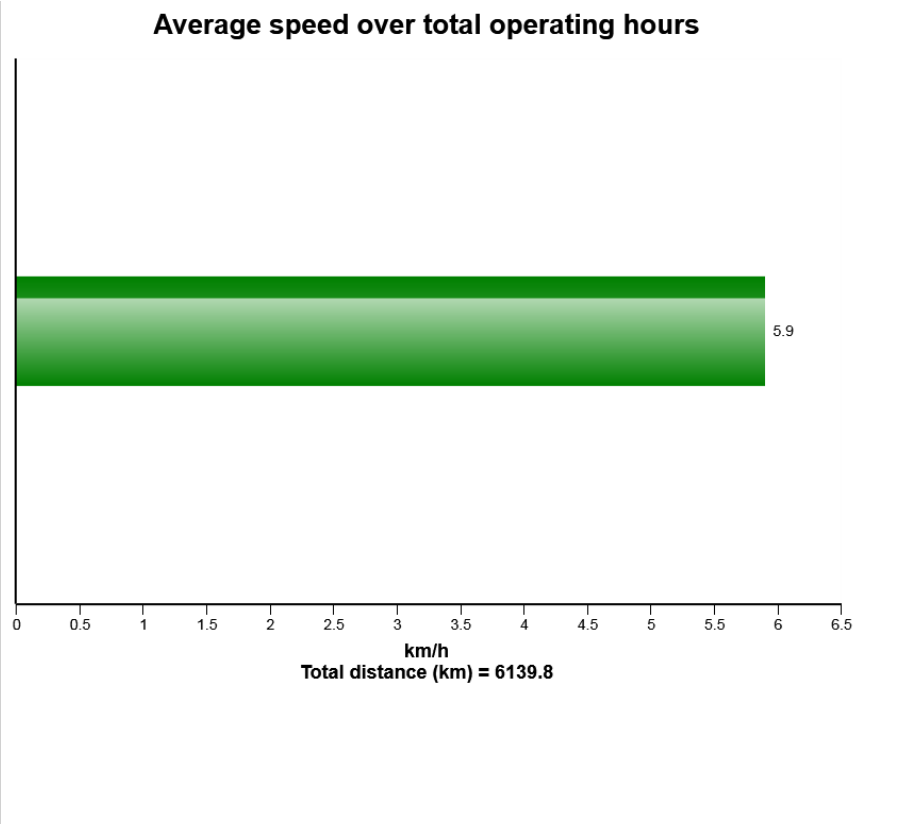

The diagram shows the machines average speed based on the total operating hours.

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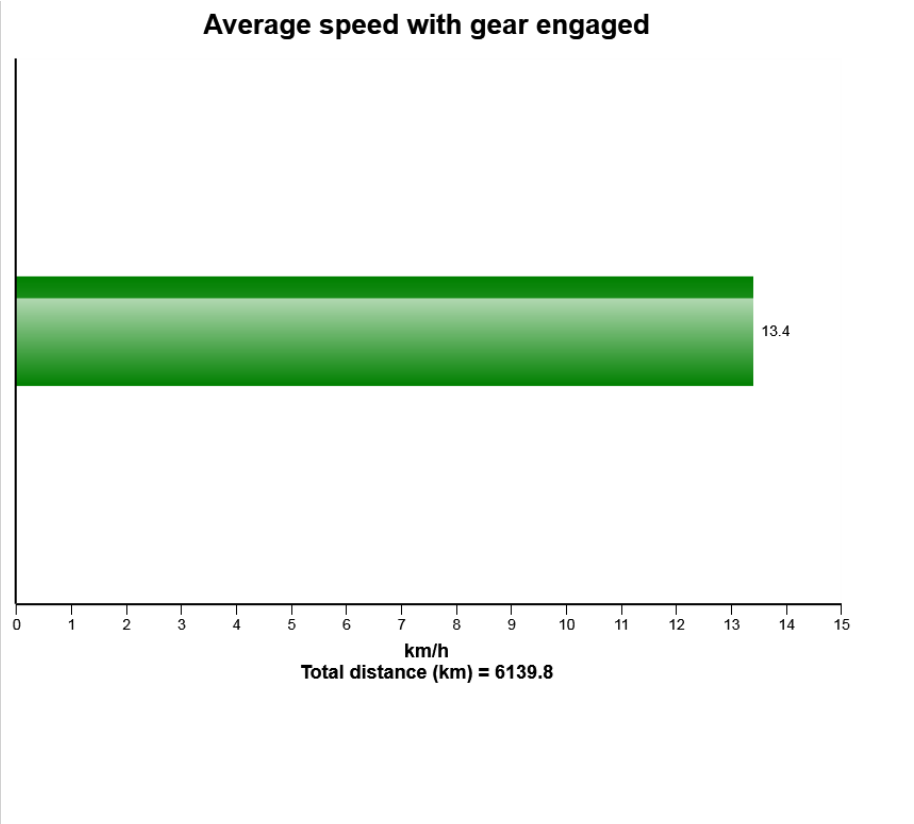

The diagram shows the machines average speed based on the operating hours with gear engaged.

Machine model	SerialNo	Operating Hours	Reading Date
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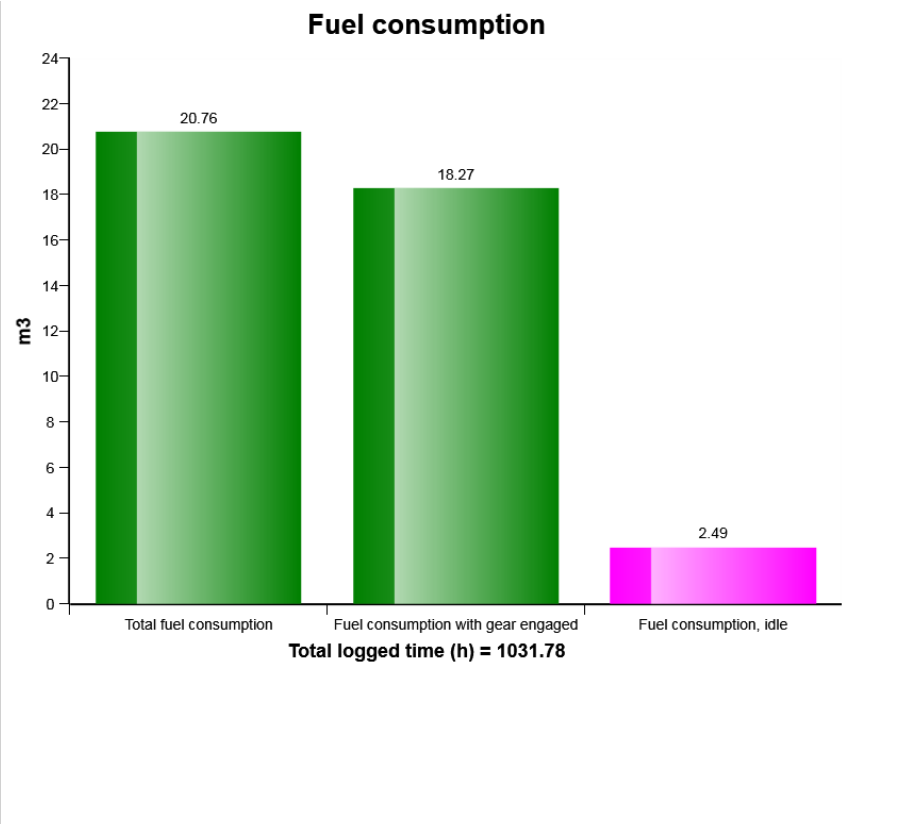

The diagram shows the total fuel consumption, fuel consumption with gear engaged and fuel consumption during idle.

High fuel consumption during idle can indicate that the machine is not fully utilized.

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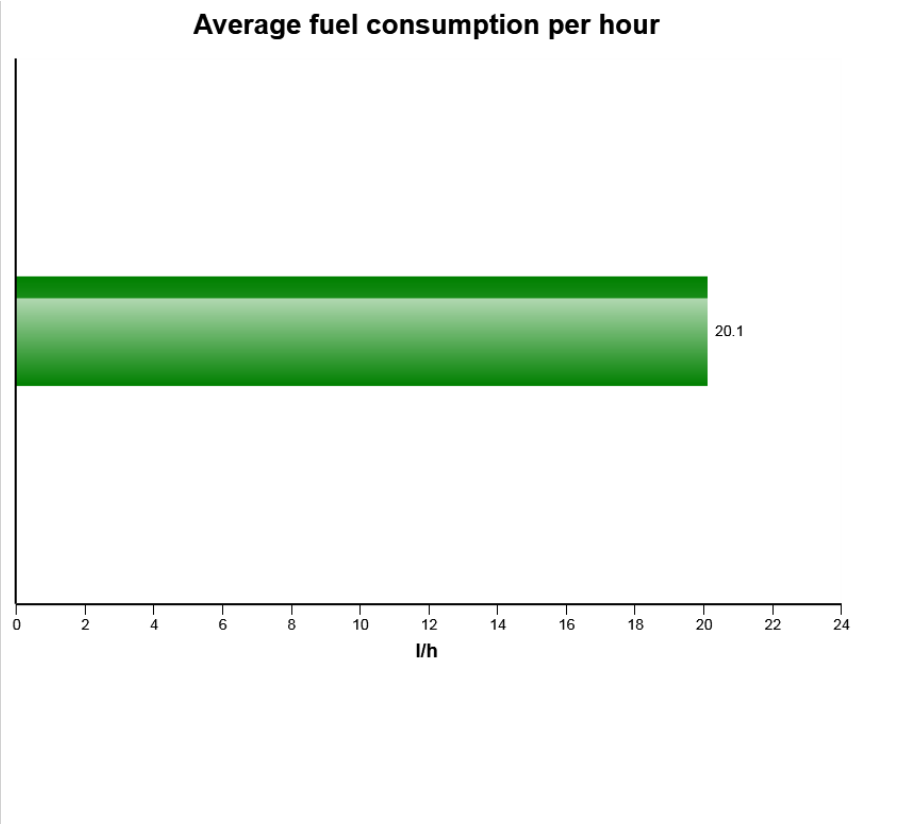

The diagram shows the average fuel consumption based on total operating hours.

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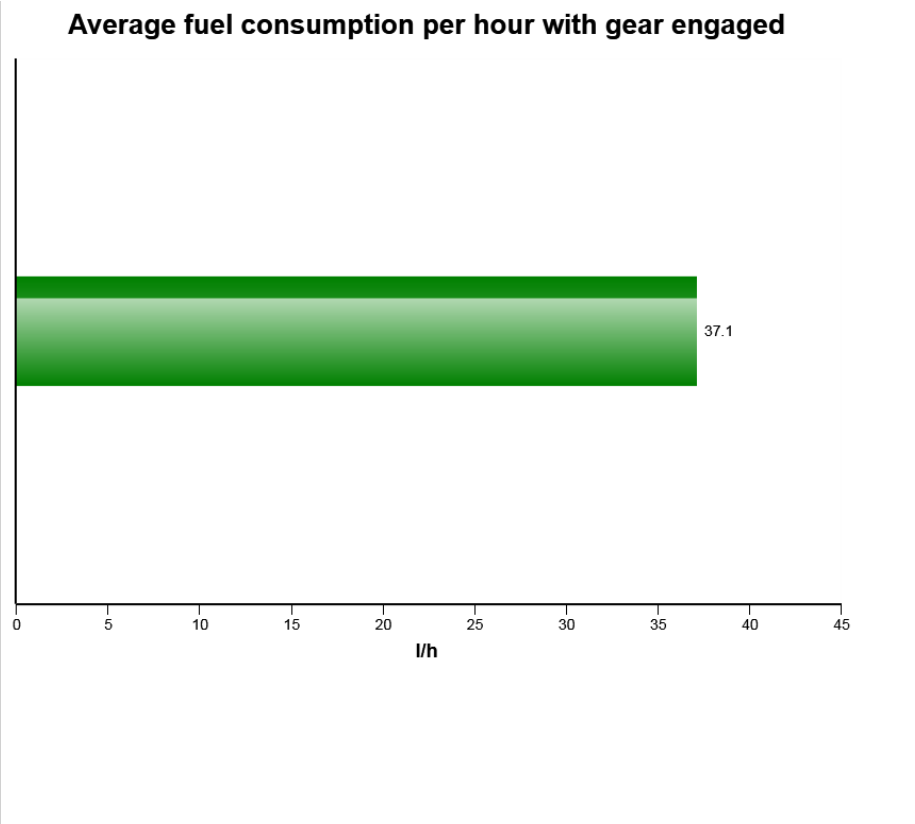

The diagram shows the average fuel consumption based on the operating hours with gear engaged.

Machine model	SerialNo	Operating Hours	Reading Date
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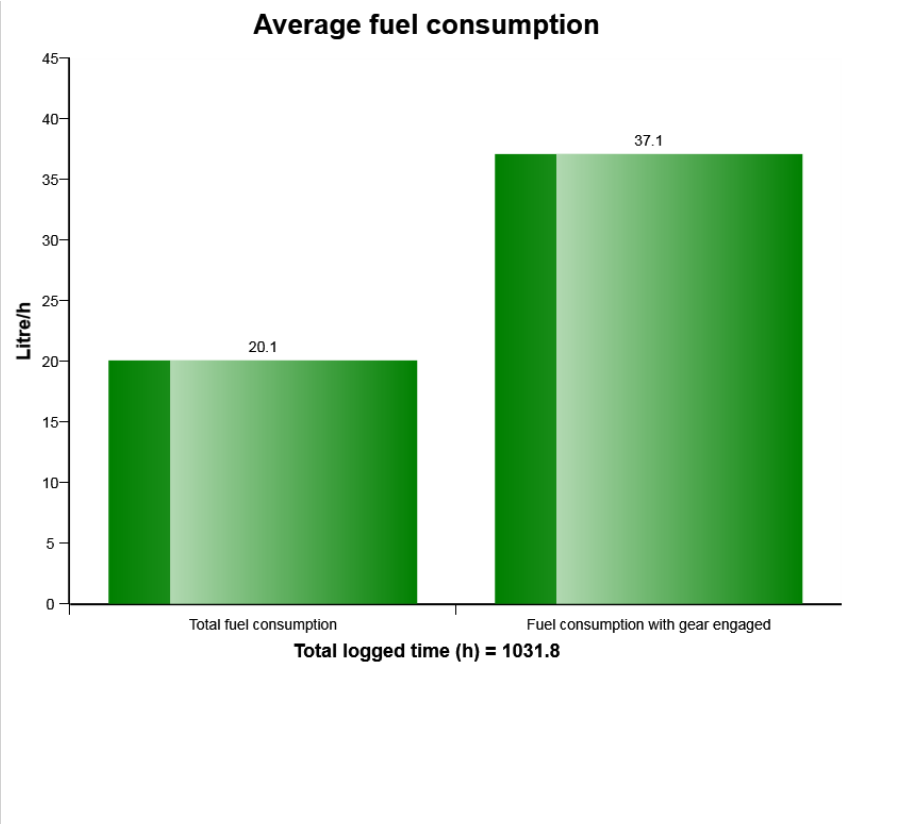

The diagram shows the total average fuel consumption versus average fuel consumption with gear engaged.

Big difference between the bars can indicate that the machine is not fully utilized, high idle lowers the total average fuel consumption.

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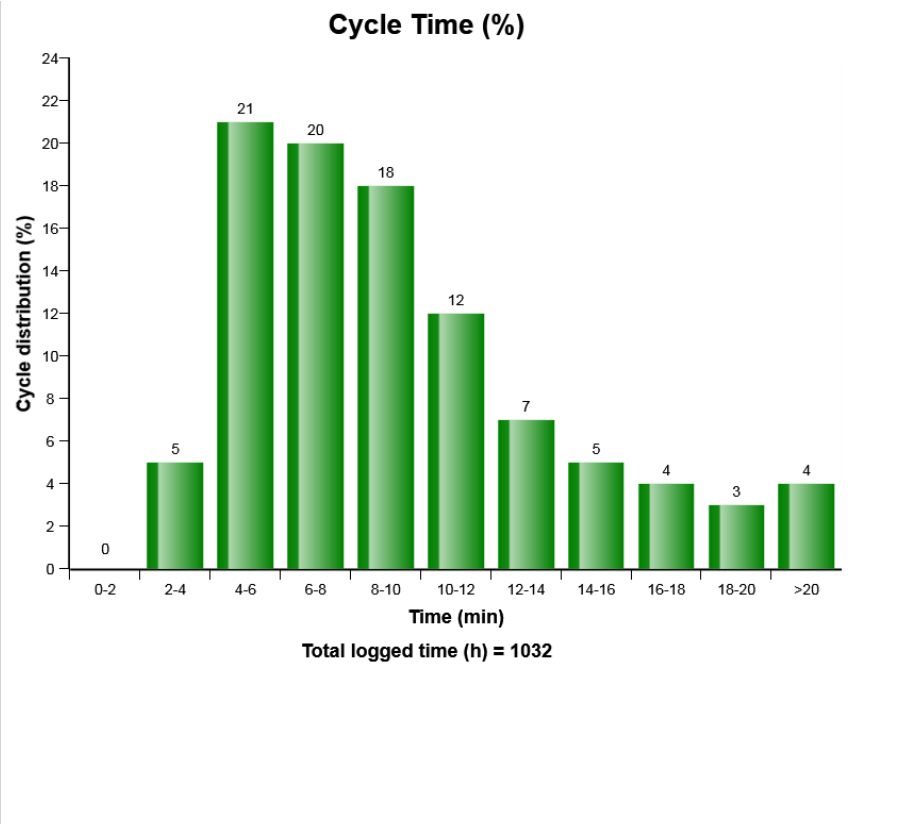

The diagram shows the distribution of the working cycle time. The time between 2 valid cycle registrations is registered. Time starts from lifting the body.

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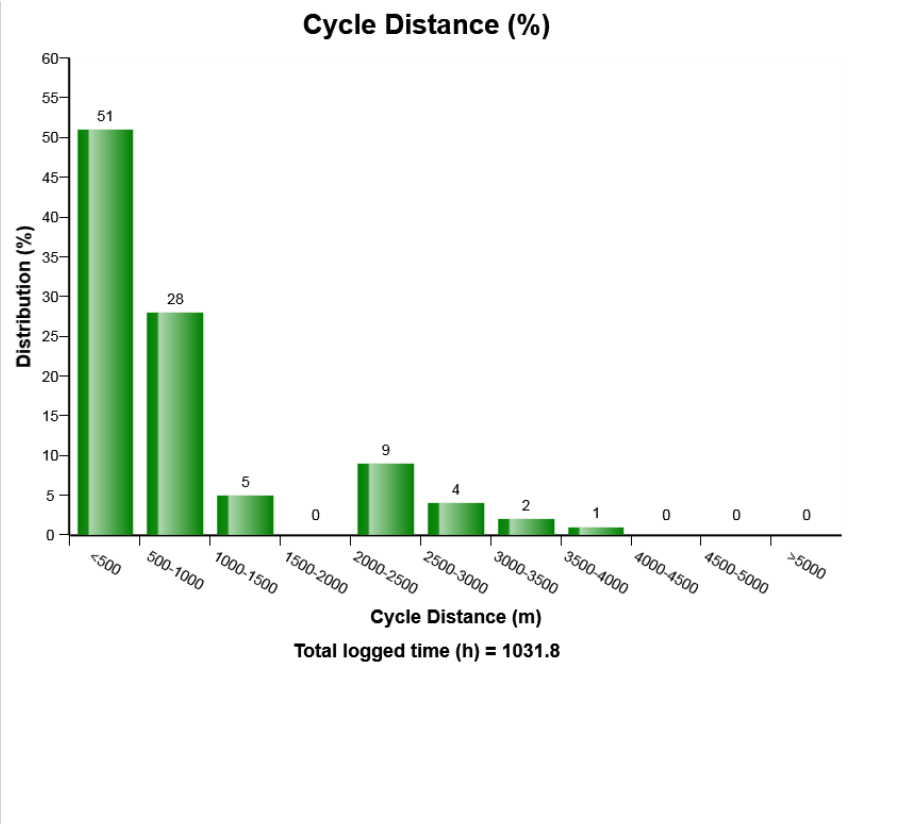

The diagram shows the distribution of the working cycle distance. The distance driven between 2 valid cycle registrations.

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Accumulated performance
Total logged time (h) =

Total logged time (h) =	1039.2
Total fuel consumption	20764.7
Production (tonne)	104548.8
Tonne/h	100.6
Tonne/litre	5.0
Litre/tonne	0.2
Number of cycles	2850
Cycles overloaded (%)	3.3
Load utilisation / cycle (%)	94.1

The table shows the accumulated values for respectively area stated in the table.

Values are saved over the life of the machine only when the engine is running.

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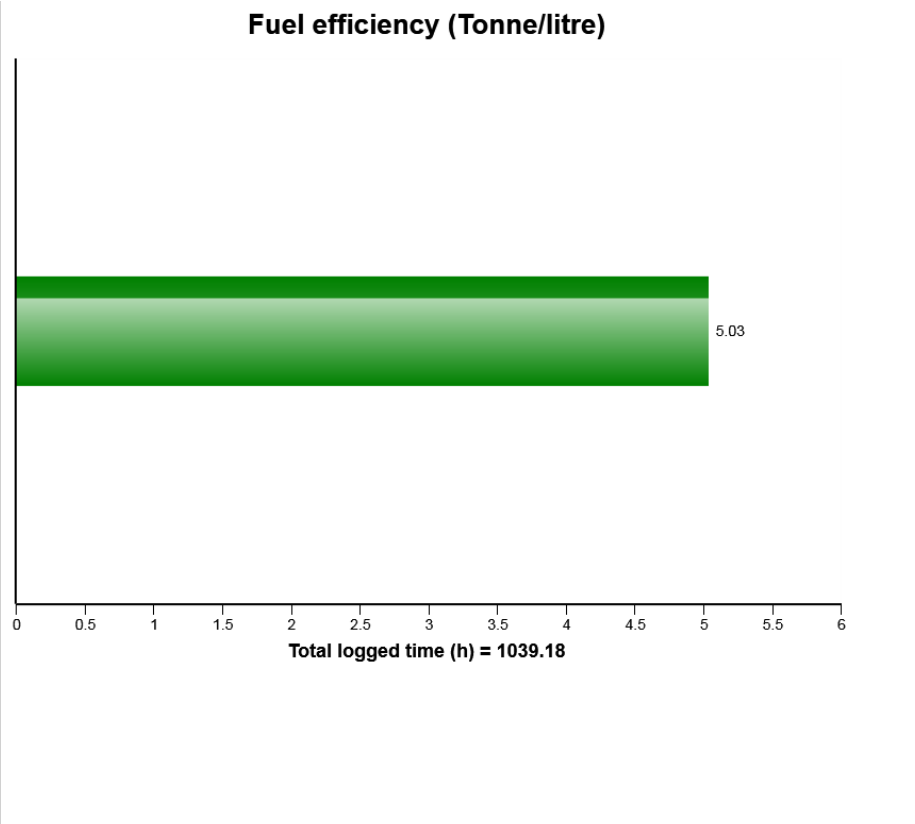

The presentation display the average produced tonne per fuel unit over the machines lifetime

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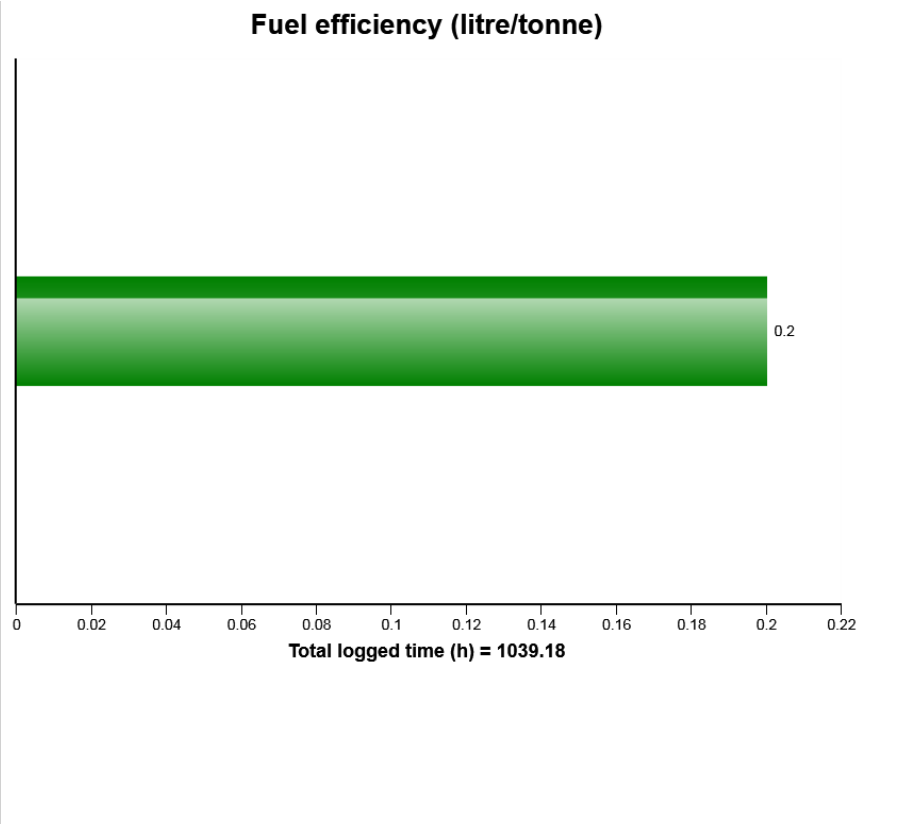

The presentation shows the average fuel consumption per tonne over the machines lifetime

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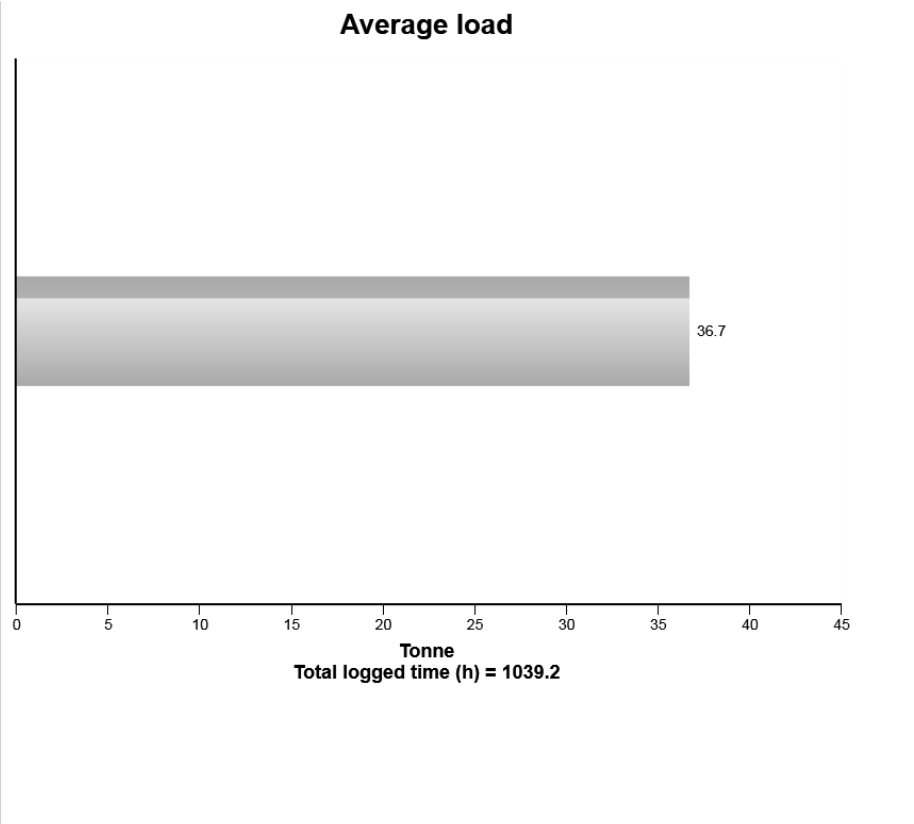

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'WordSection1' is an unexpected token. The expected token is "" or "'". Line 1, position 18.

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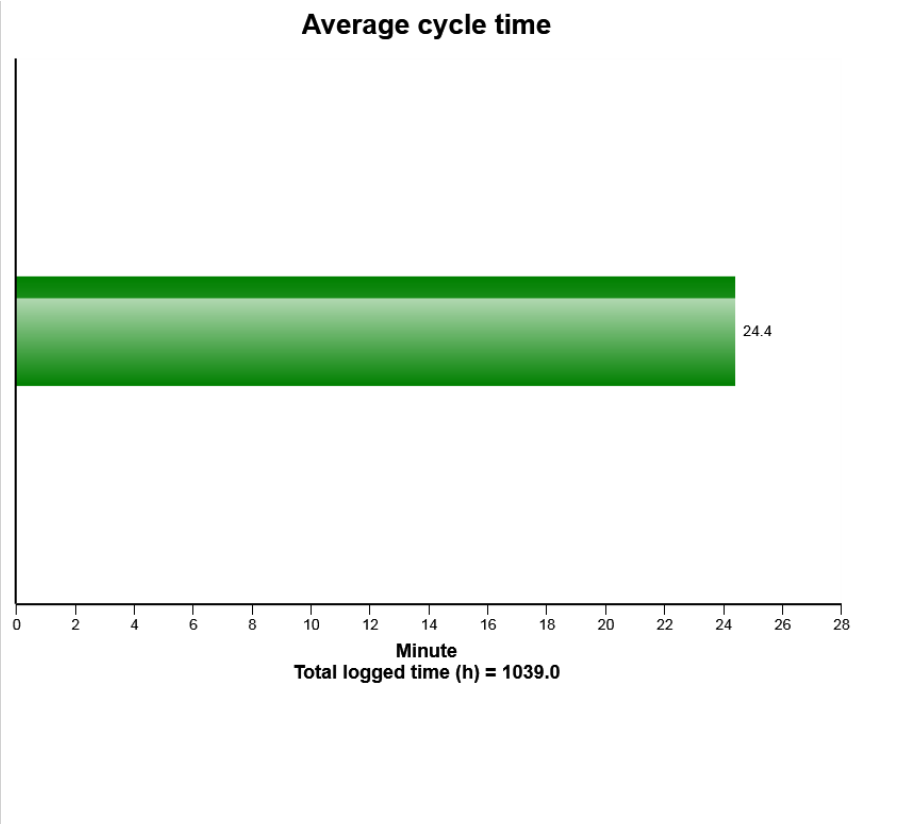

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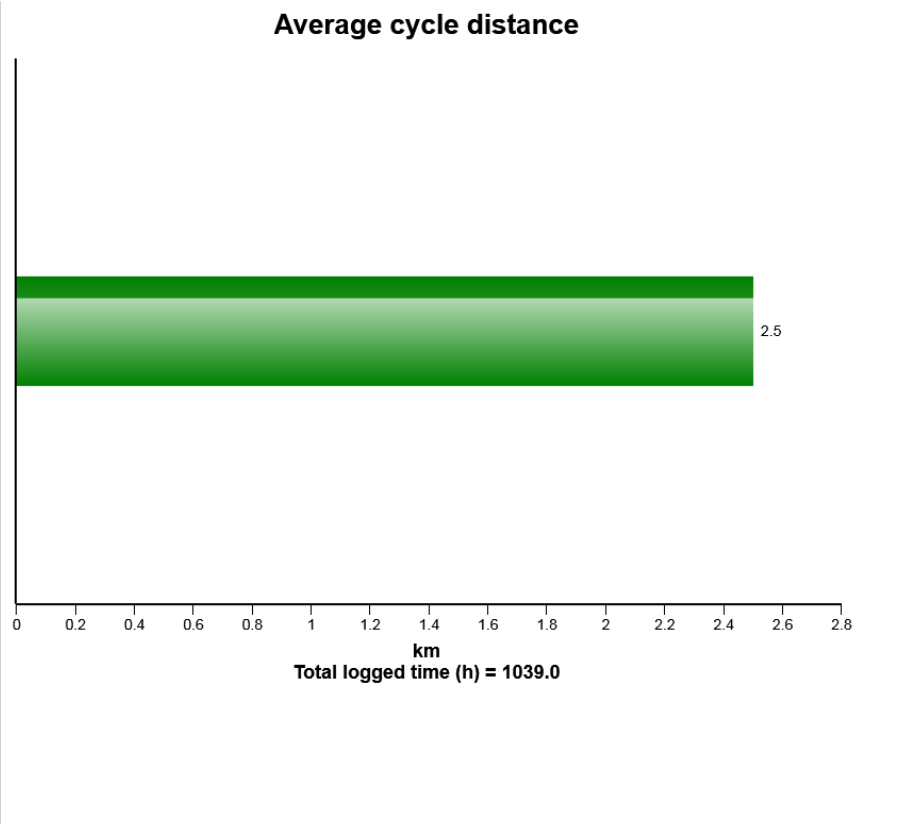

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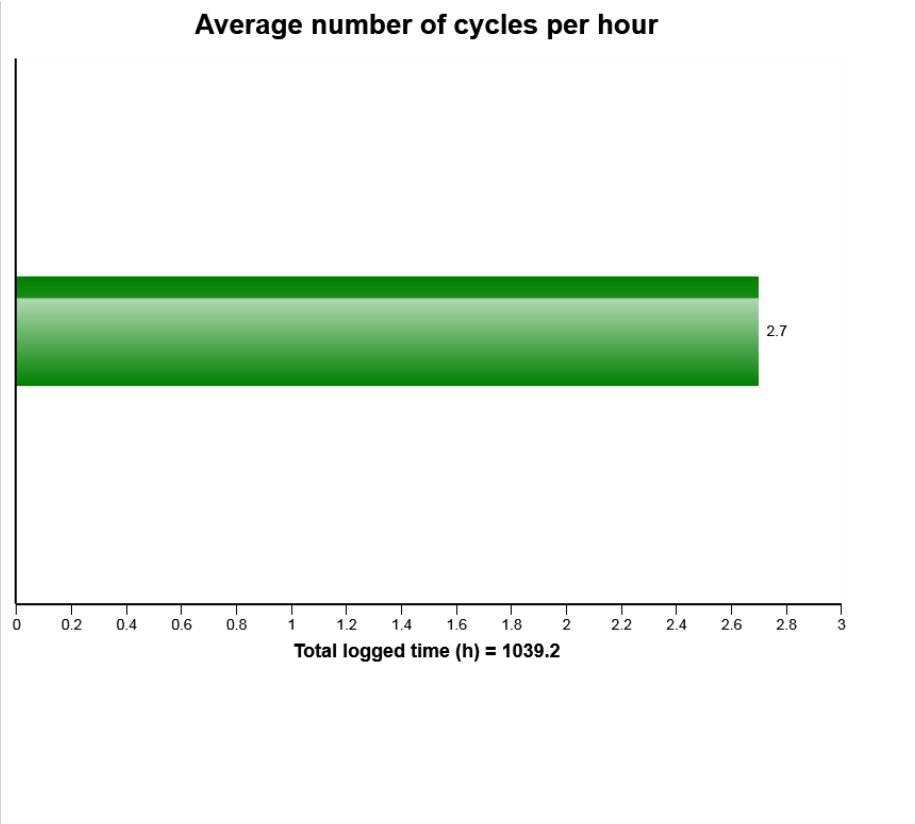

The presentation shows the average number of cycles per hour over the machines lifetime.

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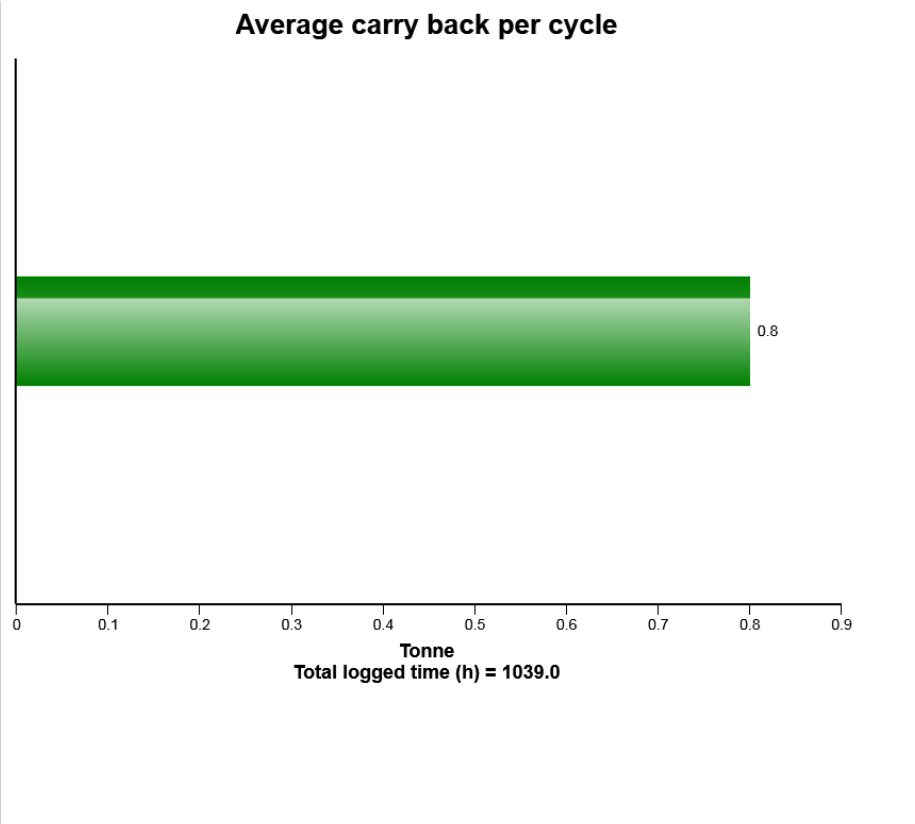

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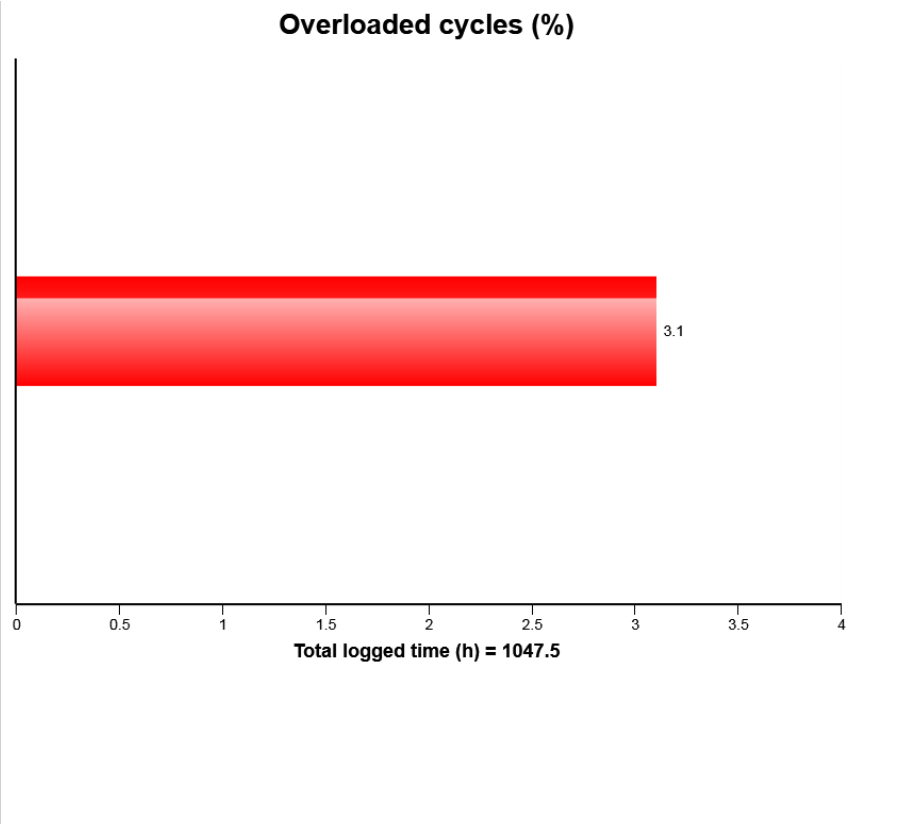

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
The ':' character, hexadecimal value 0x3A, cannot be included in a name. Line 1, position 656.

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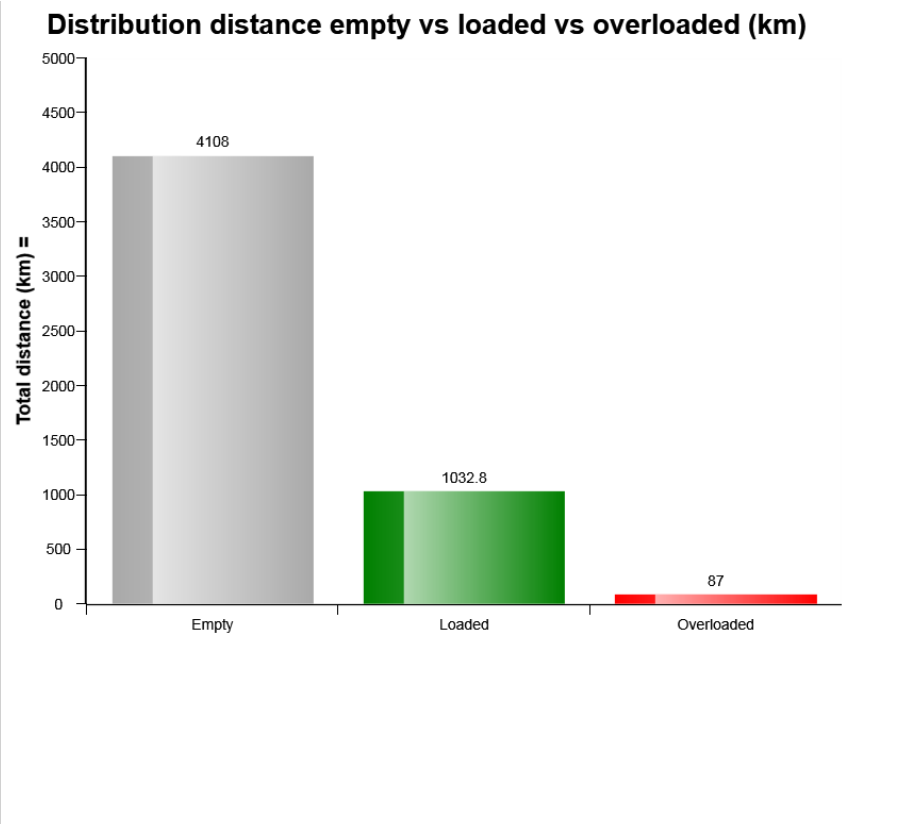

Much time operated with overload puts unnessesery stress to the machine which could lead to shorter machine life and higher repair and maintenance cost.

Much time operated empty could indicate that the machine has been operated a lot when not in production.

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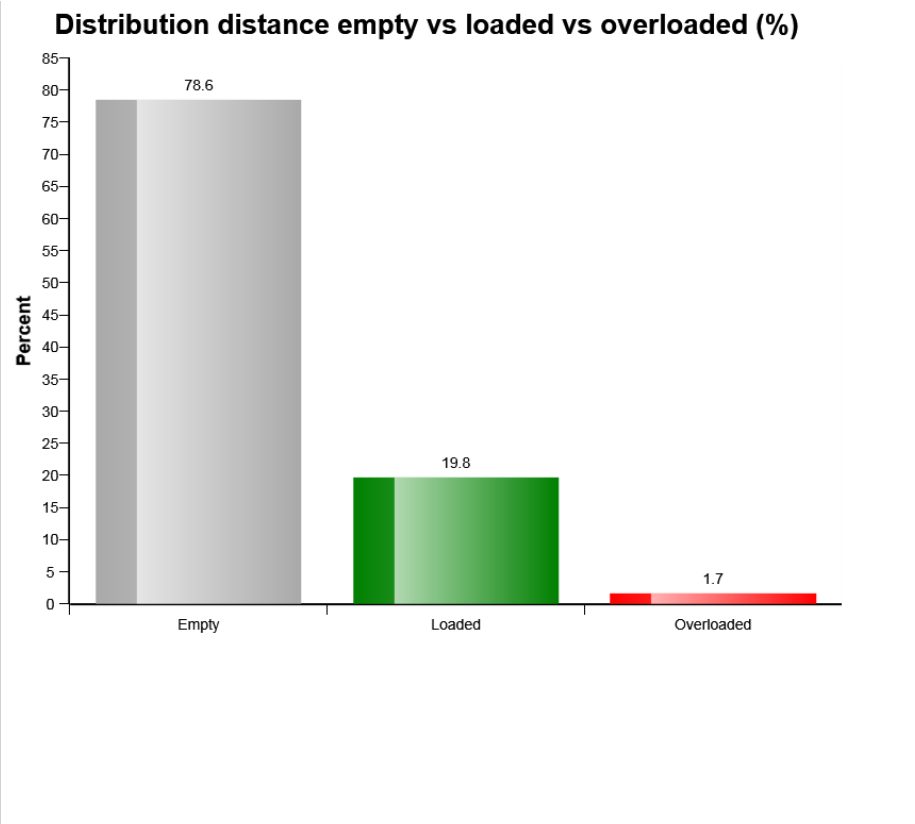

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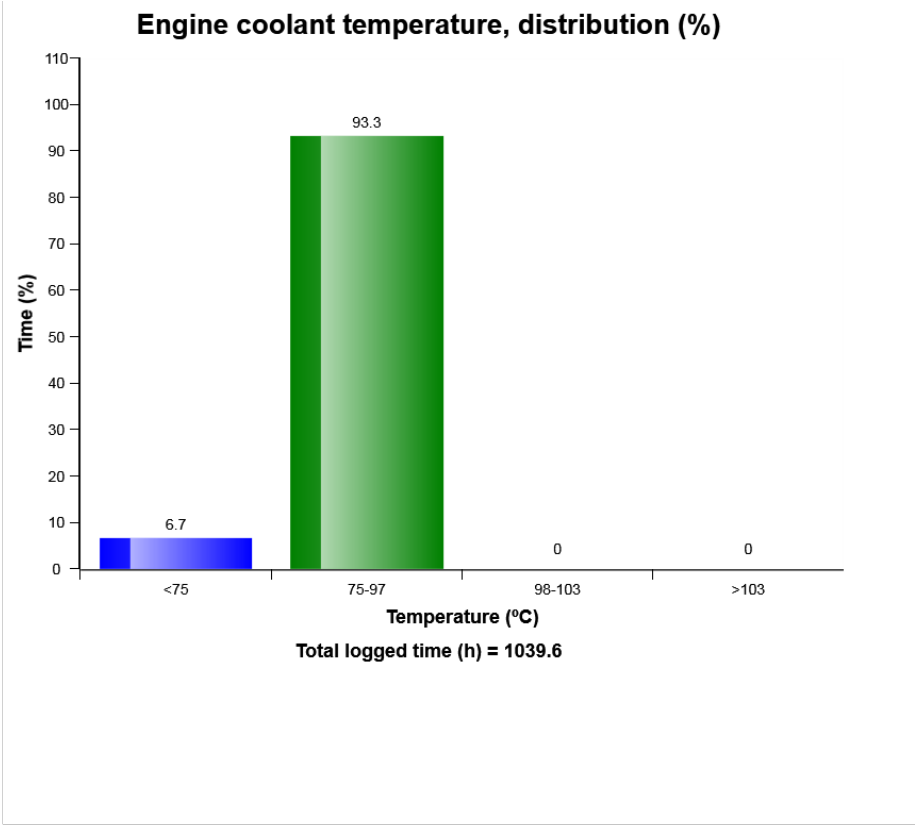

Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

X-axis: Temperature distribution in classes.

Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

It is normal to have registrations in this region.

Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.

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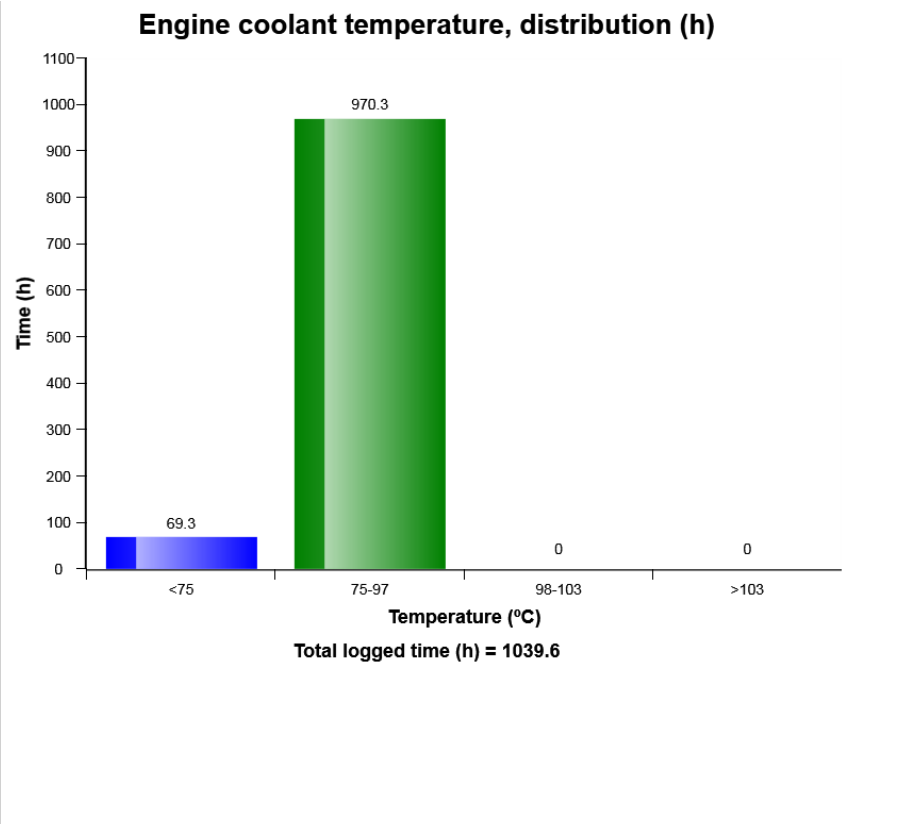

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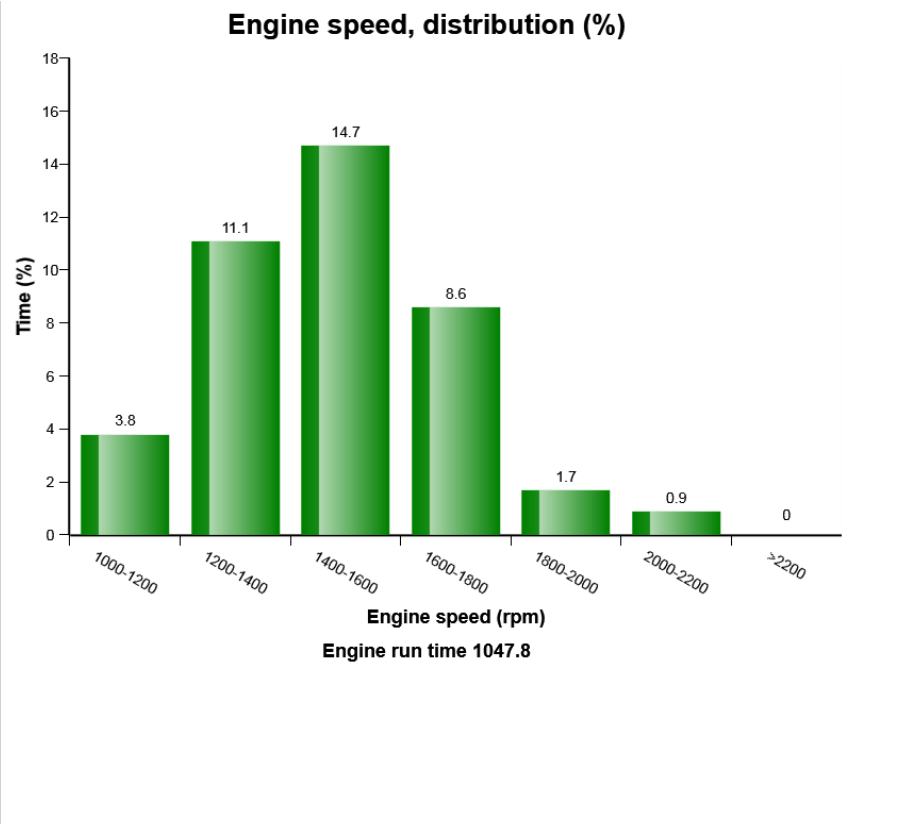

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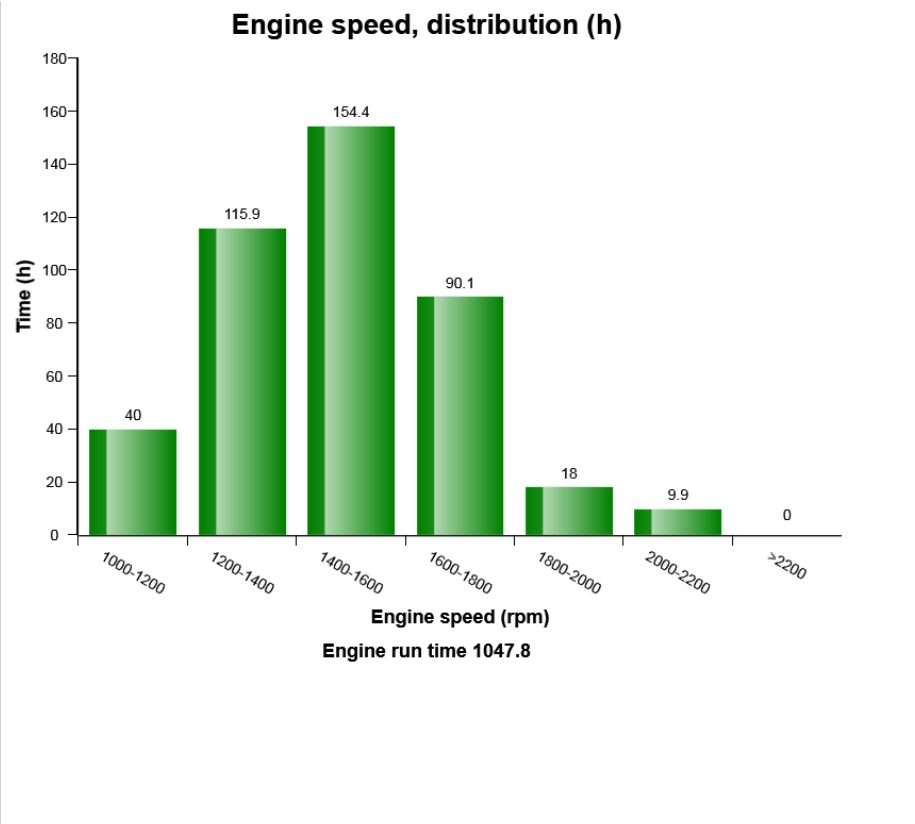

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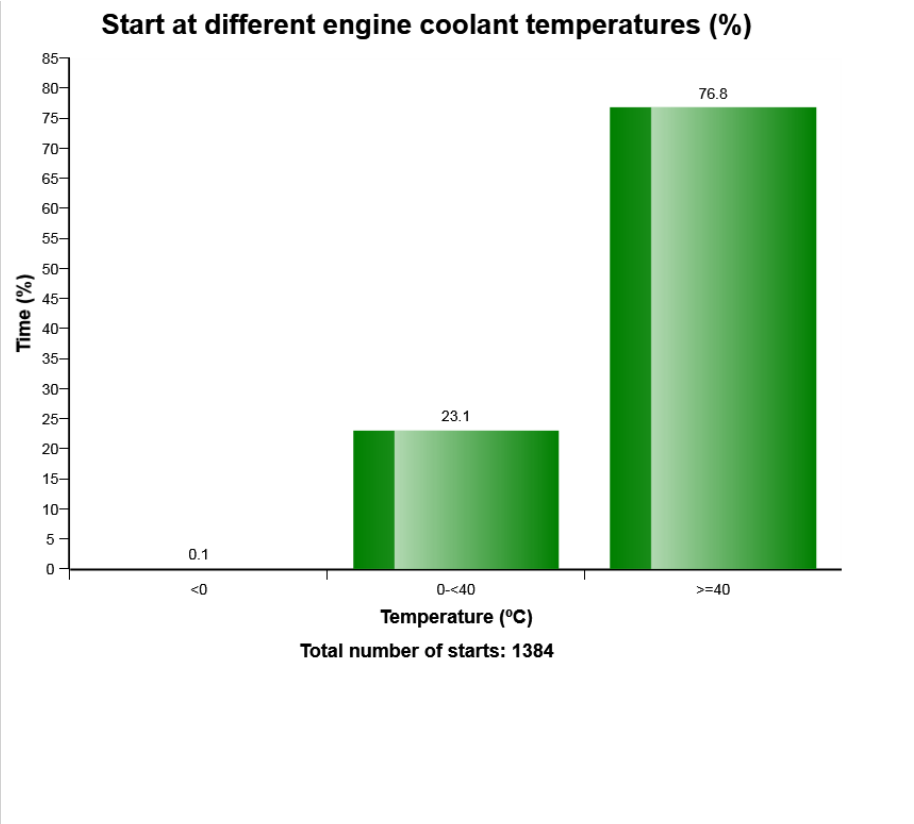

Definition:

The graph shows the distribution of engine coolant temperature, at the starting moment.

Explanation:

Y-axis: Number of engine starts

X-axis: Engine coolant temperature.

A great proportion of engine wear is due to cold starts. Try to avoid extremely cold starts. Try using an electric coolant heater.

Under the graph the total number of engine starts is displayed.

Also see " *Number of starts / hour*" to get a complete picture of engine starting.

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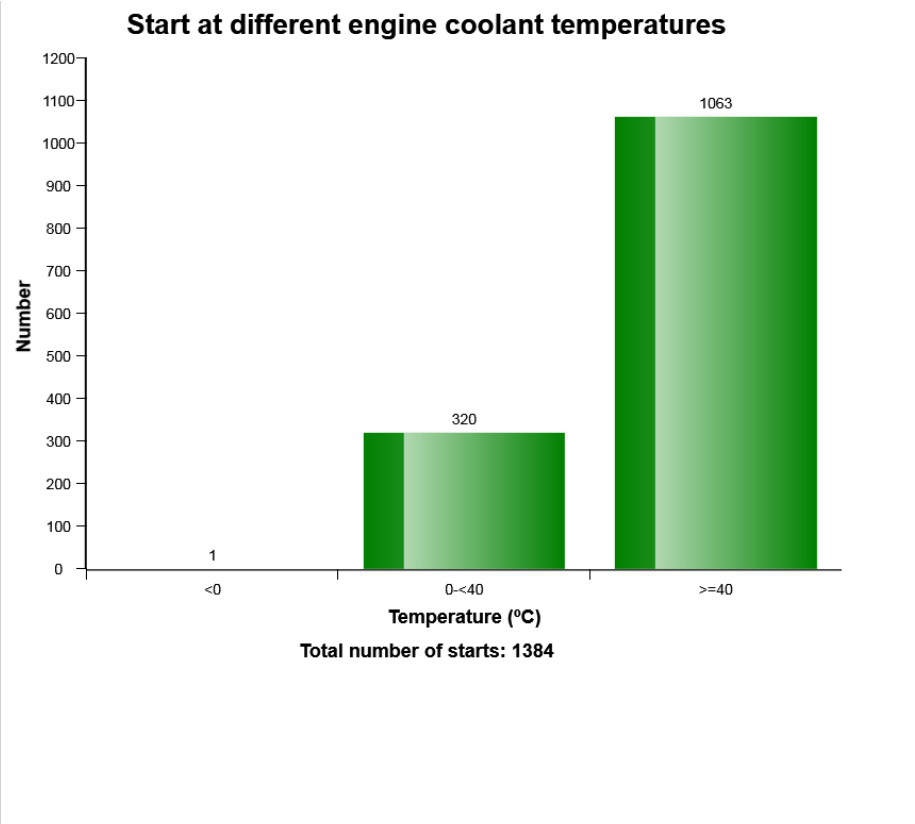

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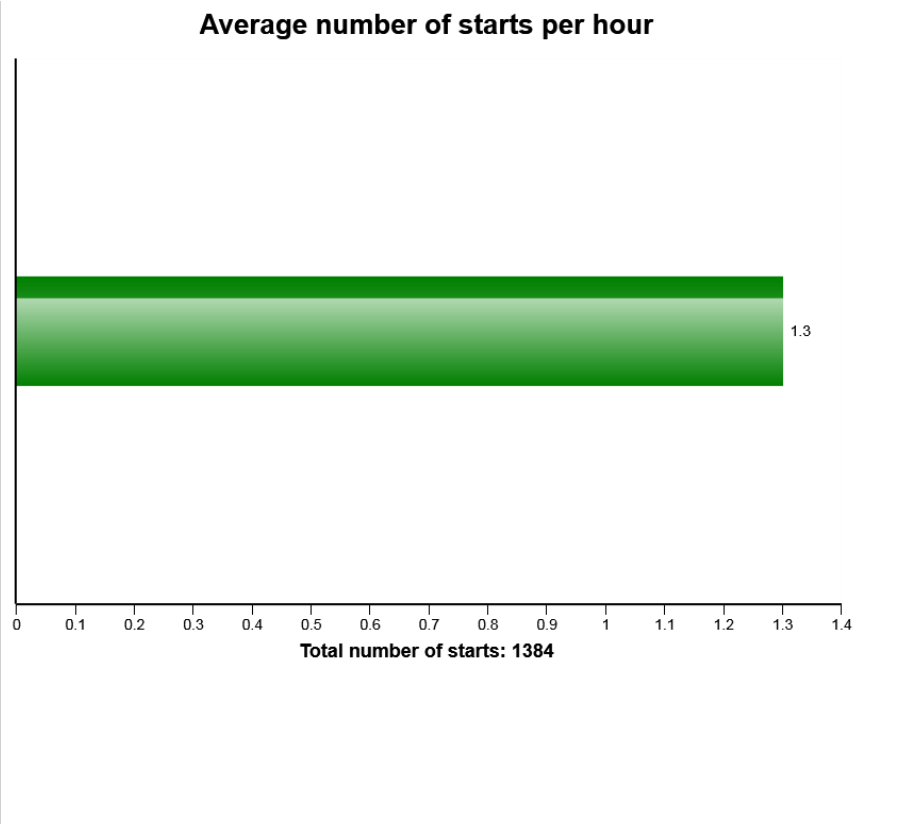

Definition:

The graph describes the average number of engine starts per engine running hour.

Explanation:

X-axis: Number of average starts per hour.

The actual time used for calculation, is time with engine on

If the fuel consumption is high one reason may be that the engine is not turned off often enough, perhaps machine is left idling for long periods. Check " Machine utilization".

The value can vary a lot depending on in which application the machine is used.

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To see at which different temperatures engine is started see" Start at different engine temperatures."

Green bar = Number of average starts per hour

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Regeneration aborted
Total number of occurences = 3

Op hours	Year	Month	Day	Hour	Minute	Reason
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
2830	2018	2	19	13	28	2
2944	2018	5	18	8	5	1
2945	2018	5	18	9	2	1

An error has occurred while processing HtmlTextBox 'ExplanationTxb':
'WordSection1' is an unexpected token. The expected token is "" or "'. Line 1, position 18.

Machine model	SerialNo	Operating Hours	Reading Date
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Regeneration duration
Total number of occurences = 7

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
0	2000	0	0	0	0	0
2829	2018	2	19	12	27	61
2944	2018	5	18	8	40	23
2944	2018	5	18	7	52	13
2945	2018	5	18	9	54	28
3058	2018	6	8	8	24	34
3059	2018	6	8	9	30	30
3569	2019	6	5	7	24	45

An error has occurred while processing HtmlTextBox 'ExplanationTxb':
The 'span' start tag on line 1 position 43 does not match the end tag of 'BR'. Line 1, position 153.

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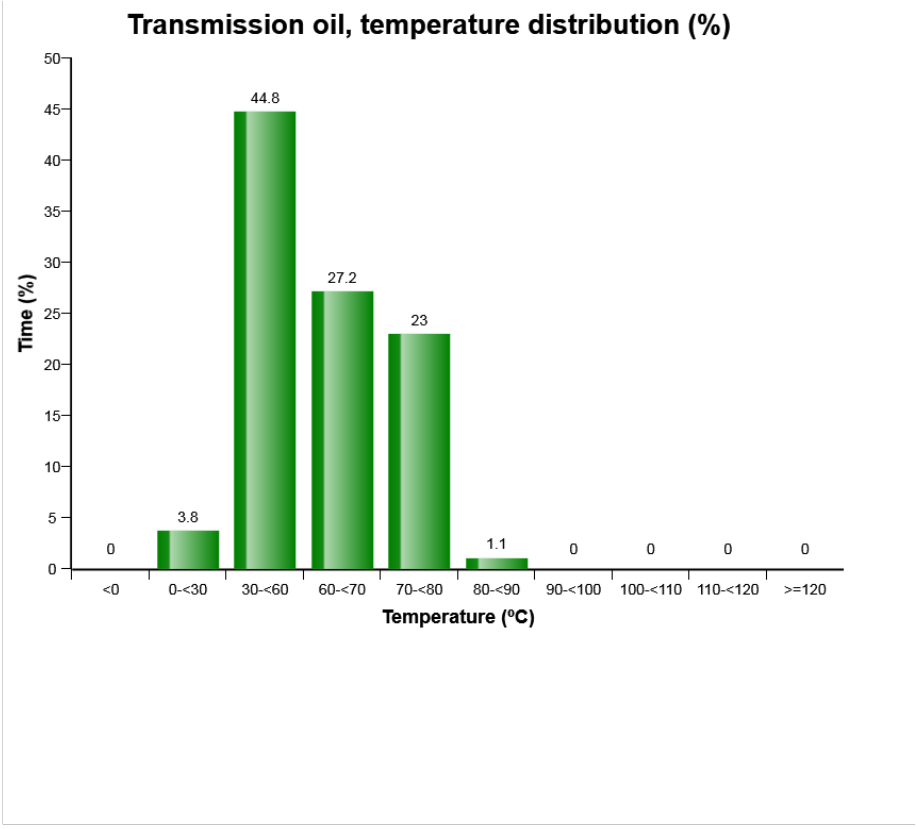

The diagram shows the transmission oil temperature in various temperature ranges. The time is displayed in the following ten temperature ranges:

<0ºC Temperatures below 0ºC

0 - <30°C Temperatures from 0ºC until 30ºC

30-<60°C Temperatures from 30ºC until 60ºC

60-<70°C Temperatures from 60ºC until 70ºC

70-<80°C Temperatures from 70ºC until 80ºC

80-<90°C Temperatures from 80ºC until 90ºC

90-<100°C Temperatures from 90ºC until 100ºC

100-<110°C Temperatures from 100ºC until 110ºC

110-<120°C Temperatures from 110ºC until 120ºC

≥120°C Temperatures over 120ºC

The bar that describes temperatures from 110ºC until 120ºC is yellow and means that the oil has began to be overheated. Driver has been given orange central warning

The bar that describes >120ºC is red and means that the oil has been overheated. Driver has been given red central warning.

Oil temperatures exceeding 110ºC must be avoided since the properties of the oil are degraded

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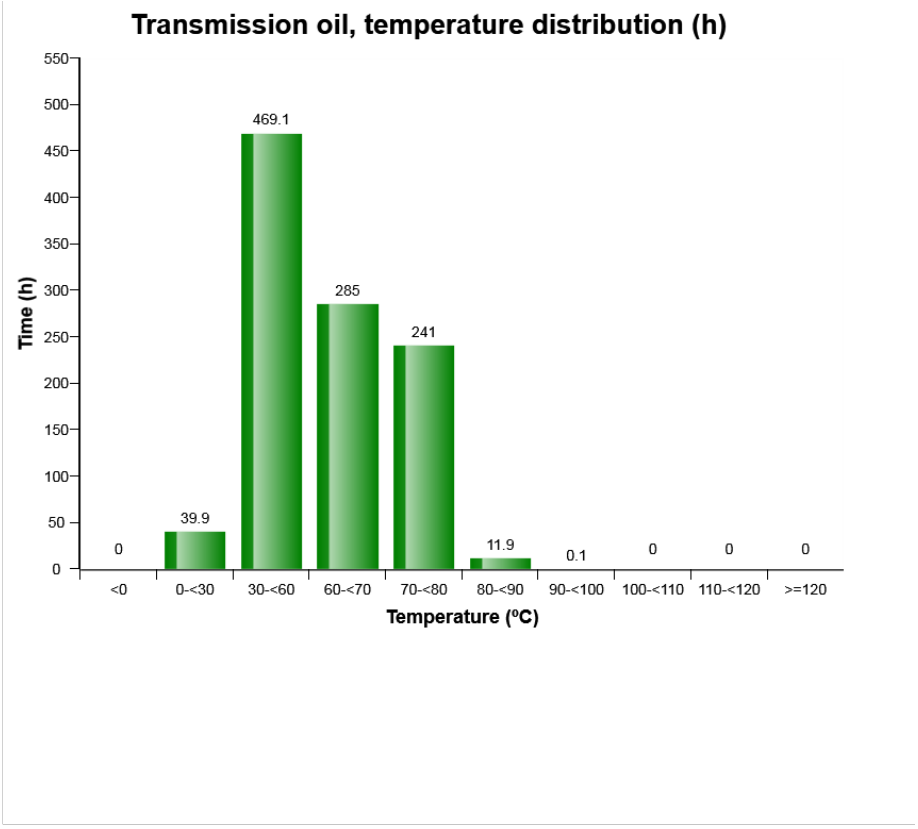

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70-<80°C Temperatures from 70ºC until 80ºC

80-<90°C Temperatures from 80ºC until 90ºC

90-<100°C Temperatures from 90ºC until 100ºC

100-<110°C Temperatures from 100ºC until 110ºC

110-<120°C Temperatures from 110ºC until 120ºC

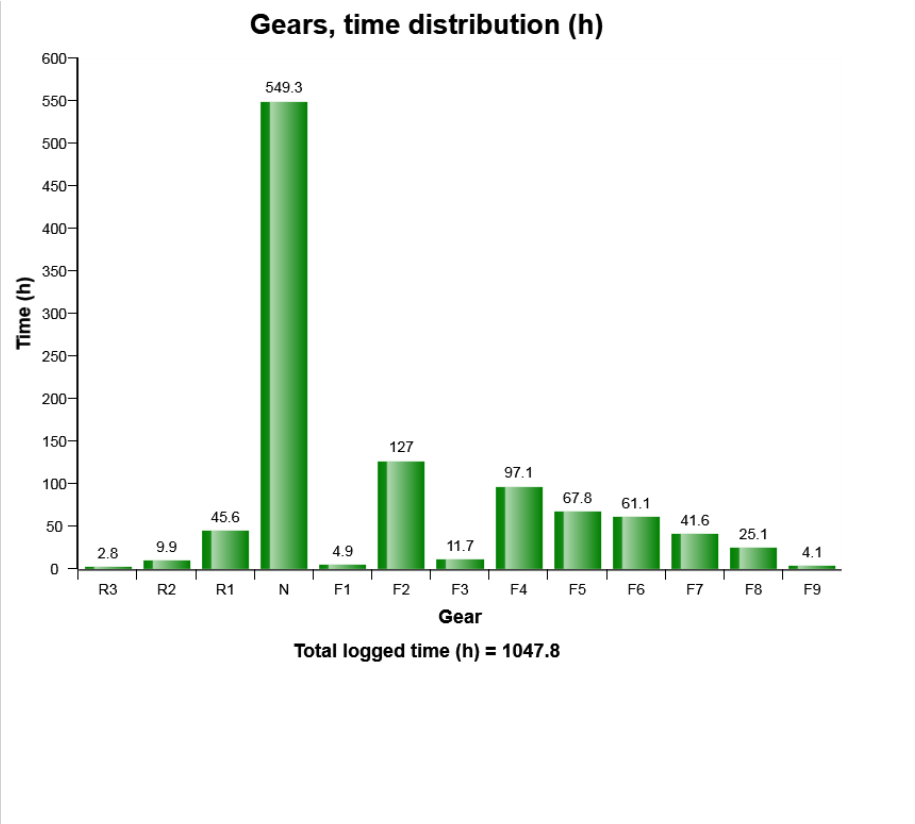
≥120°C Temperatures over 120ºC

The bar that describes temperatures from 110º C until 120ºC is yellow and means that the oil has began to be overheated. Driver has been given orange central warning

The bar that describes >120ºC is red and means that the oil has been overheated. Driver has been given red central warning.

Oil temperatures exceeding 110ºC must be avoided since the properties of the oil are degraded

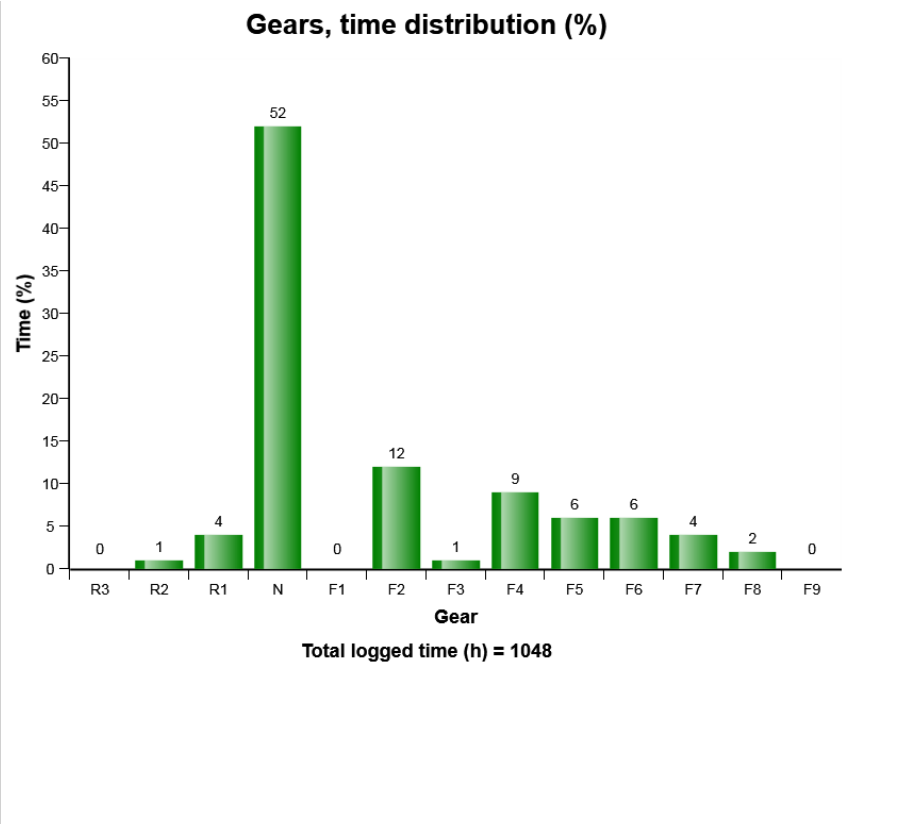
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the time for each gear. Each bar represents a gear.

How the time is distributed between the gears depends on the operating conditions.

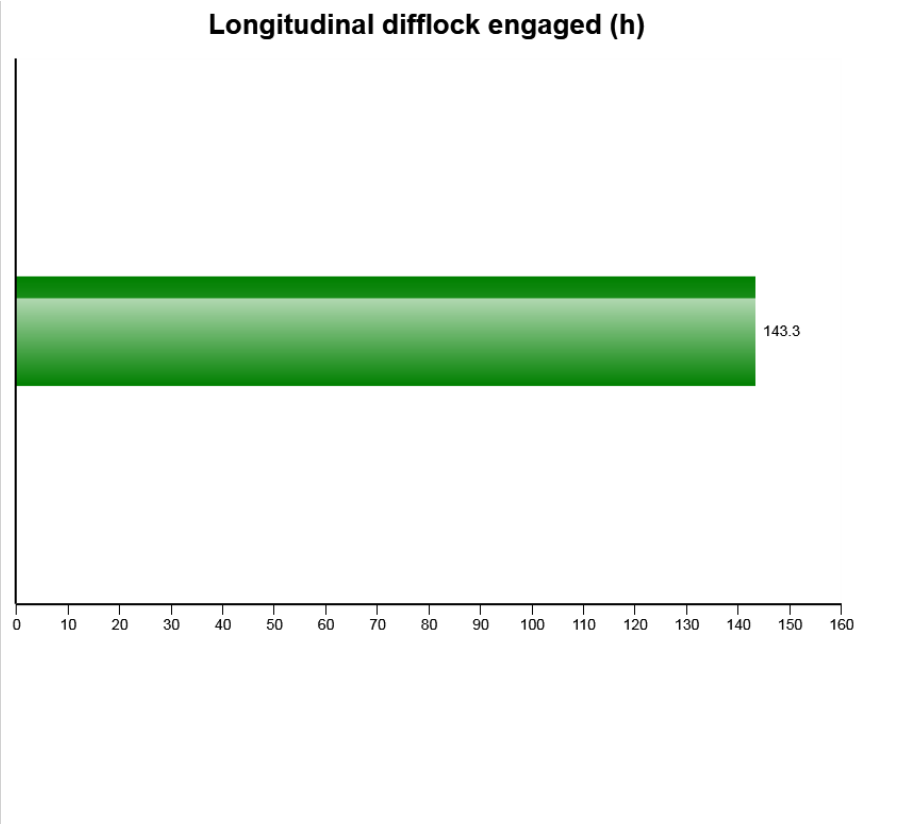
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the time for each gear. Each bar represents a gear.

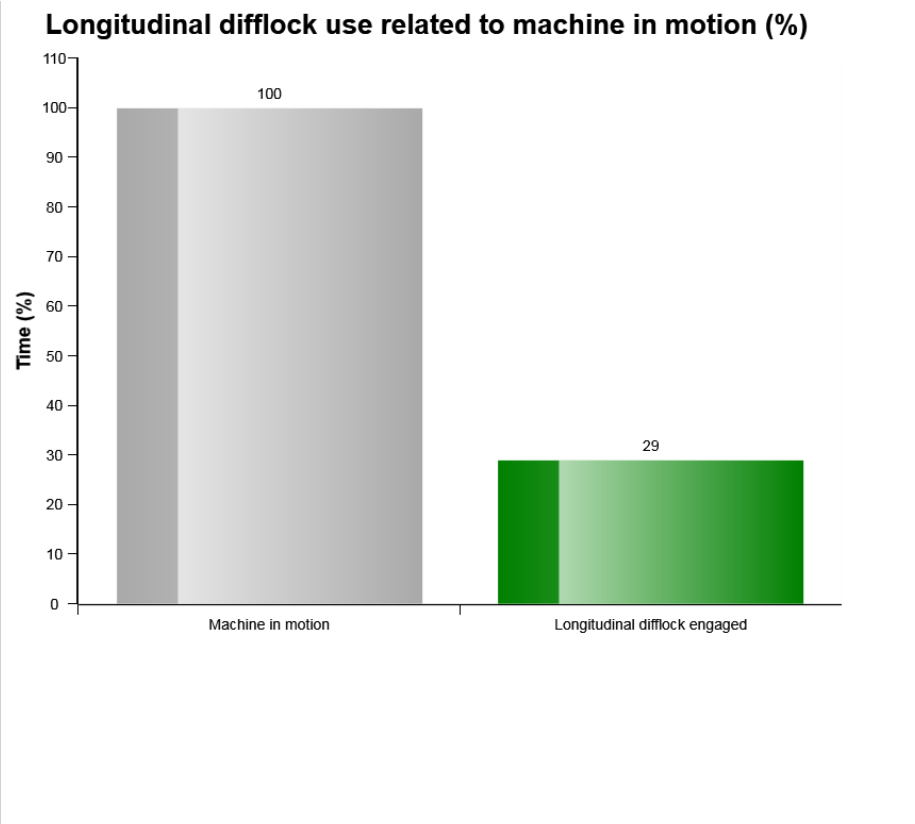
How the time is distributed between the gears depends on the operating conditions.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows how long time in hours the longitudinal difflock has been engaged. The presentation only shows time when the machine is moving as this is when the wear on the difflock occurs. The difflock should always be disengage when not needed to avoid unnecessary wear.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the percentage of engaged longitudinal difflock in relation to machine in motion.

The longitudinal difflock should always be disengaged when not needed to reduce wear.

The normal use of the longitudinal difflock in relation to the time that the machine has been operated depends on the operating conditions. Generally, the more offroad applications the machine operates in, the higher the longitudinal difflock use shall be in relation to the time that the machine has been operated. Also operating in uphill conditions on slippery surface can require longitudinal difflock.

Also check " Longitudinal difflock engaged (h)"

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

Transmission oil pressure low
Total number of occurences = 1

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (bar)
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
0	2000	0	0	0	0	0	0.0
3166	2018	7	11	13	26	47	0.1

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating

hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed.

Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

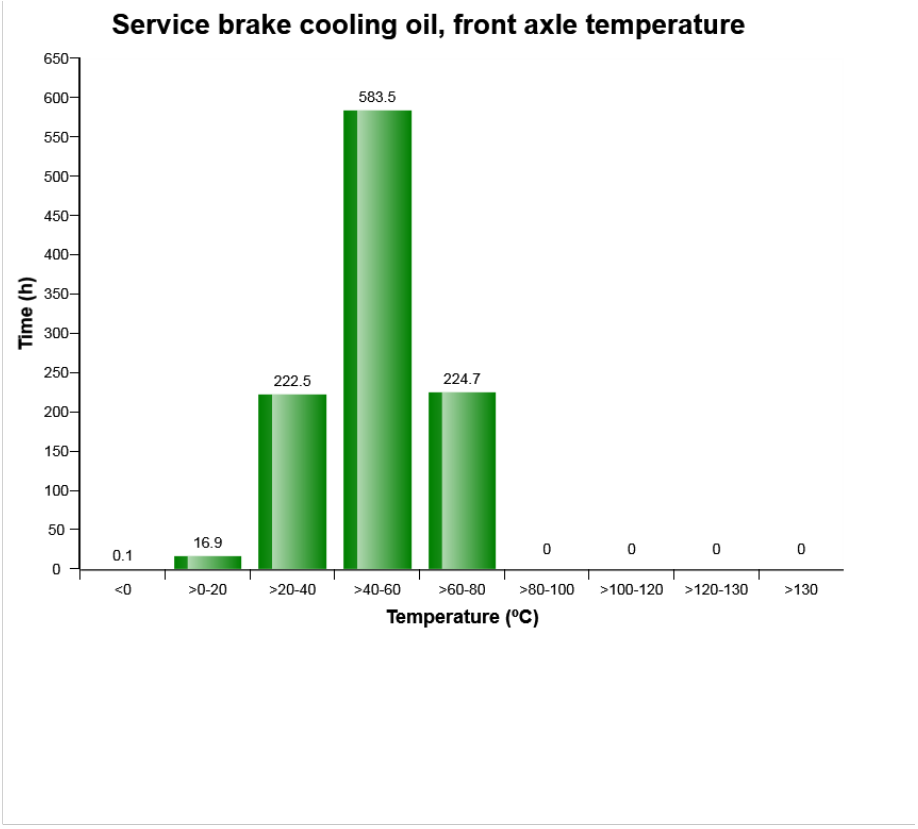
Extreme value :

The extreme value column displays the most extreme value during the event.

Criteria :

In order for an occurrence of low transmission oil pressure to be recorded in a data point and the count to increment by 1, the transmission oil pressure state must change from “normal” or “error” to “low.” The event of low transmission oil pressure will end when the status changes from “low” back to “normal” or “error.”

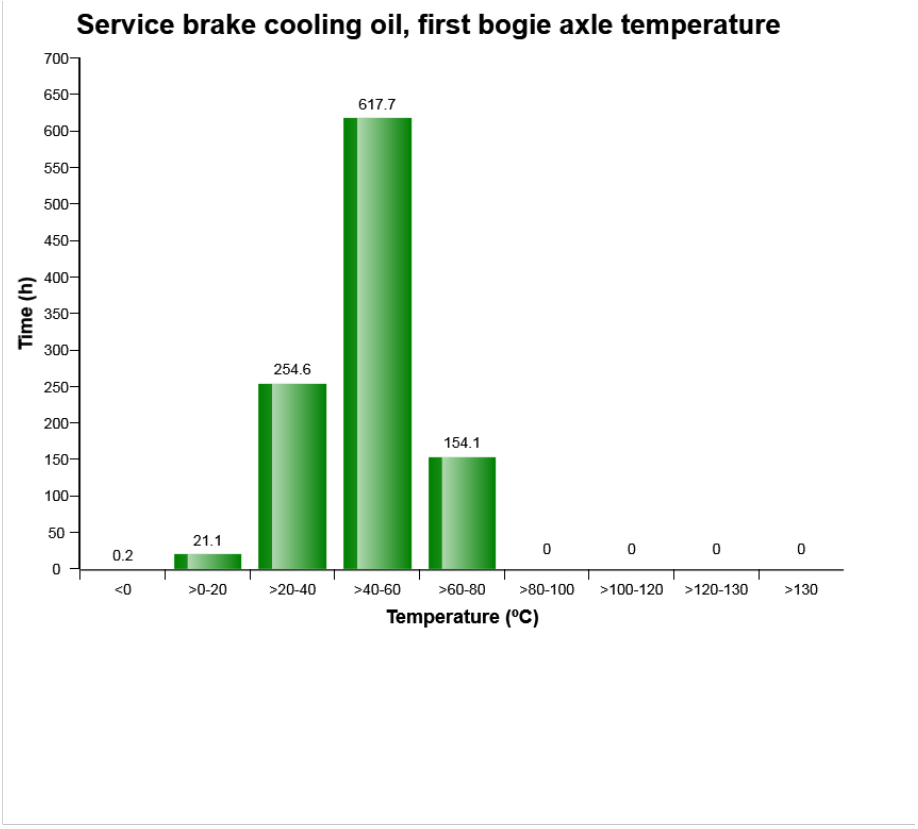
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the front axle brake cooling oil temperature. The temperatures are divided into ranges, yellow bar (>120-130ºC) and red bar (>130ºC) shows abnormal temperatures. The temperature is registered in the line from the front axle to the oil cooler, that is, the warmest oil in the circuit.

The temperature shown by yellow and red bars degrade the properties of the cooling oil, and may be the result of incorrect and hard operation of the machine. Check the brake pressure distribution in the diagram "Service brake pressure, distribution (%)". If the brake cooling oil temperature is high despite normal distribution of service brake pressure, there is probably a malfunction in the brake cooling circuit

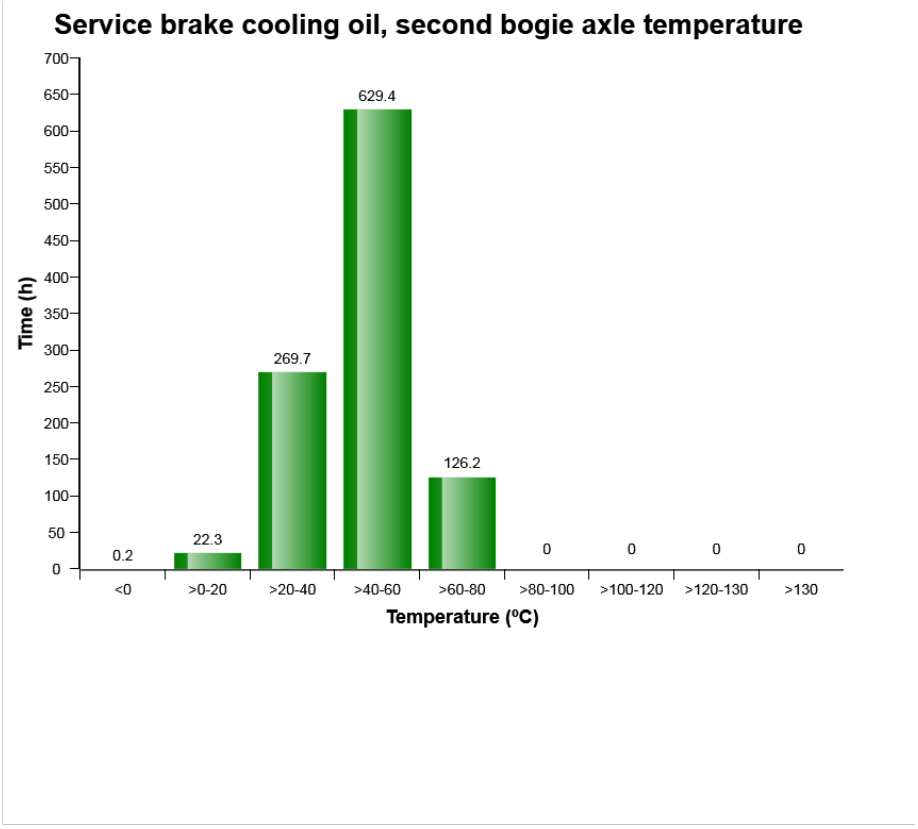
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the first bogie axle brake cooling oil temperature. The temperatures are divided into ranges, yellow bar (>120-130ºC) and red bar (>130ºC) shows abnormal temperatures. The temperature is registered in the line from the first bogie axle to the oil cooler, that is, the warmest oil in the circuit.

The temperature shown by yellow and red bars degrade the properties of the cooling oil, and may be the result of incorrect and hard operation of the machine. Check the brake pressure distribution in the diagram "Service brake pressure, distribution (%)". If the brake cooling oil temperature is high despite normal distribution of service brake pressure, there is probably a malfunction in the brake cooling circuit

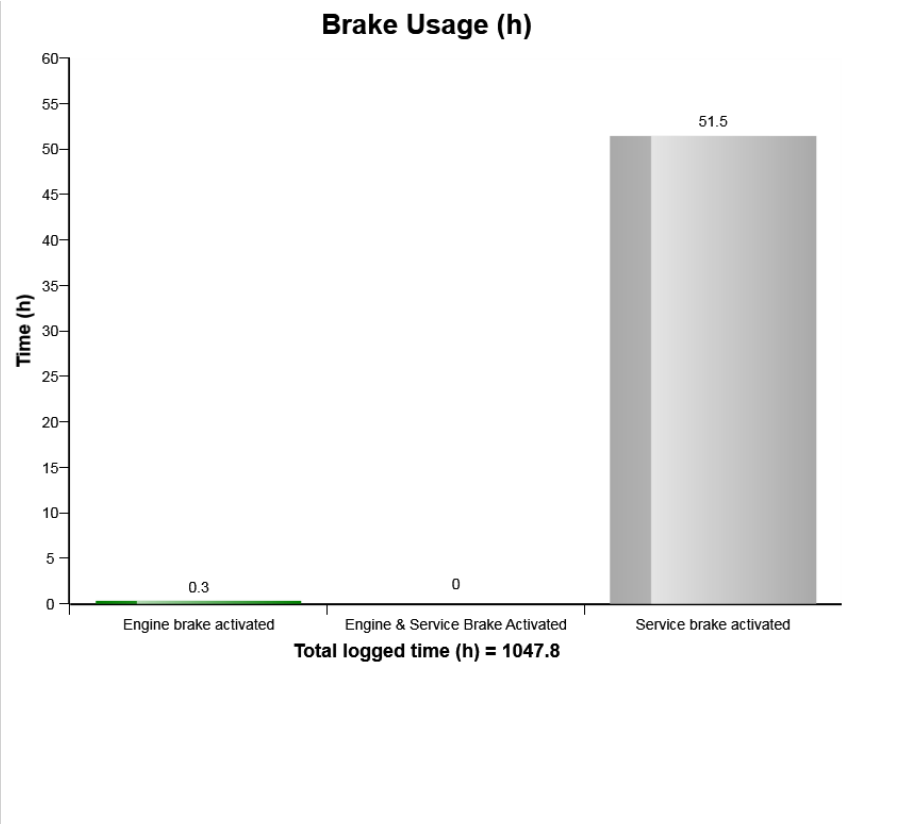
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



The diagram shows the Service brake cooling oil, second bogie axle temperature. The temperatures are divided into ranges, yellow bar (>120-130ºC) and red bar (>130ºC) shows abnormal temperatures. The temperature is registered in the line from the second bogie axle to the oil cooler, that is, the warmest oil in the circuit.

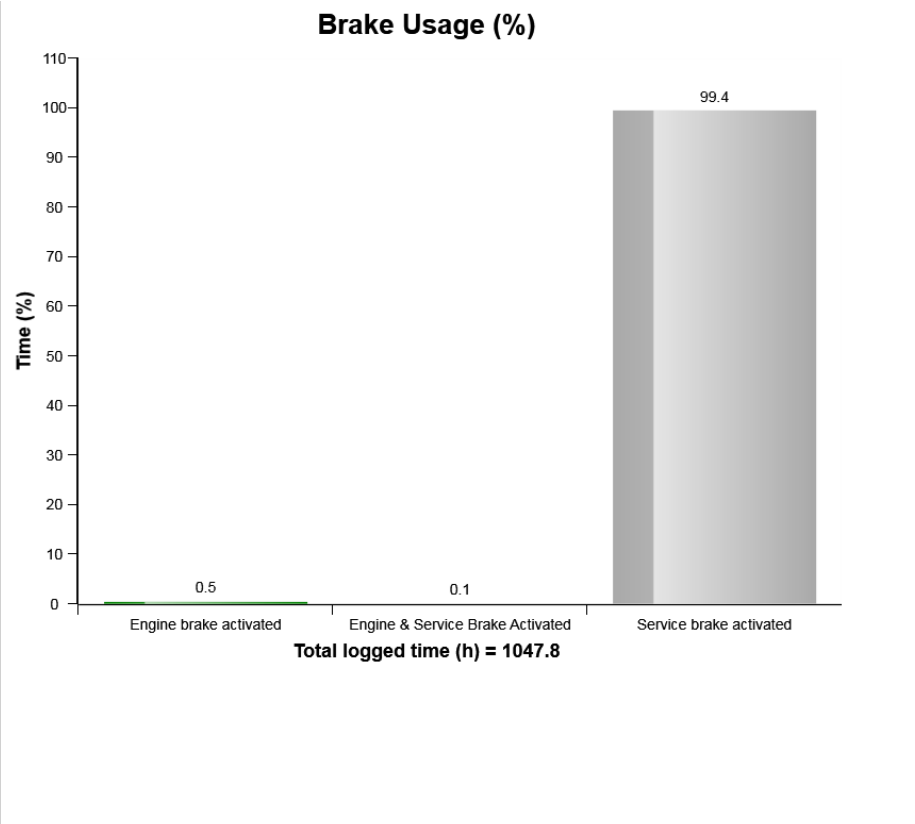
The temperature shown by yellow and red bars degrade the properties of the cooling oil, and may be the result of incorrect and hard operation of the machine. Check the brake pressure distribution in the diagram "Service brake pressure, distribution (%)". If the brake cooling oil temperature is high despite normal distribution of service brake pressure, there is probably a malfunction in the brake cooling circuit

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



An error has occurred while processing HtmlTextBox 'htmlTextBox1':
'WordSection1' is an unexpected token. The expected token is "" or "'. Line 1, position 18.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



An error has occurred while processing HtmlTextBox 'htmlTextBox1':
'WordSection1' is an unexpected token. The expected token is "" or "'. Line 1, position 18.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

Low Brake Servo Pressure
Total number of occurences = 11

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (bar)
B	2804	2018	2	2	12	53	2	128
C	2870	2018	2	28	8	16	6	89
D	2927	2018	5	16	6	38	2	130
E	2945	2018	5	18	7	23	4	108
F	2990	2018	5	25	12	12	3	104
G	2994	2018	5	29	6	40	1	120
H	3003	2018	5	30	6	37	4	111
I	3077	2018	6	18	7	35	1	142
J	3333	2018	11	1	10	32	5	98
A	3714	2019	9	23	15	31	2	129

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating hours is displayed in the first column, followed by year, month, day, hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed

Duration :

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

Extreme value :

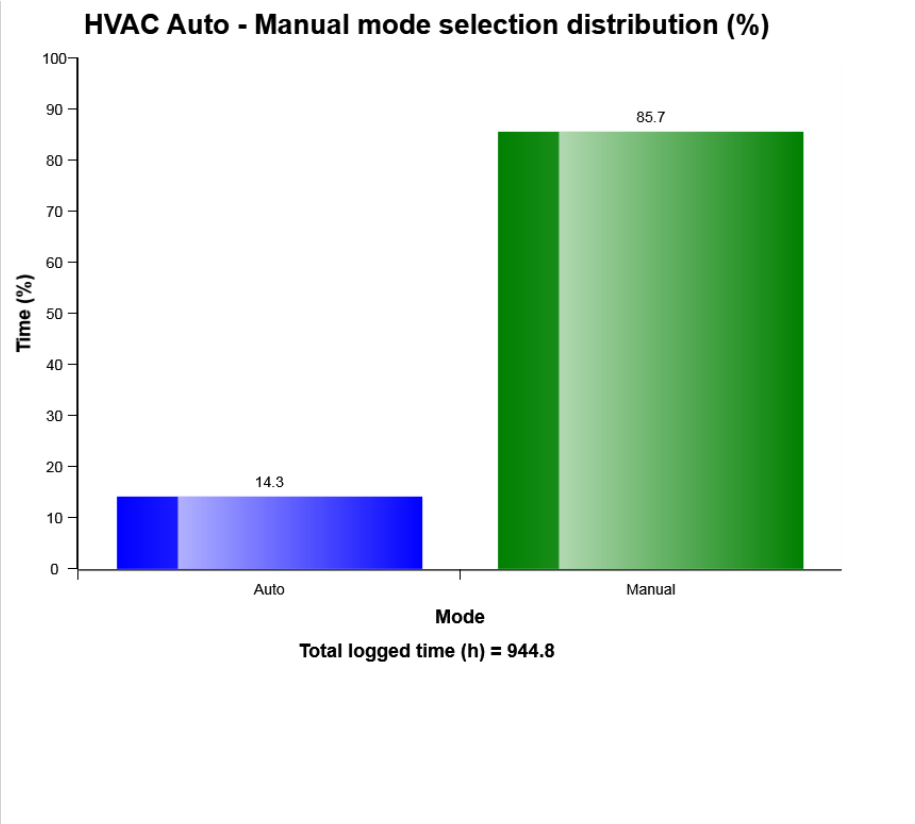
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

The extreme value column displays the most extreme value during the event.

Criteria :

In order for an occurrence of low brake servo pressure to be recorded in a data point and the count to increment by 1, the low brake servo pressure state must be alarm. Gear not in Neutral and engine must be on.

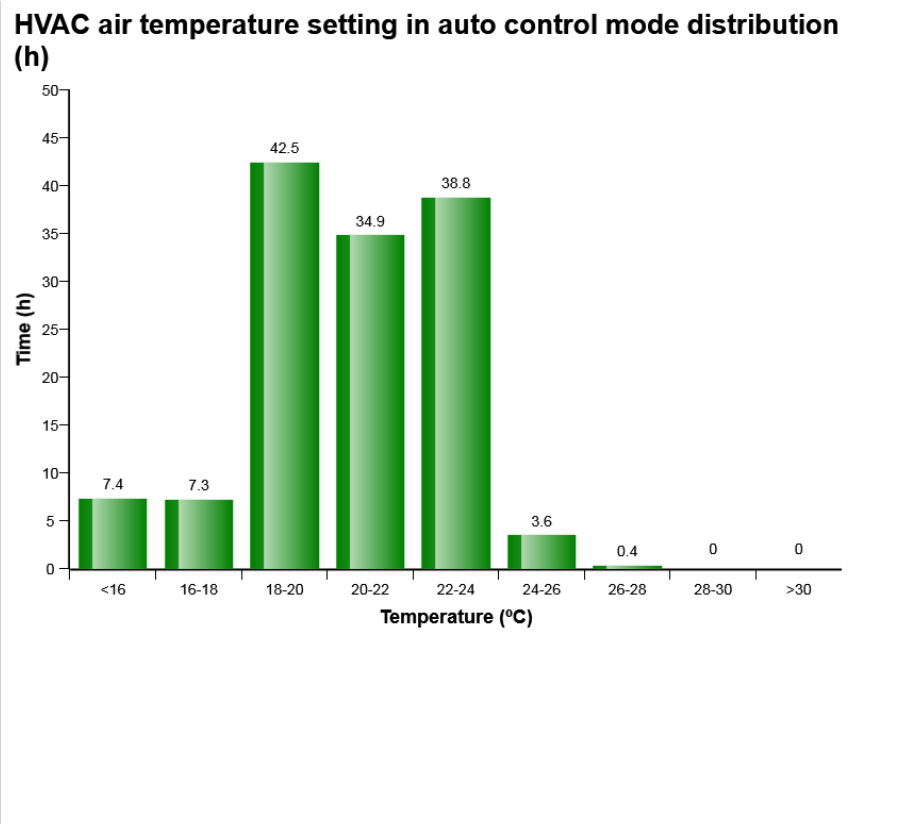
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The diagram describes auto-manual mode sele ction distribution of HVAC system in machine while it Works. The share of each mode compared to Total time of HVAC operation is displayed.

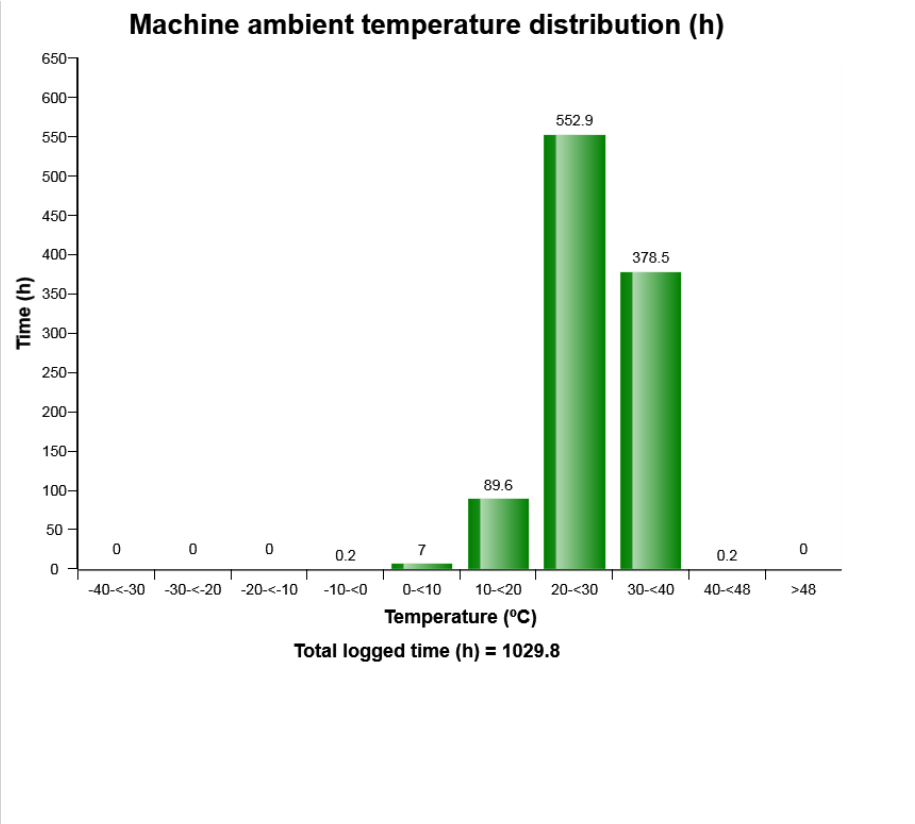
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The diagram describes air temperature setting distribution for HVAC auto control mode established by operator in Cabin

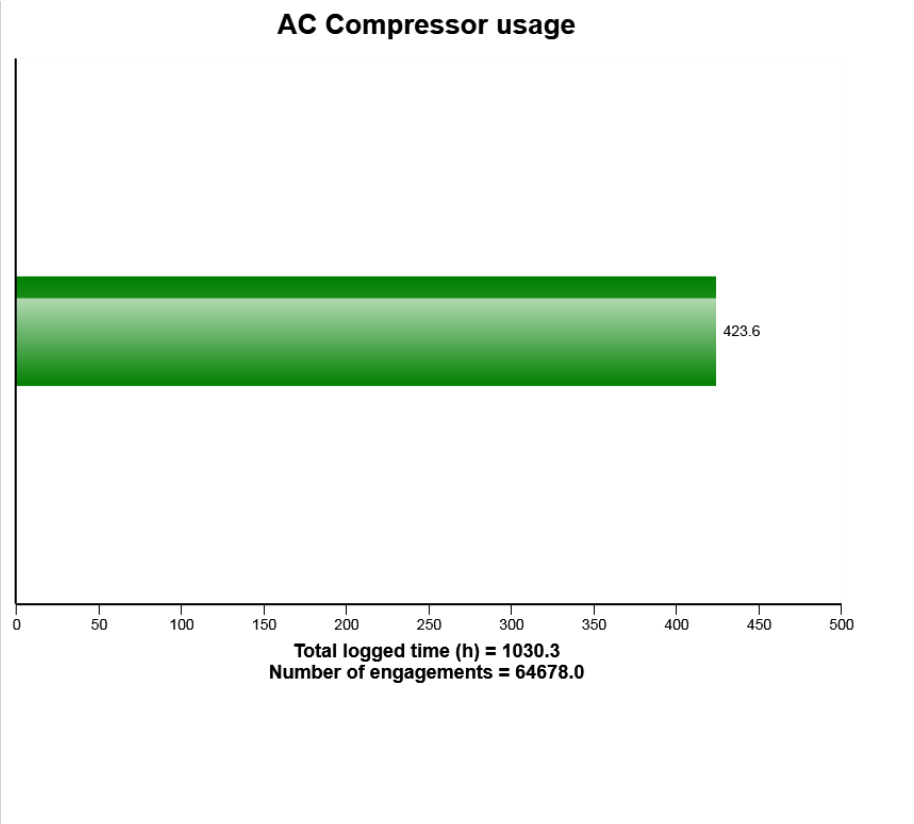
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The diagram describes ambient temperature distribution of the machine while machine operates.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The graph shows the total time of AC compressor engagement.

Explanation:

Green bar: Total time in hours, AC compressor has been engaged.

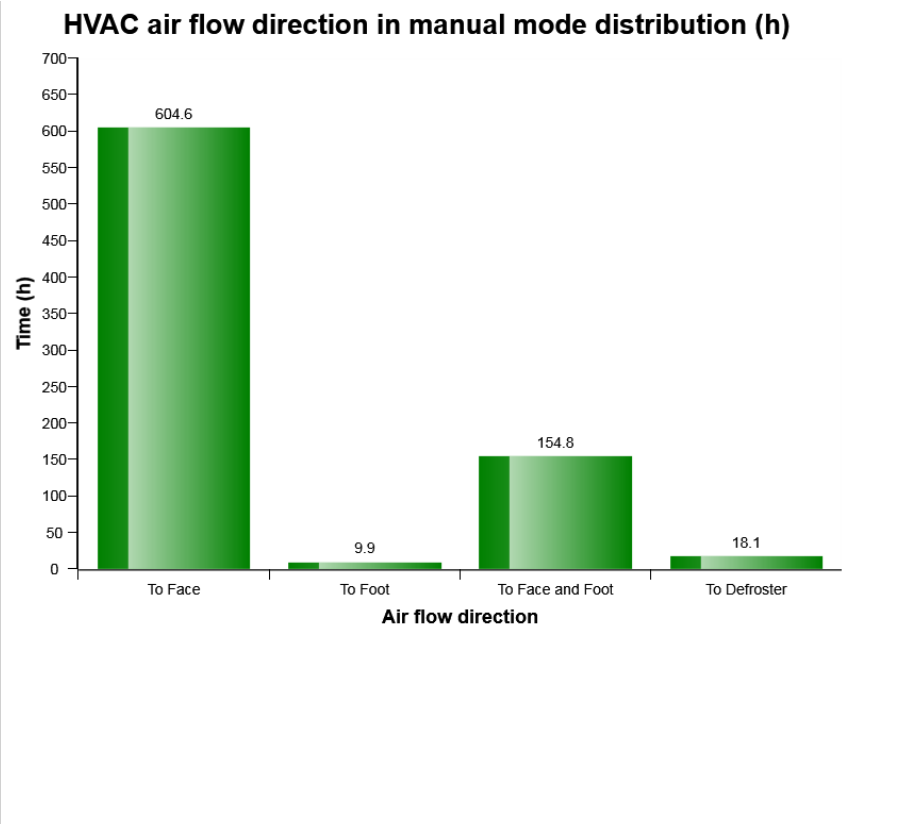
Under the graph the total engine running time (in hours) is displayed.

Total number of AC compressor activations is also displayed.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

-

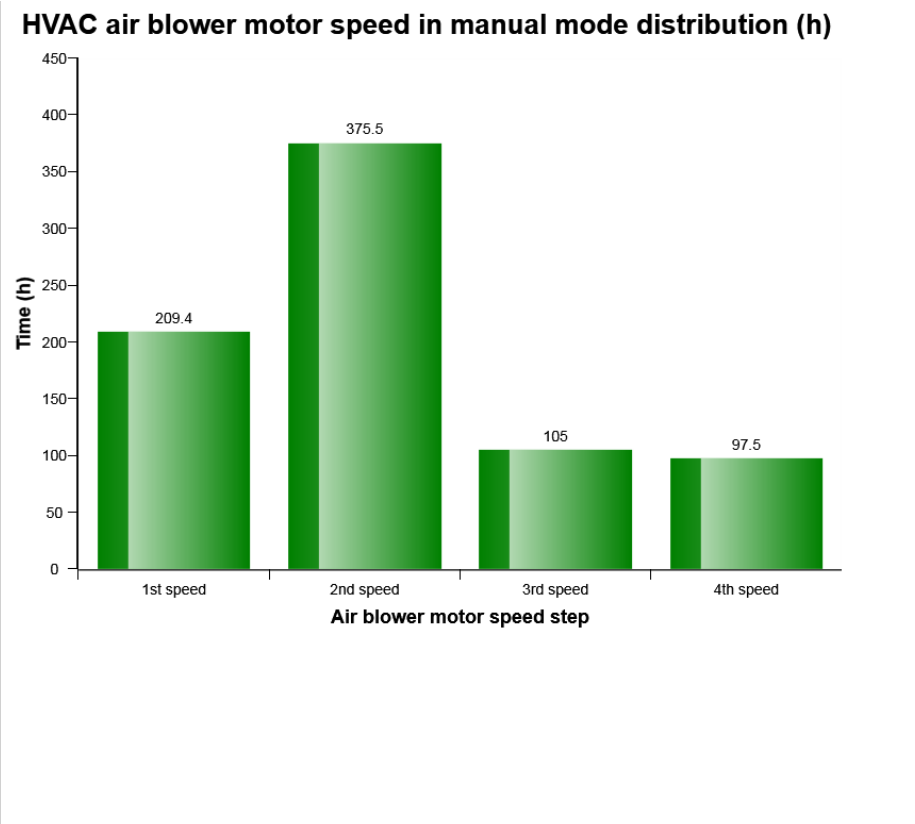
Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The diagram describes air flow direction distribution for HVAC manual control mode established by operator in Cabin.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The diagram describes air blower motor speed distribution for HVAC manual control mode established by operator in Cabin.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

AC High Pressure
Total number of occurences = 6

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
3102	2018	6	20	16	17	11	37
3609	2019	6	10	12	46	16	32
3637	2019	6	13	12	53	4	33
3662	2019	6	26	14	35	294	38
3662	2019	6	26	14	9	301	38
3663	2019	6	26	14	58	197	38

Definition :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating

hours is displayed in the first column, followed by year, month，day，hour and minute to show when an event has occurred.

The rows are not ordered chronological (The latest event may be in the middle).

Only one event per minute is registered.

Over the table the total number of events is displayed

Duration：

The duration of each event is shown after the timestamp of the event.

The duration is counted as long as the criteria is fulfilled.

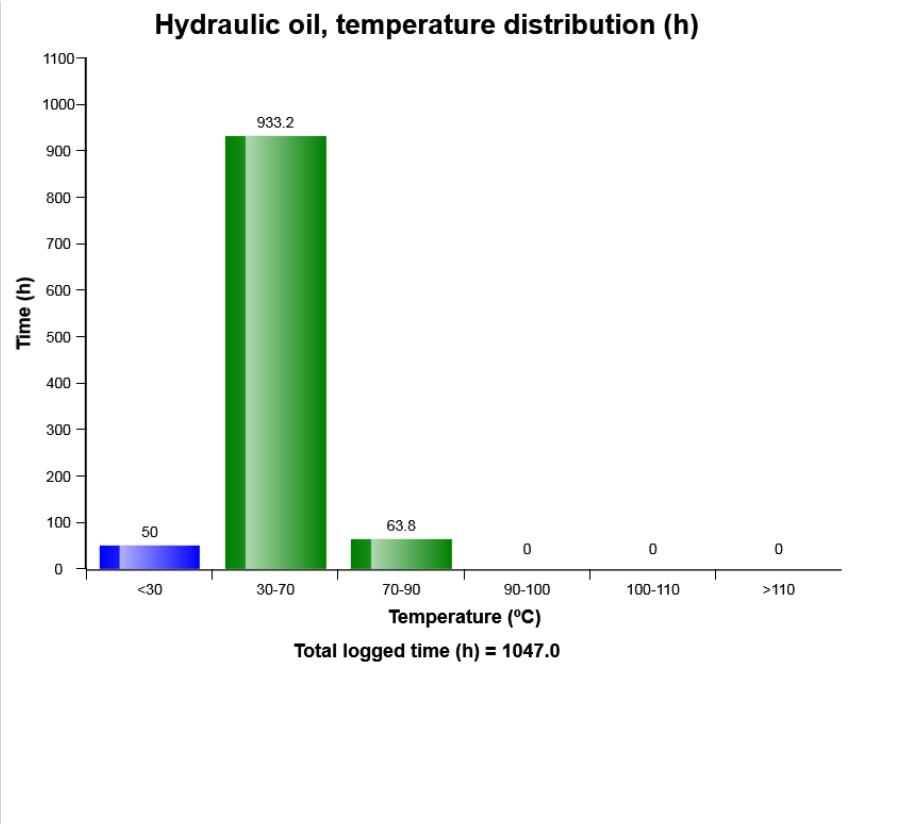
Extreme value：

The extreme value column displays the most extreme value during the event.

Criteria：

Logging is performed when, High AC Pressure signal is active. Ambient temp is viewed.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The graph shows the time distribution of the temperature, while engine running.

Explanation:

Y-axis: Time

X-axis: Temperature distribution in classes.

Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

It is normal to have registrations in this region.

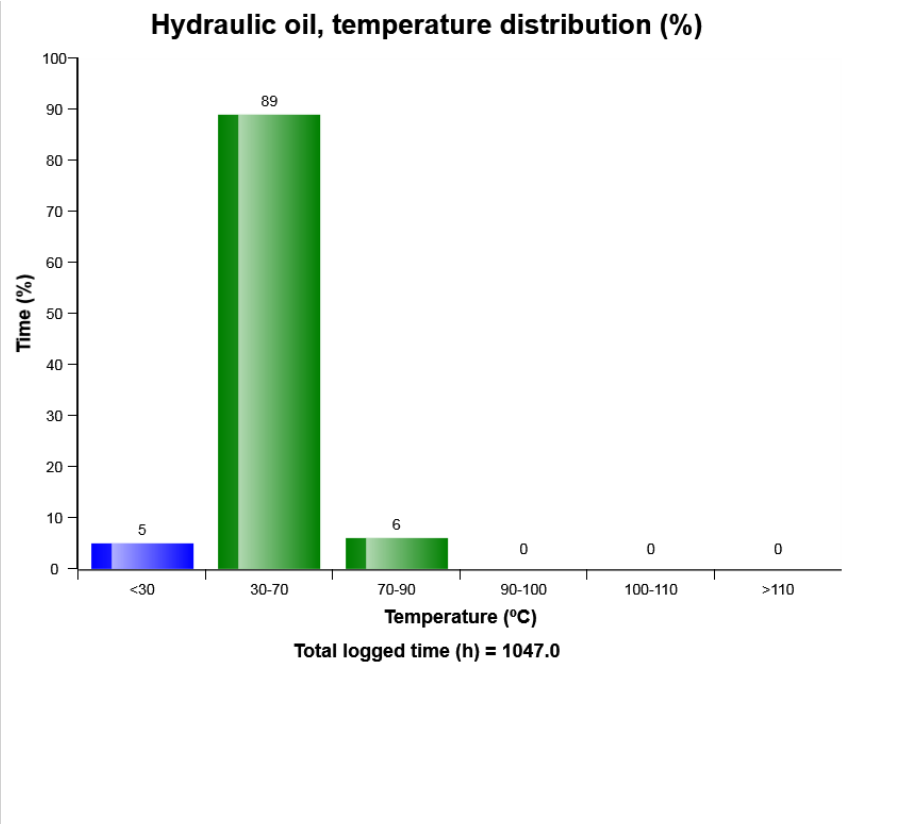
Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019



Definition:

The graph shows the time distribution of the temperature, while engine running.

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Y-axis: Time

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Blue bar = Warm-up phase.

During the engine warm-up phase, this temperature region is passed.

Machine model	SerialNo	Operating Hours	Reading Date
A40G	340776	3718	17/12/2019

It is normal to have registrations in this region.

Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

Registrations in this region is not normal, running in this region may cause severe damage.