

# VOLVO CONSTRUCTION EQUIPMENT MATRIS REPORT

Machine model <b>A45G</b>	SerialNo <b>342416</b>	Operating Hours <b>2373.8</b>	Reading Date <b>02/09/2020</b>
Company name <b>Hoffman</b>	Dealer	Report Issuer	
Contact name	Technician <b>user</b>	Primary Application <b>Earth moving construction</b>	
Site	Workorder	Ground Condition	

MATRIS Reading, Summary / Recommendation

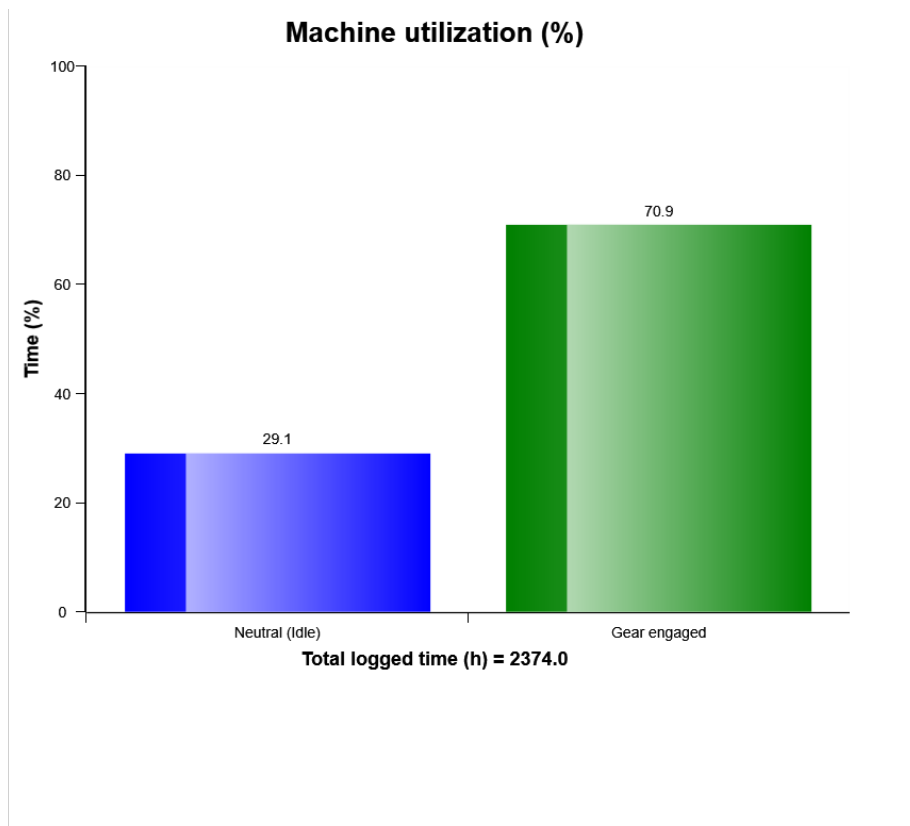


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Main equipment	Type	Equipment
	Tyre size/class	Sold without tyres
	Body extensions	Not mounted
	Tail-gate	Not mounted
	Extra spillguard	Not mounted
	Wear plates	Not mounted
	Pattern	None



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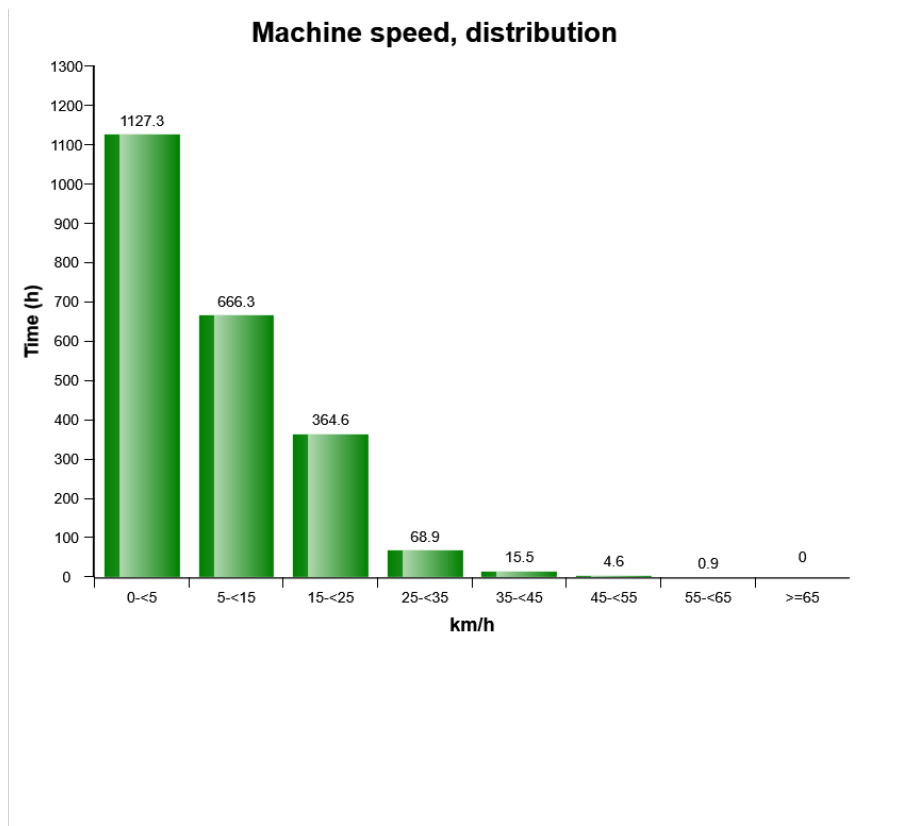
The diagram shows a simplified presentation of the machines utilization based on the relation between time in gear and time in neutral. The "Gear engaged " includes both forward and reverse gears.

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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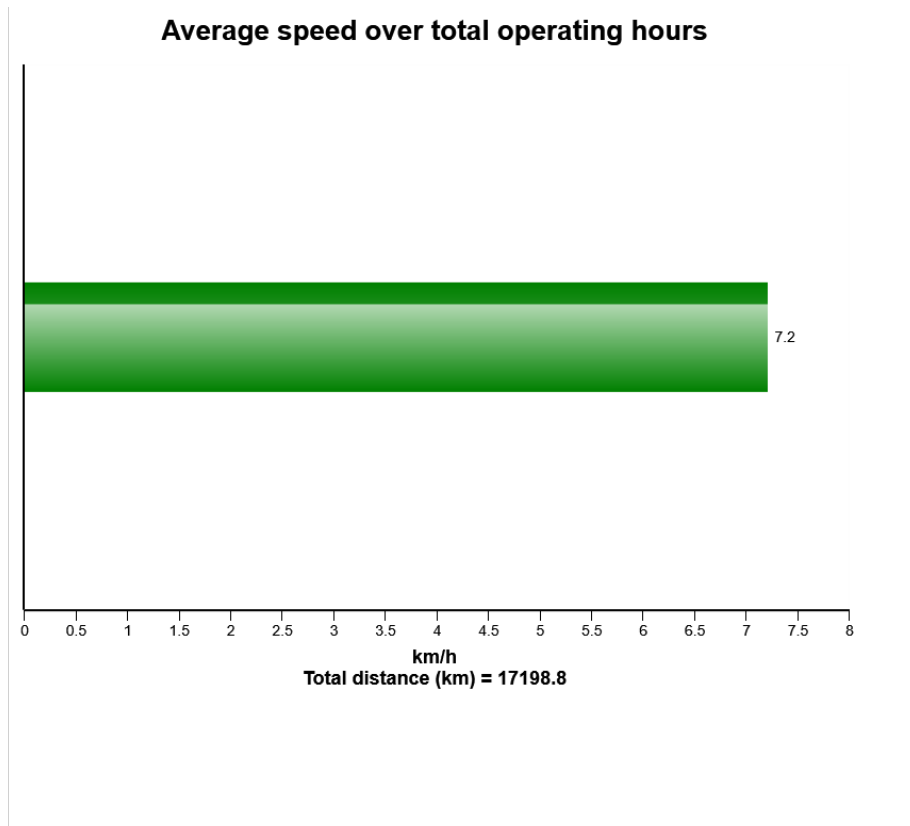


The presentation shows the time in hours in speed-intervals for the vehicle

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.



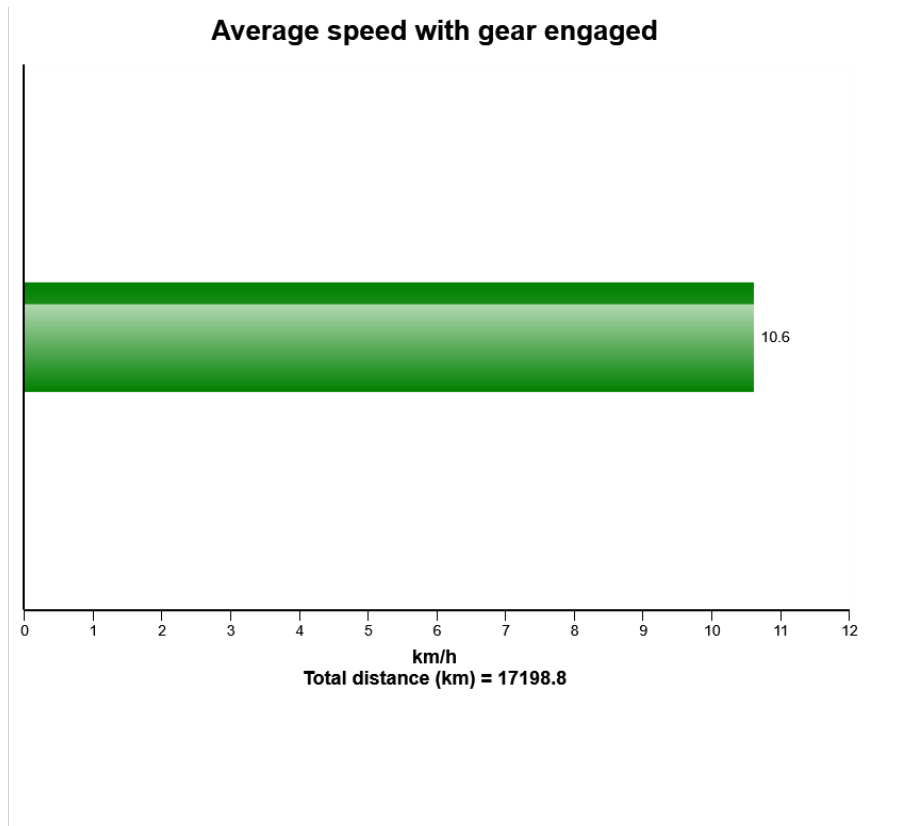
Machine model	SerialNo	Operating Hours	Reading Date
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The diagram shows the machines average speed based on the total operating hours.



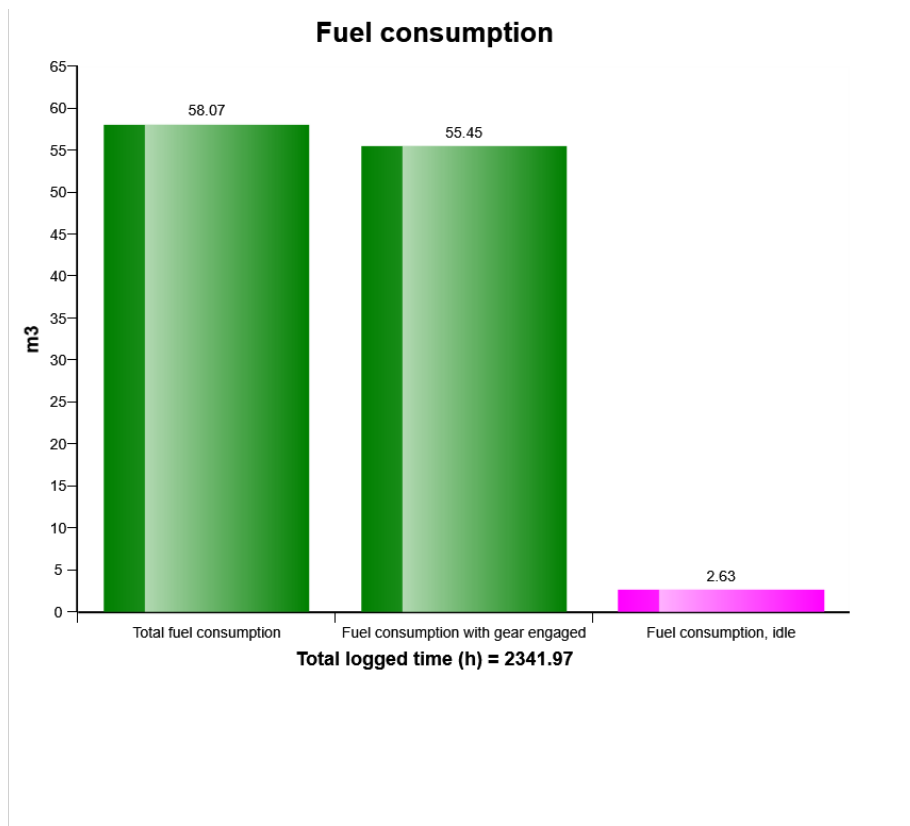
Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

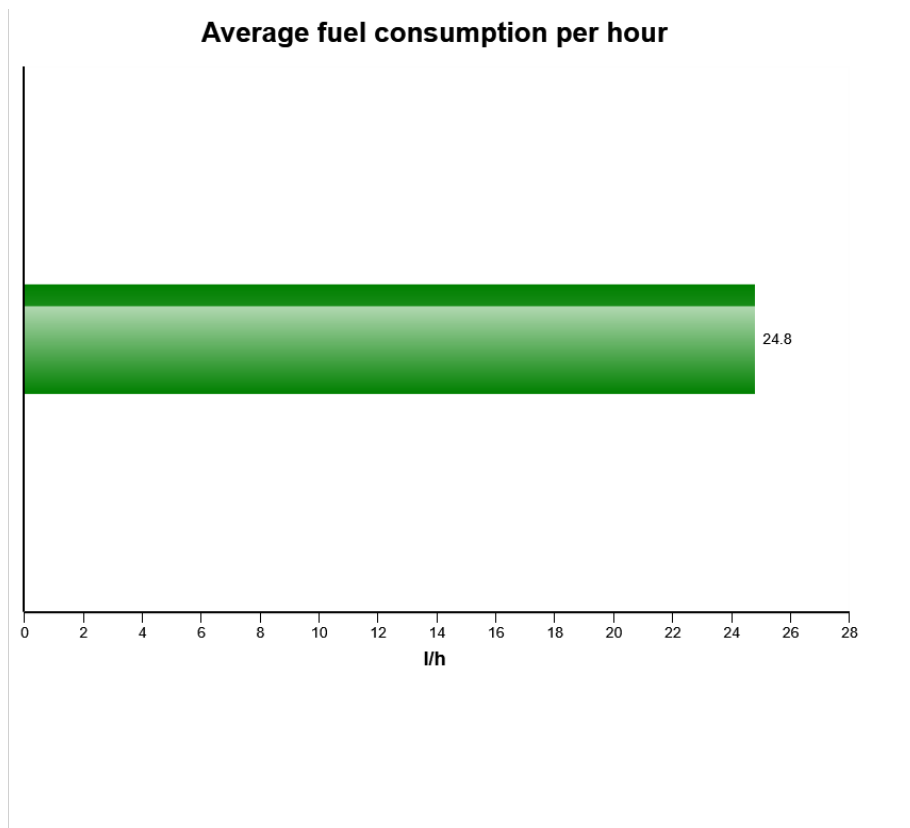


The diagram shows the total fuel consumption, fuel consumption with gear engaged and fuel consumption during idle.

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



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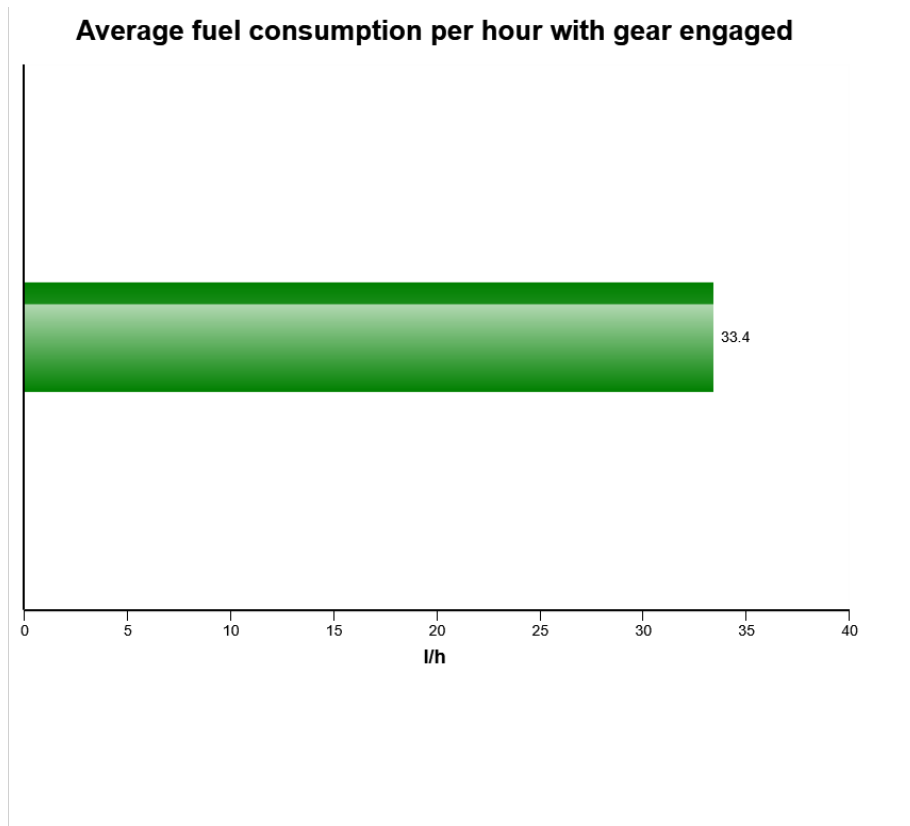


The diagram shows the average fuel consumption based on total operating hours.





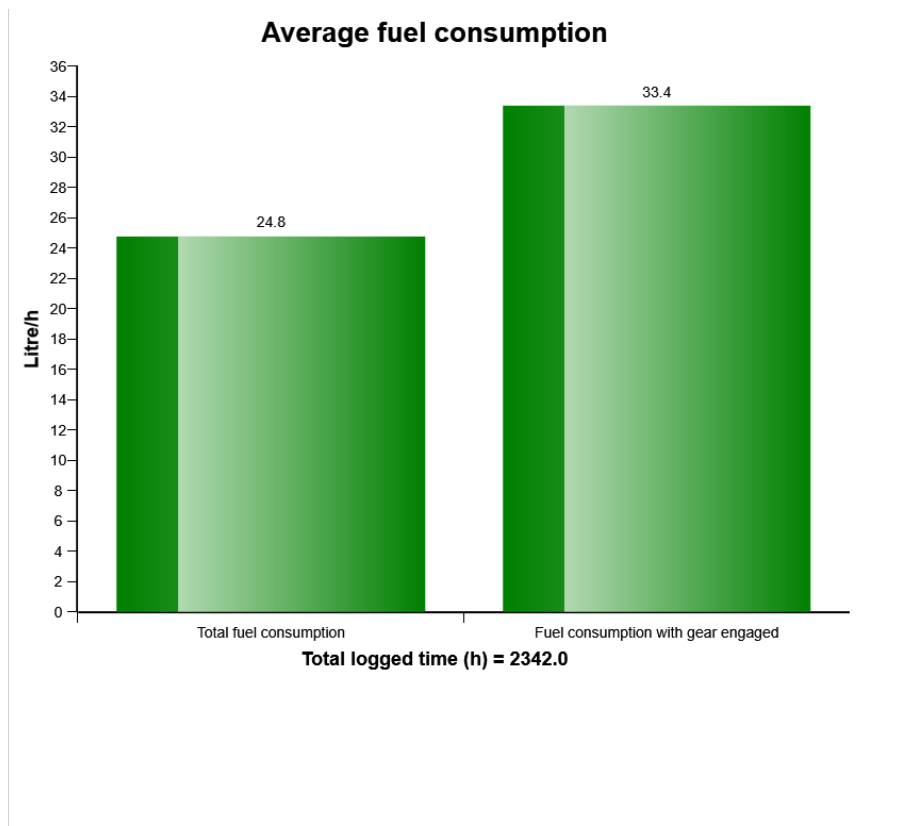
Machine model	SerialNo	Operating Hours	Reading Date
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The diagram shows the average fuel consumption based on the operating hours with gear engaged.



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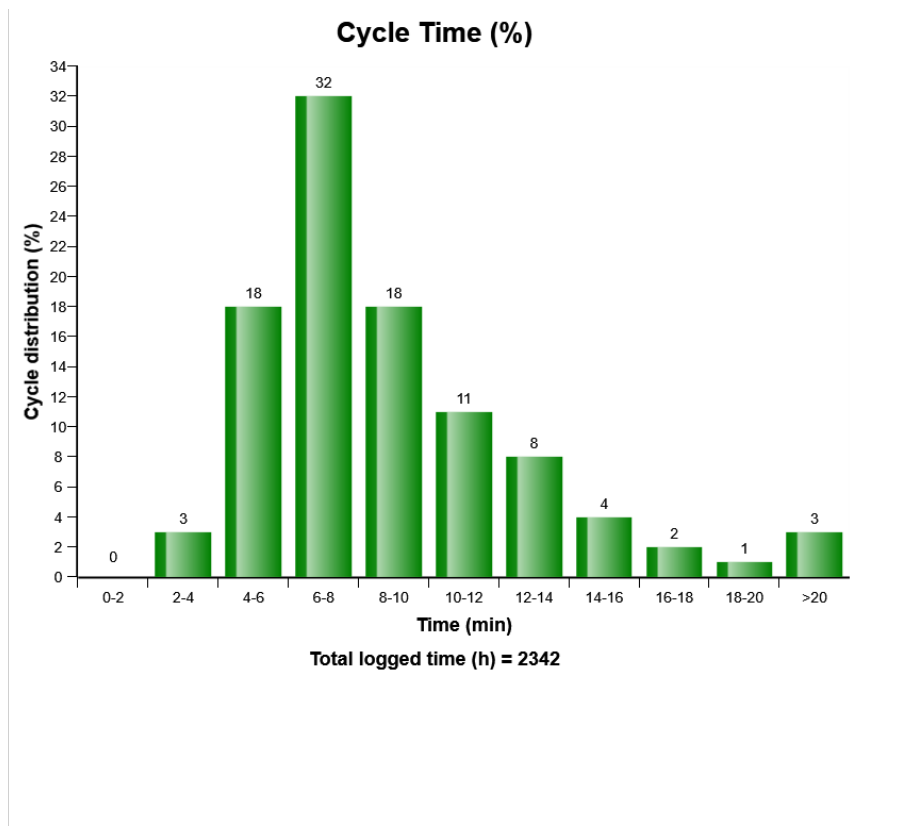


The diagram shows the total average fuel consumption versus average fuel consumption with gear engaged.

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



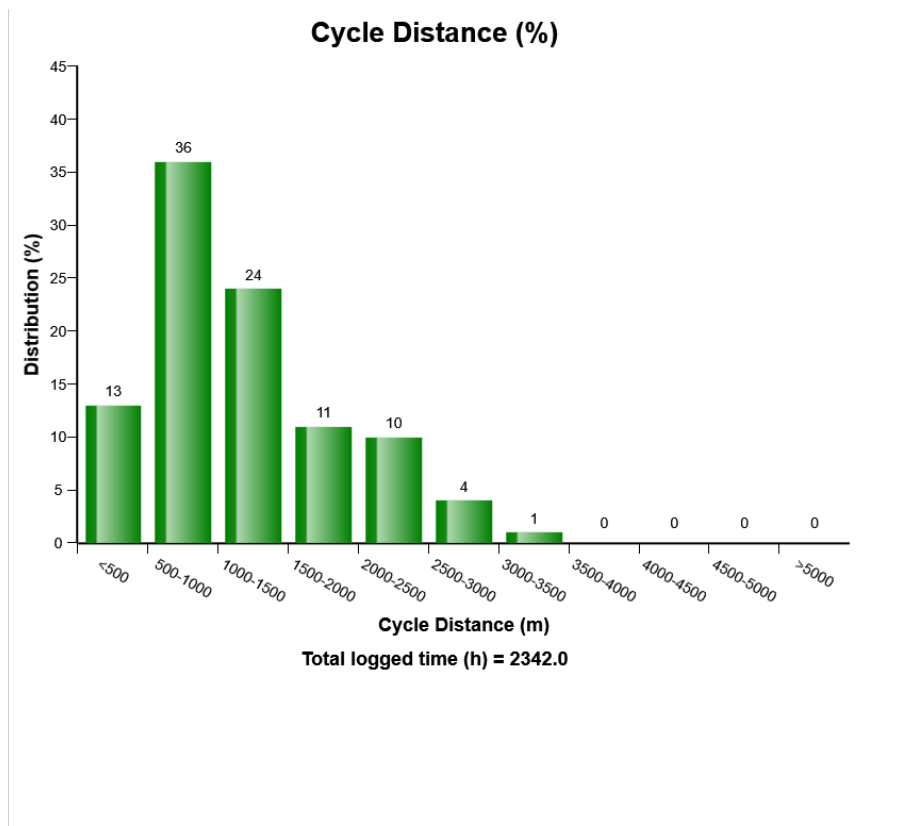
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The diagram shows the distribution of the working cycle time. The time between 2 valid cycle registrations is registered. Time starts from lifting the body.



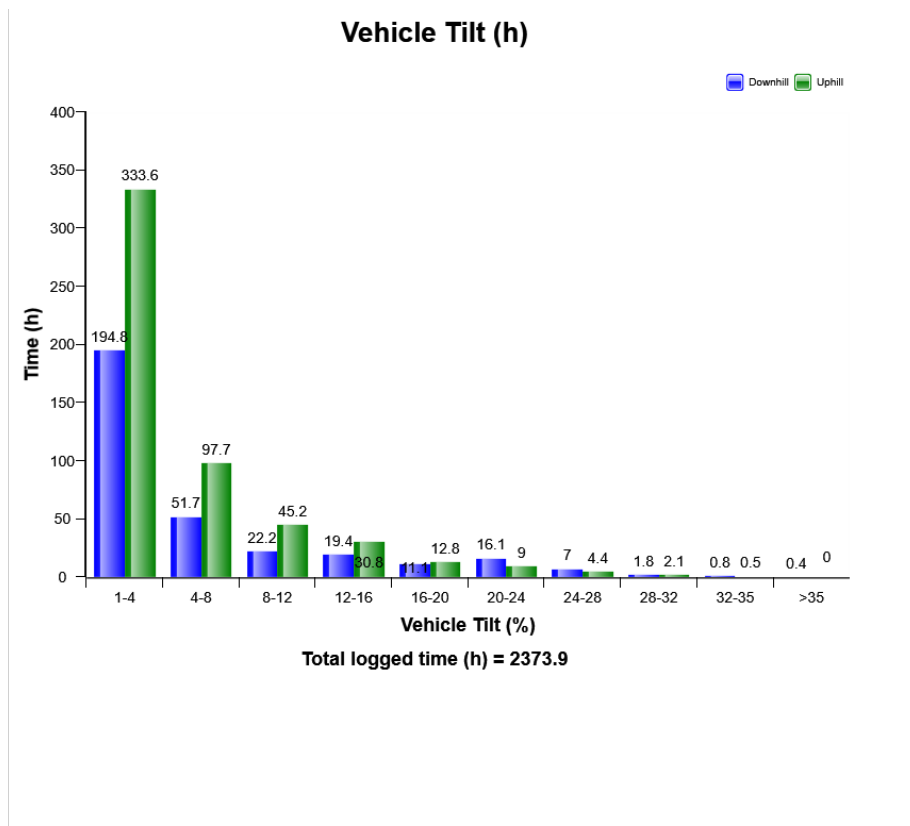
Machine model	SerialNo	Operating Hours	Reading Date
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The diagram shows the distribution of the working cycle distance. The distance driven between 2 valid cycle registrations.



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The diagram shows the distribution of the longitudinal tilt in percent (not degrees), the criteria to get registrations is that the vehicle speed exceeds 1km/h (0,62mph) and that the engine is on.



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**Accumulated performance**  
**Total logged time (h) =**

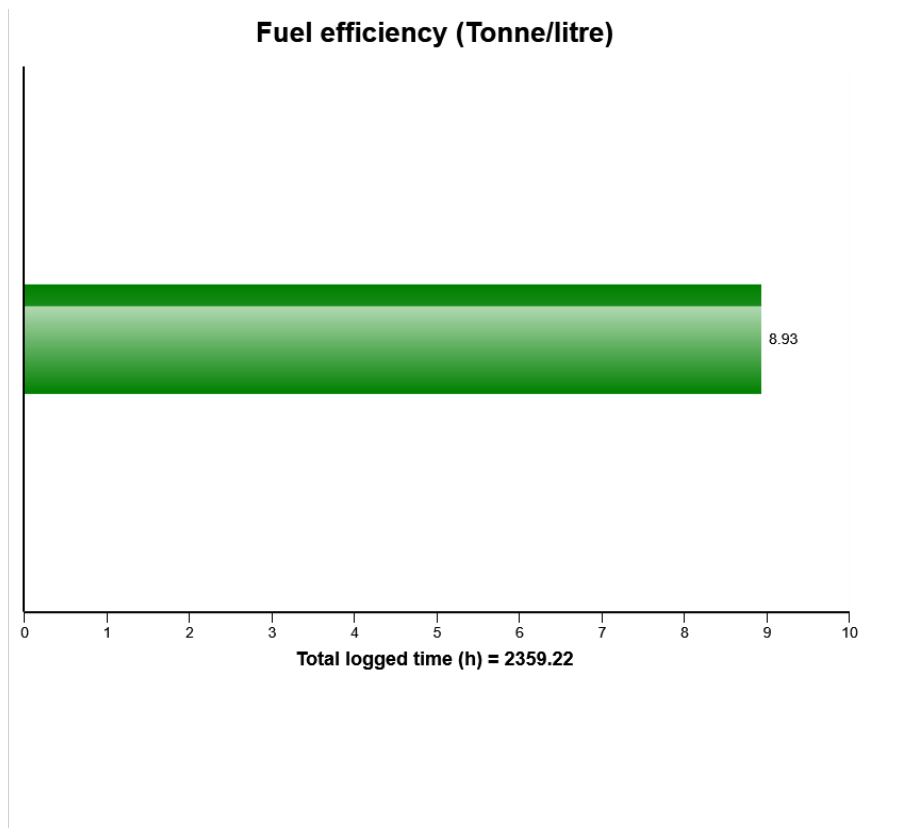
<b>Total logged time (h) =</b>	2359.2
<b>Total fuel consumption</b>	58092.0
<b>Production (tonne)</b>	518960.8
<b>Tonne/h</b>	220.0
<b>Tonne/litre</b>	8.9
<b>Litre/tonne</b>	0.1
<b>Number of cycles</b>	14012
<b>Cycles overloaded (%)</b>	5.9
<b>Load utilisation / cycle (%)</b>	90.3

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.



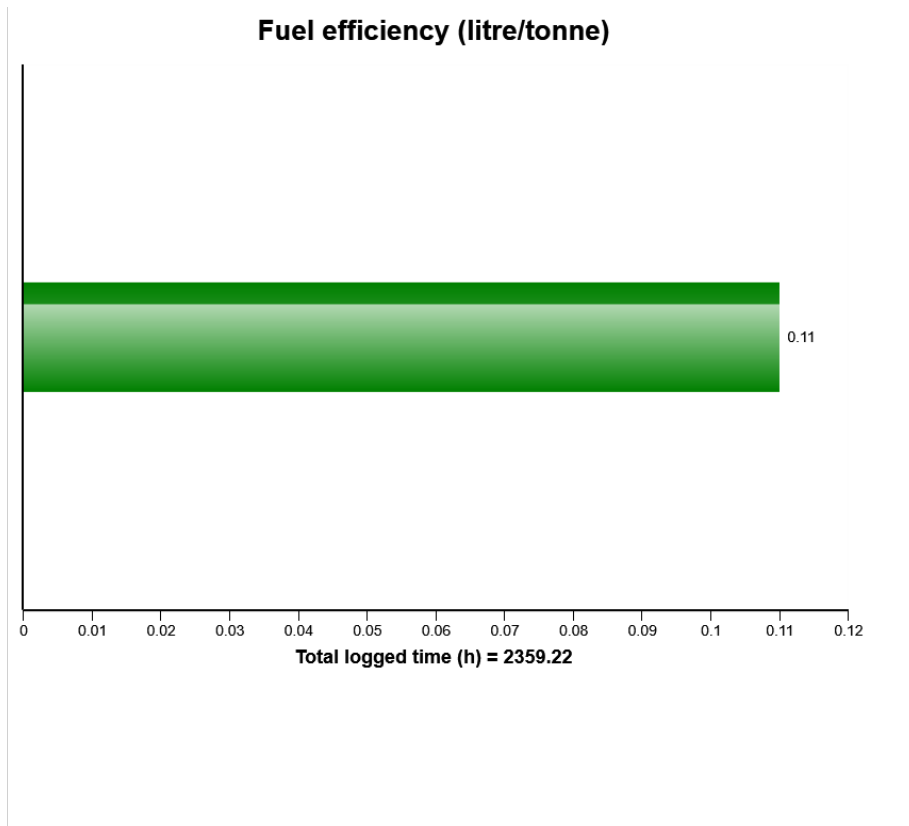
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The presentation display the average produced tonne per fuel unit over the machines lifetime



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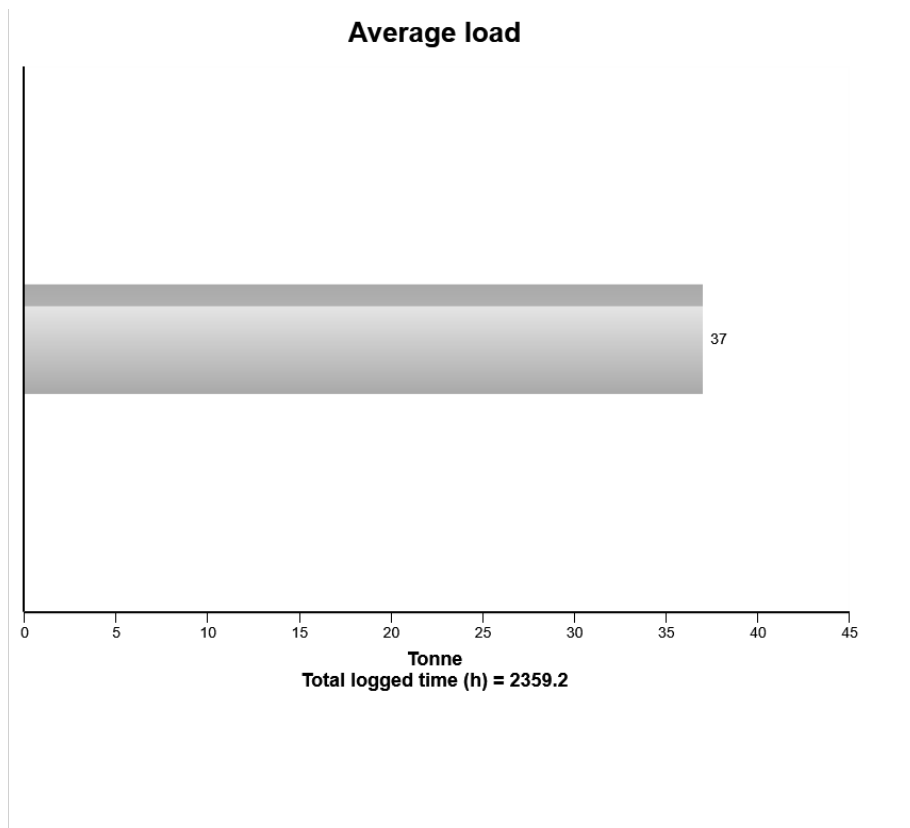


The presentation shows the average fuel consumption per tonne over the machines lifetime





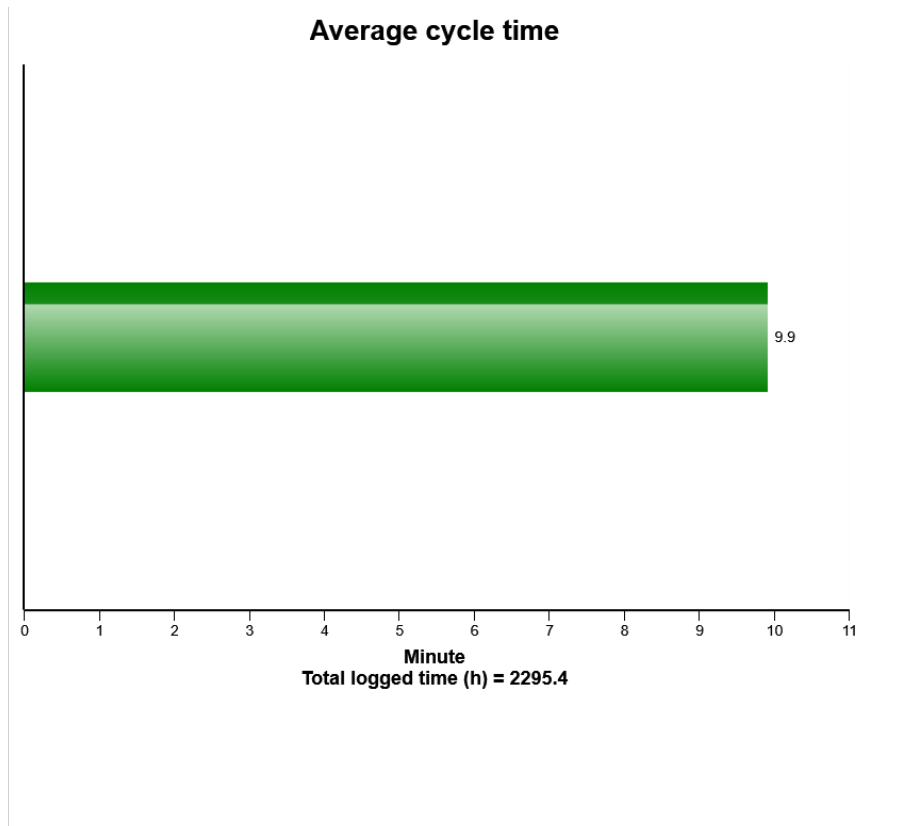
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An error has occurred while processing HtmlTextBox 'htmlTextBox1':  
'WordSection1' is an unexpected token. The expected token is "" or "". Line 1, position 18.



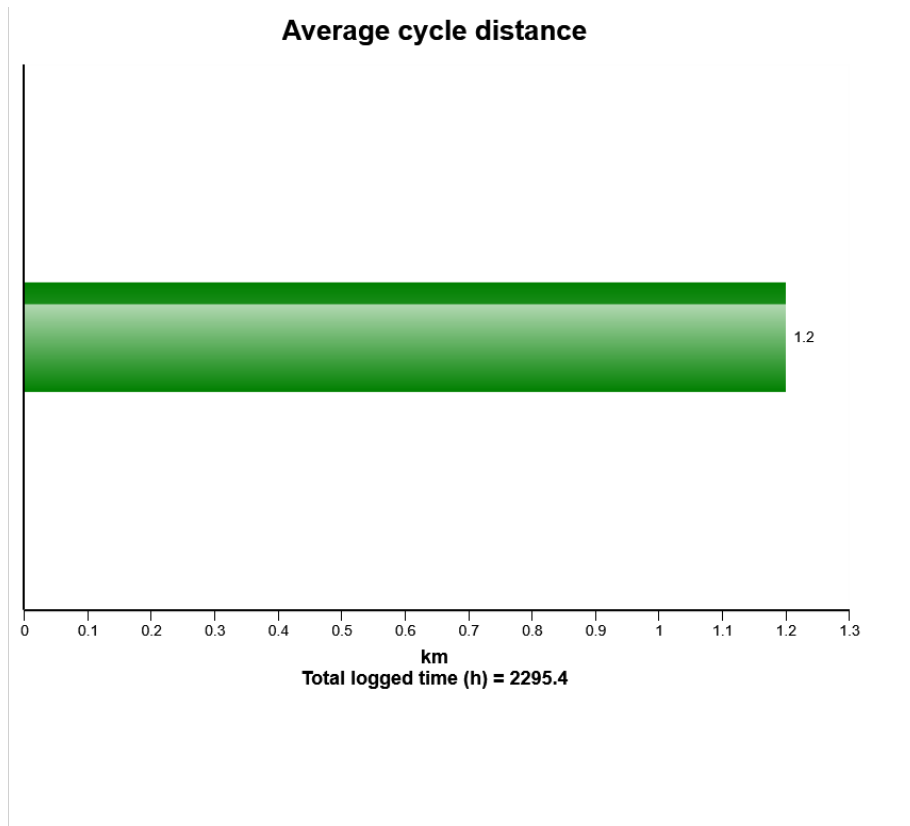
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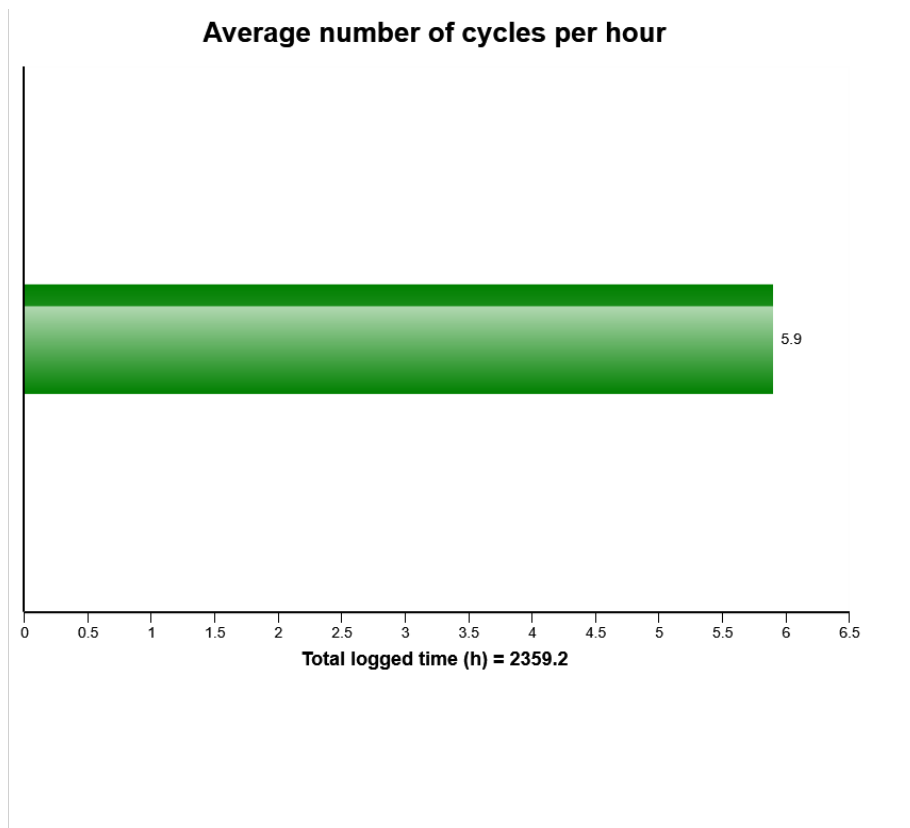
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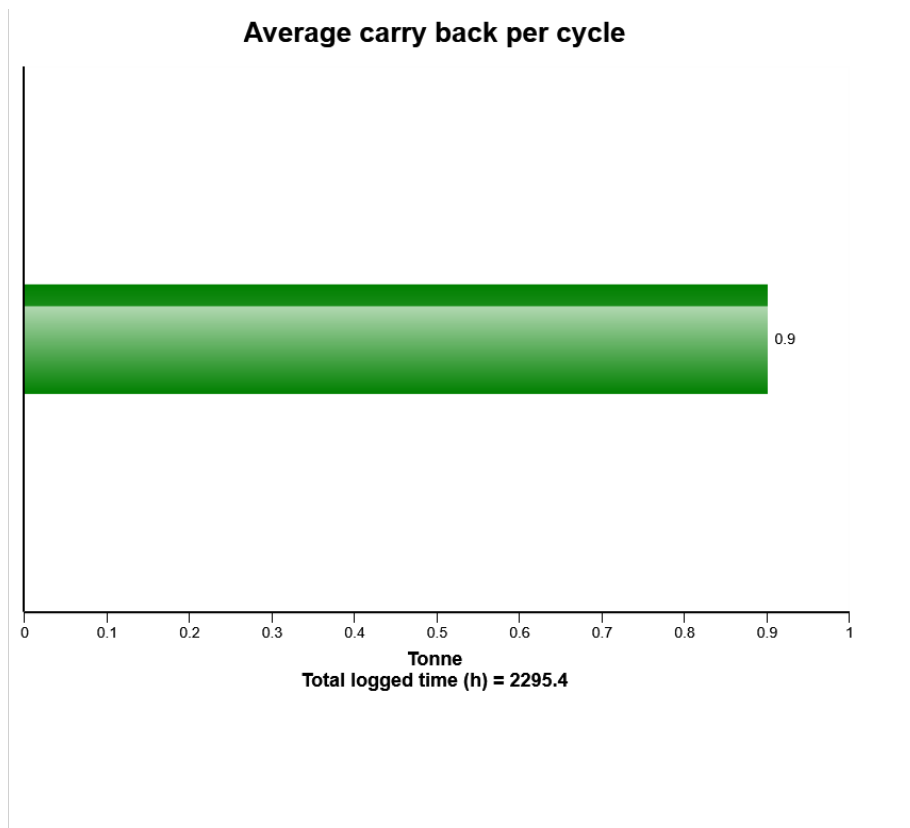
Machine model	SerialNo	Operating Hours	Reading Date
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The presentation shows the average number of cycles per hour over the machines lifetime.



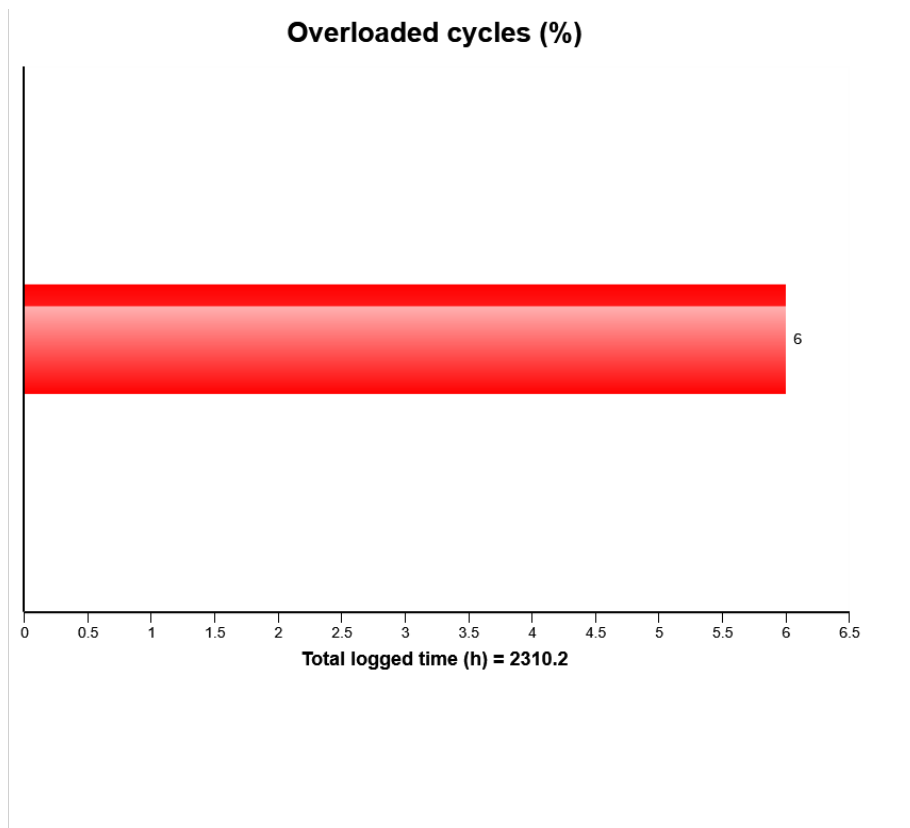
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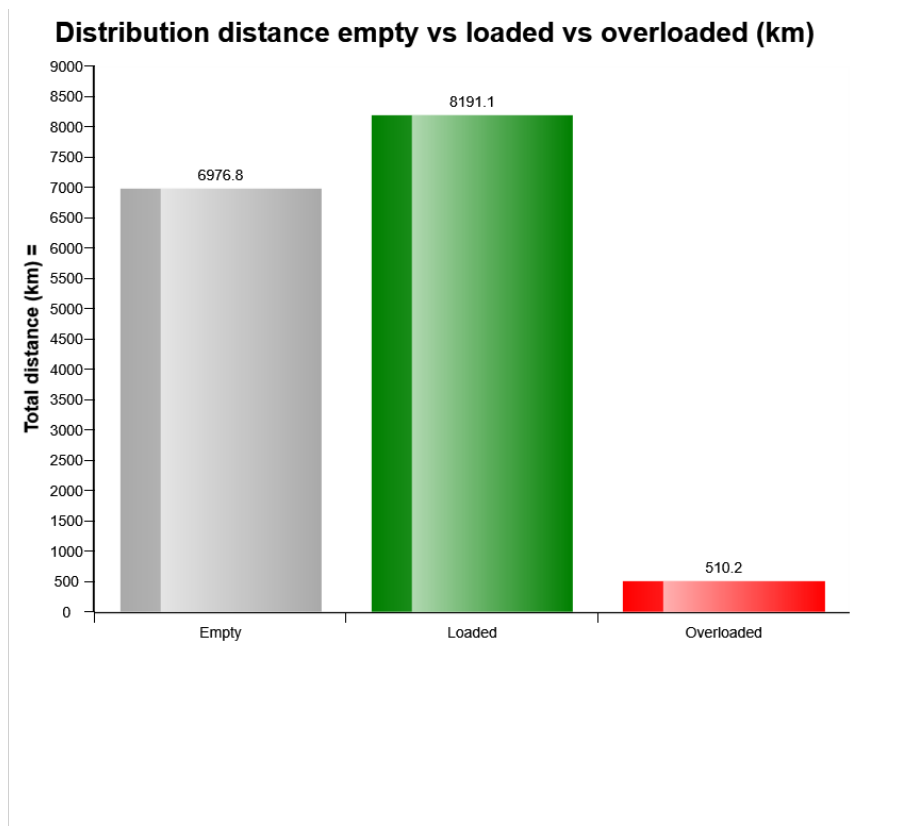
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An error has occurred while processing HtmlTextBox 'htmlTextBox1':  
The ':' character, hexadecimal value 0x3A, cannot be included in a name. Line 1, position 656.



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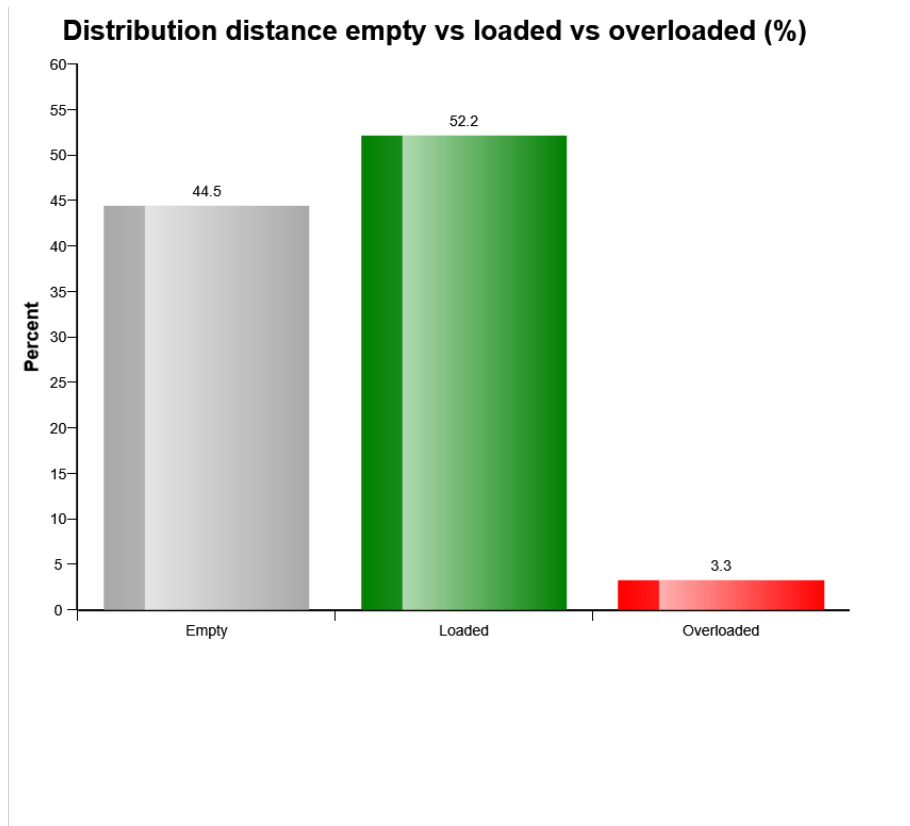


Much time operated with overload puts unnecessary stress to the machine which could lead to shorter machine life and higher repair and maintenance cost.

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



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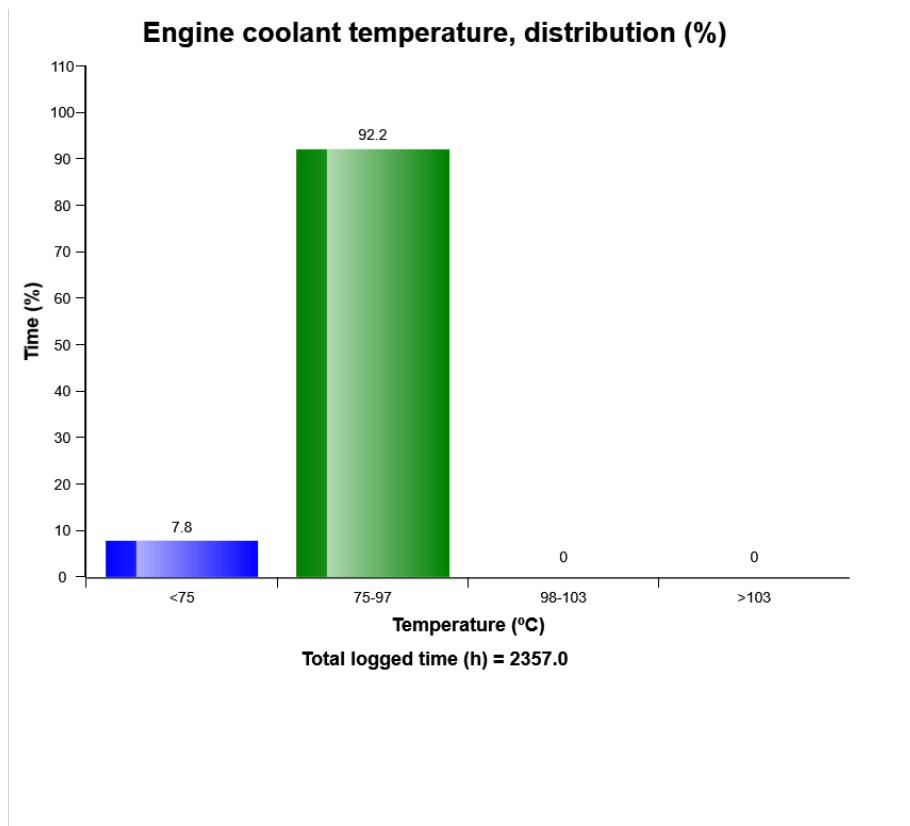
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**Definition:**

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.



Machine model	SerialNo	Operating Hours	Reading Date
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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.

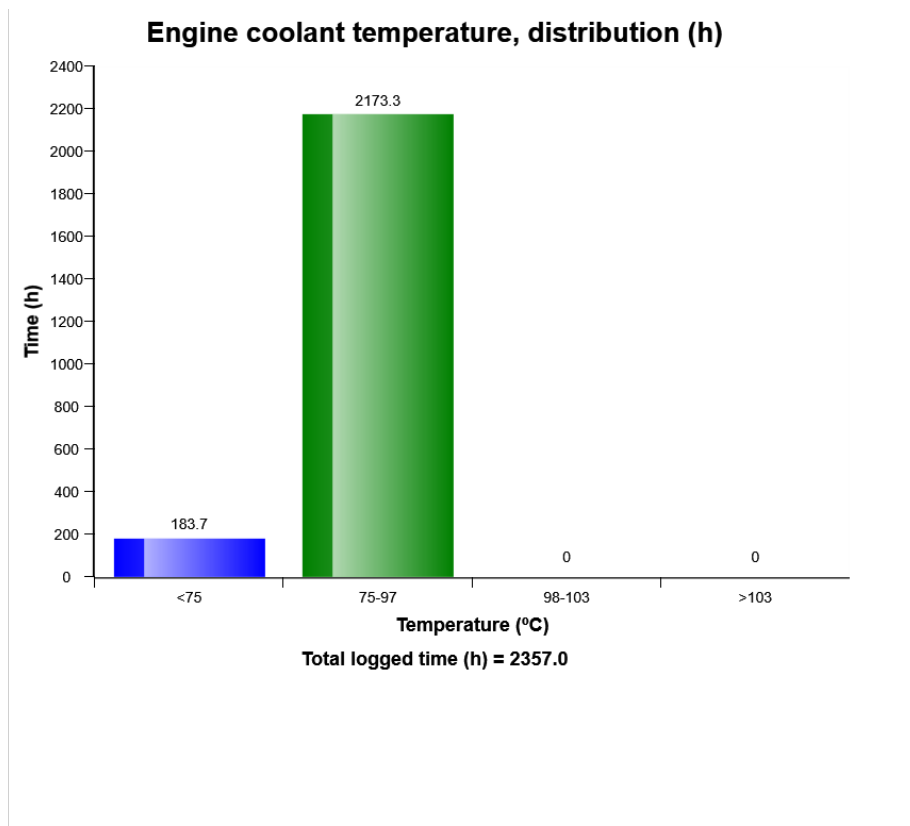
**Yellow bar** = High working temperature. It is normal to have some registrations in this region.

**Red bar** = Alarm.

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



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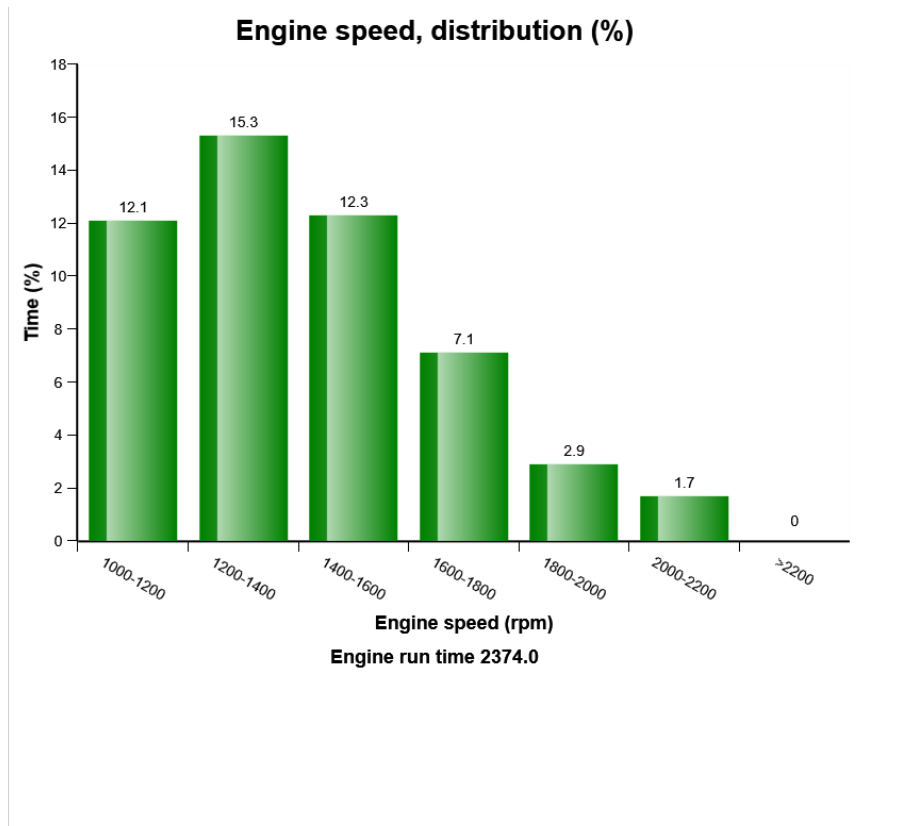
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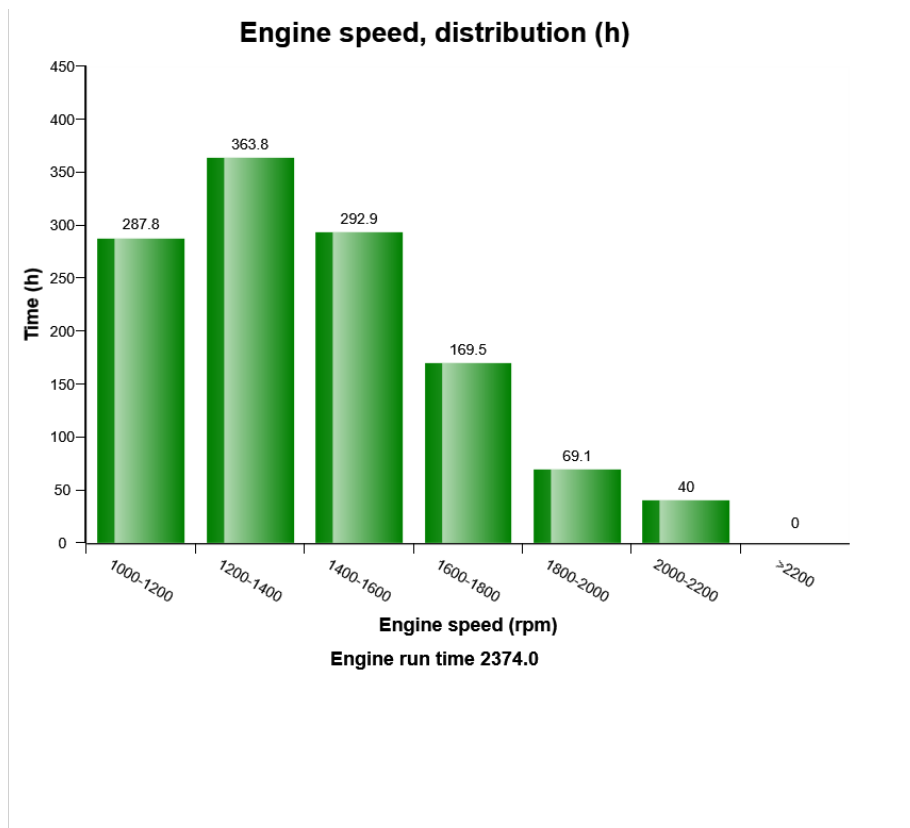
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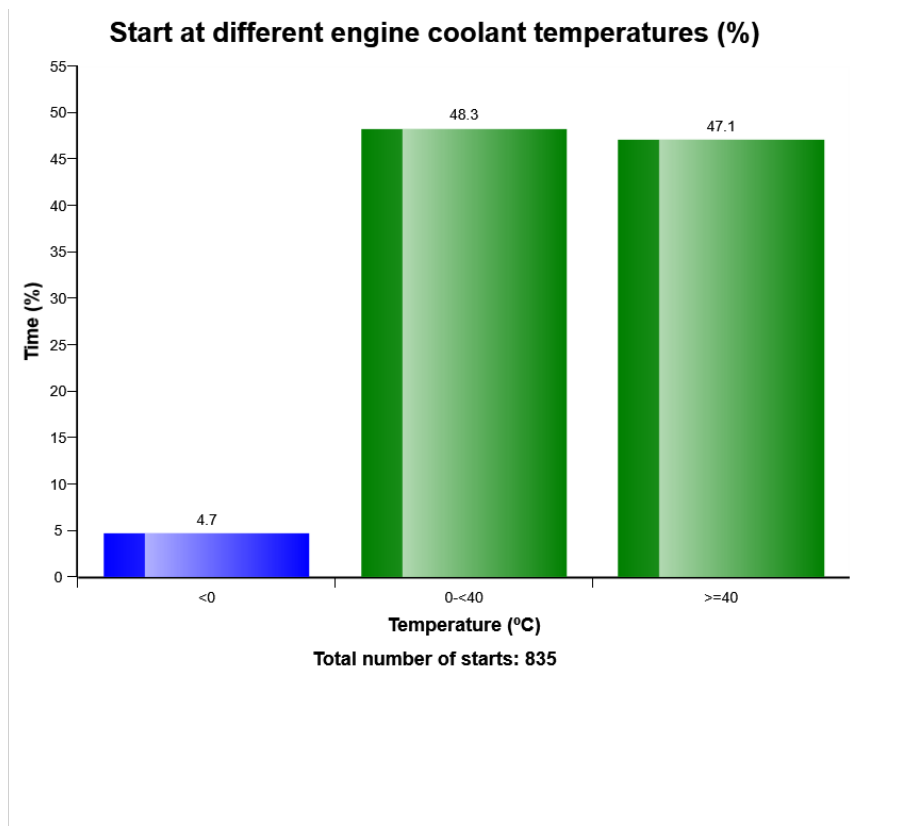
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Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



**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.



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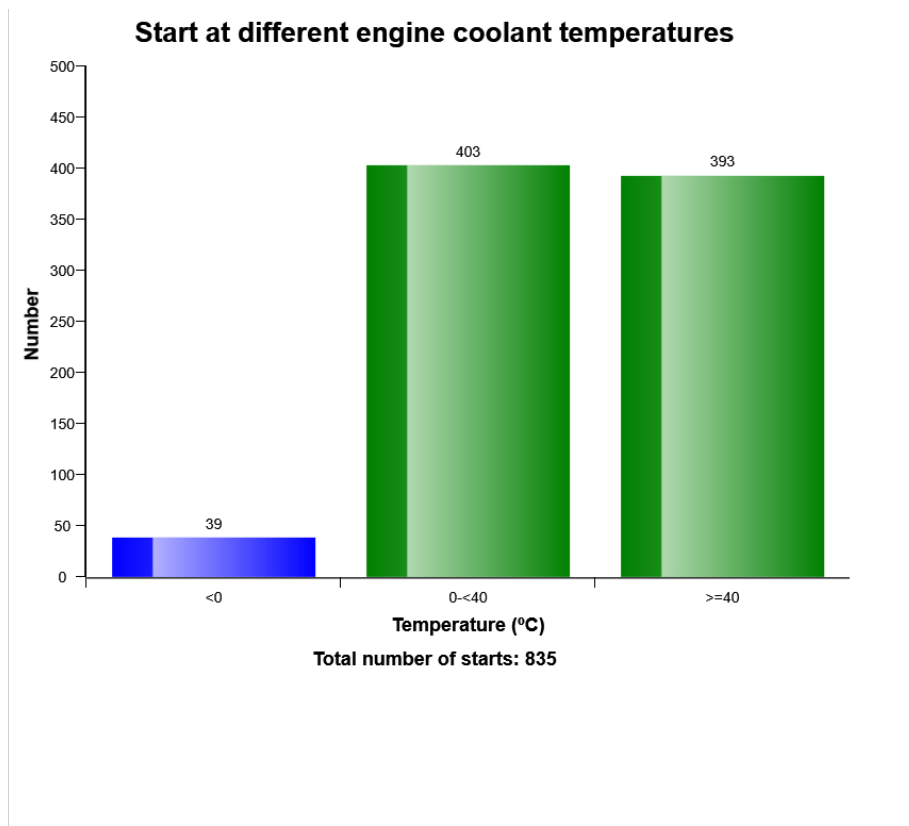
Under the graph the total number of engine starts is displayed.

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





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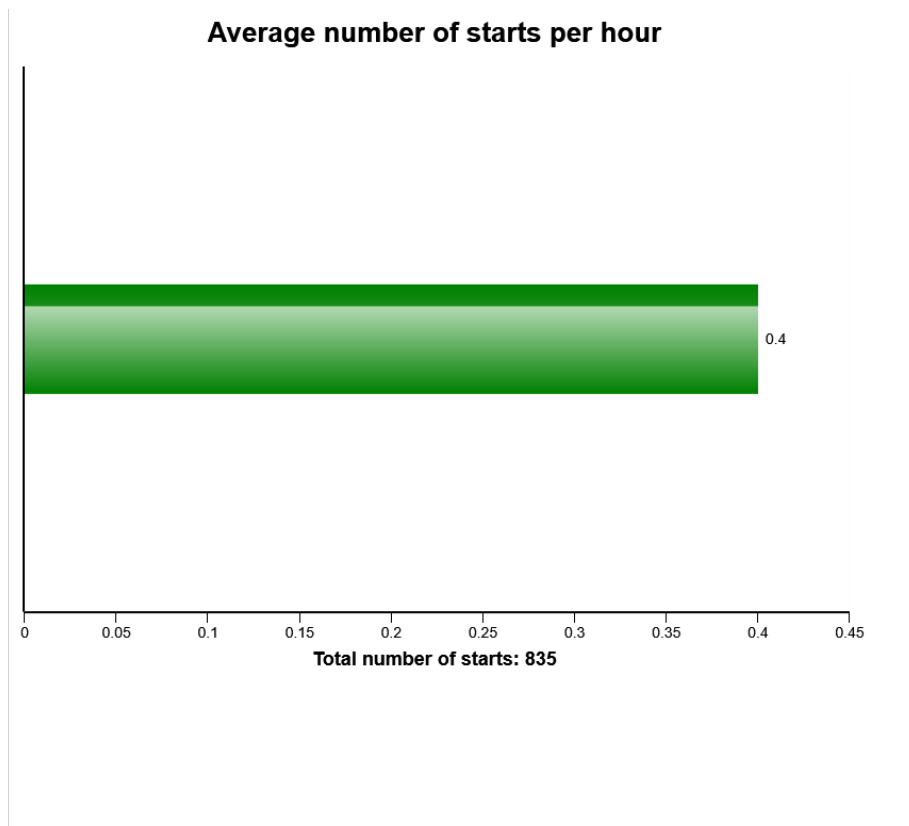
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**Definition:**

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 occurrences = 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
0	2000	0	0	0	0	0
1001	2018	10	30	12	56	2
1589	2019	6	19	19	12	1
1597	2019	6	21	13	1	1

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



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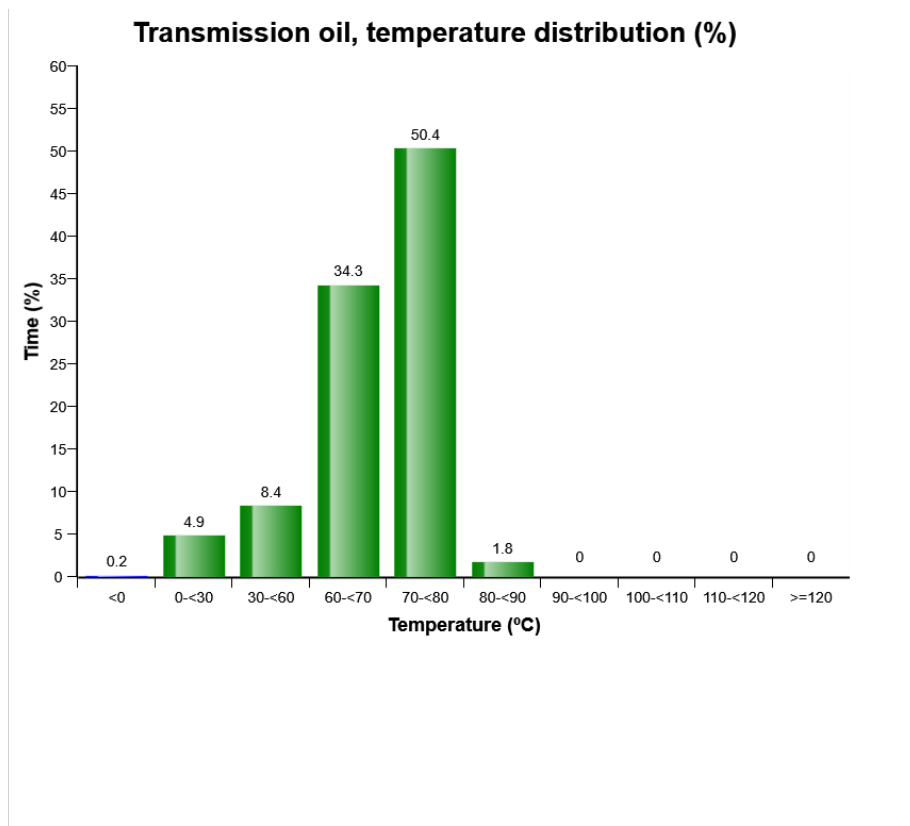
**Regeneration duration**  
**Total number of occurrences = 25**

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
1581	2019	6	19	10	27	33
1588	2019	6	19	18	28	44
1589	2019	6	20	7	29	80
1590	2019	6	20	8	52	42
1591	2019	6	20	9	41	51
1596	2019	6	21	12	24	36
1597	2019	6	21	13	36	34
1600	2019	6	21	17	21	37
1615	2019	6	25	7	38	85
1617	2019	6	25	9	38	38
1617	2019	6	25	9	6	30
1619	2019	6	25	11	37	24
1620	2019	6	25	12	3	45
1624	2019	6	29	8	14	36
1626	2019	6	29	10	12	30
1627	2019	6	29	11	42	58
1634	2019	7	1	16	48	51
2143	2020	4	4	3	48	42
2145	2020	4	4	19	1	32
2308	2020	6	29	21	36	42

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:

<0°C Temperatures below 0°C

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

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

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

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

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



Machine model	SerialNo	Operating Hours	Reading Date
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90-<100°C Temperatures from 90°C until 100°C

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

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

≥120°C Temperatures over 120°C

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

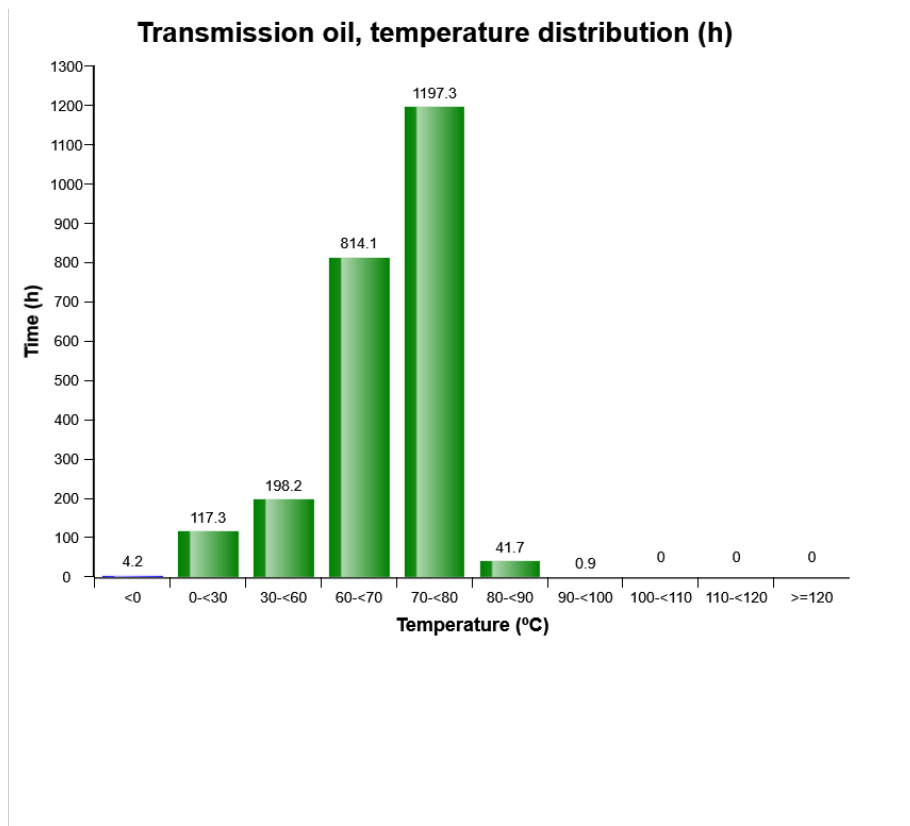
The bar that describes >120°C is red and means that the oil has been overheated. Driver has been given red central warning.

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





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<0°C Temperatures below 0°C

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

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

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

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

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



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

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

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

≥120°C Temperatures over 120°C

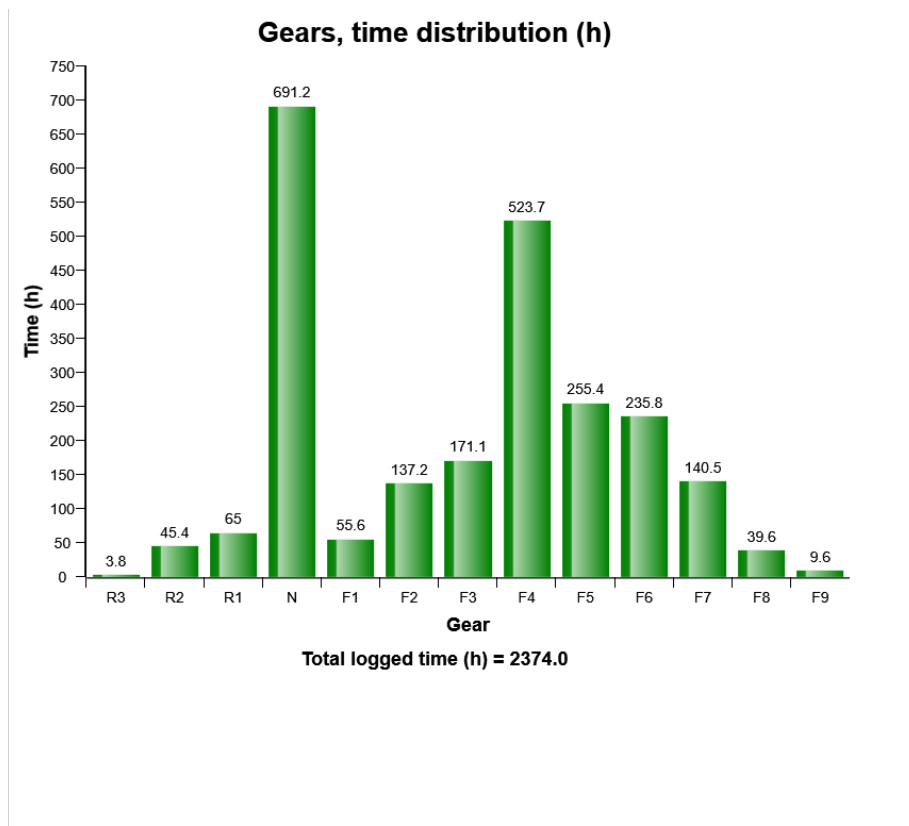
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The bar that describes >120°C is red and means that the oil has been overheated. Driver has been given red central warning.

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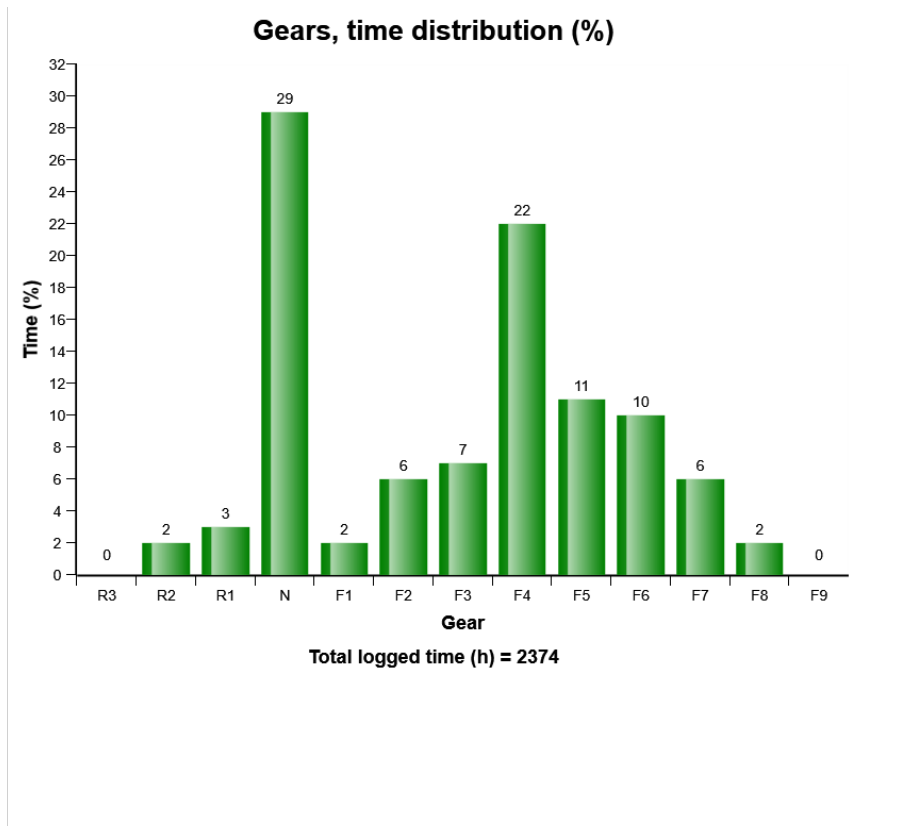


The diagram shows the time for each gear. Each bar represents a gear.

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



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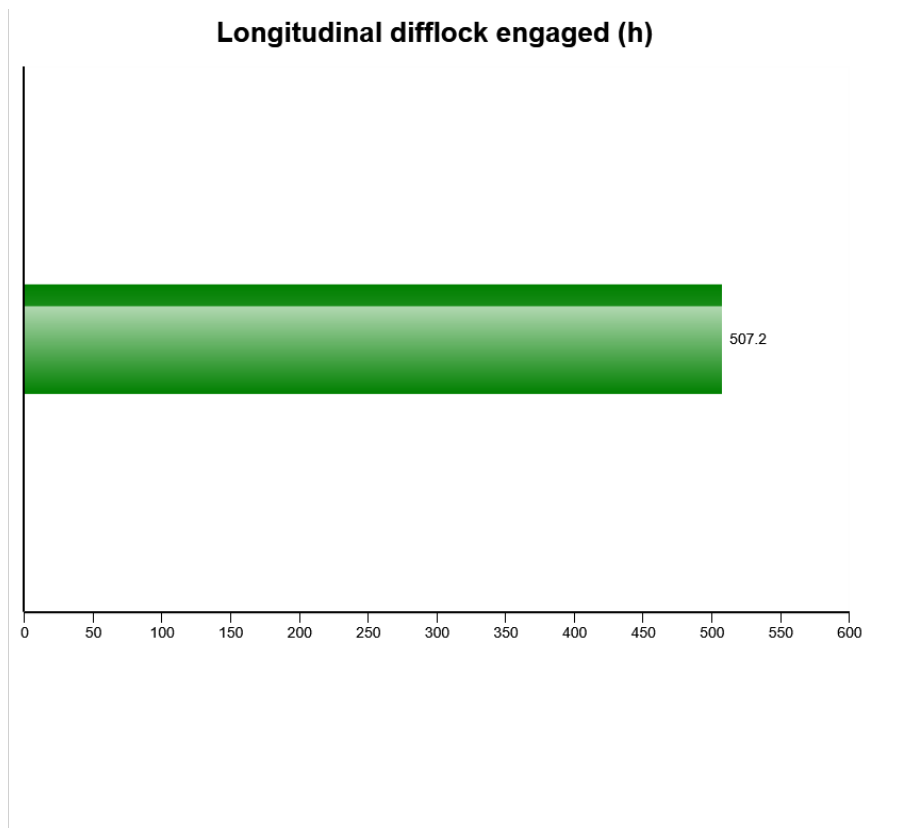


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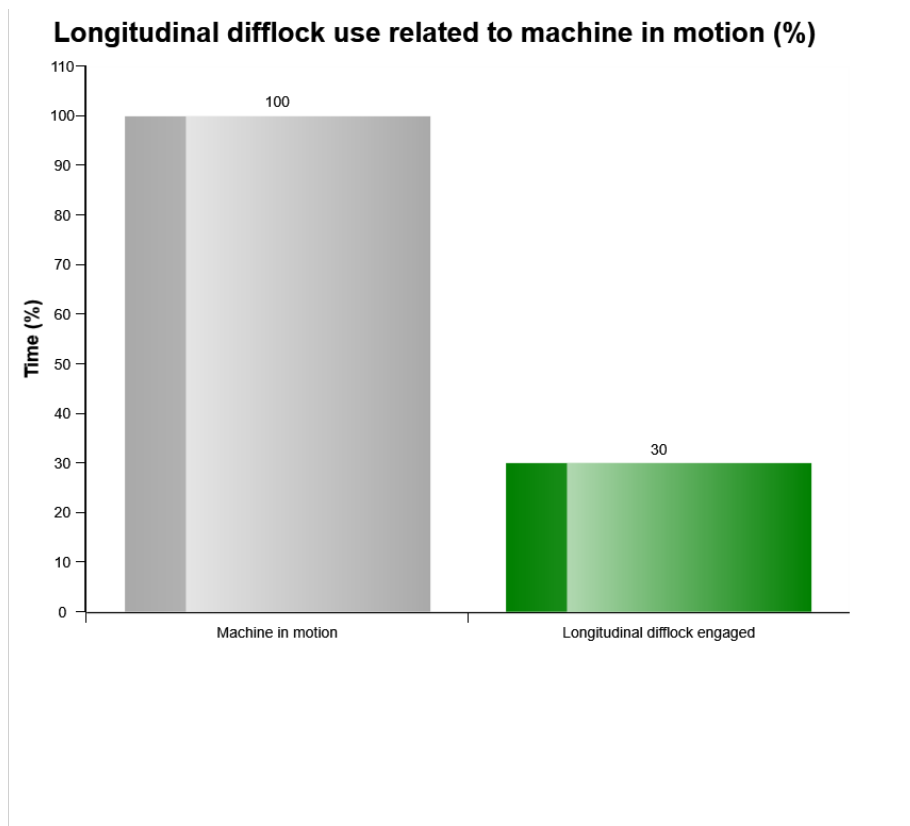
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The diagram shows how long time in hours the longitudinal difflock has been engaged. The presentation only shows time when the machine is moving as this is when the wear on the difflock occurs. The difflock should always be disengage when not needed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



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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
A45G	342416	2373.8	02/09/2020

**Transmission oil pressure low  
Total number of occurrences = 2**

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
4	2018	4	3	10	5	27	5.6
2047	2020	2	21	18	8	1	23.0

**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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

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.**

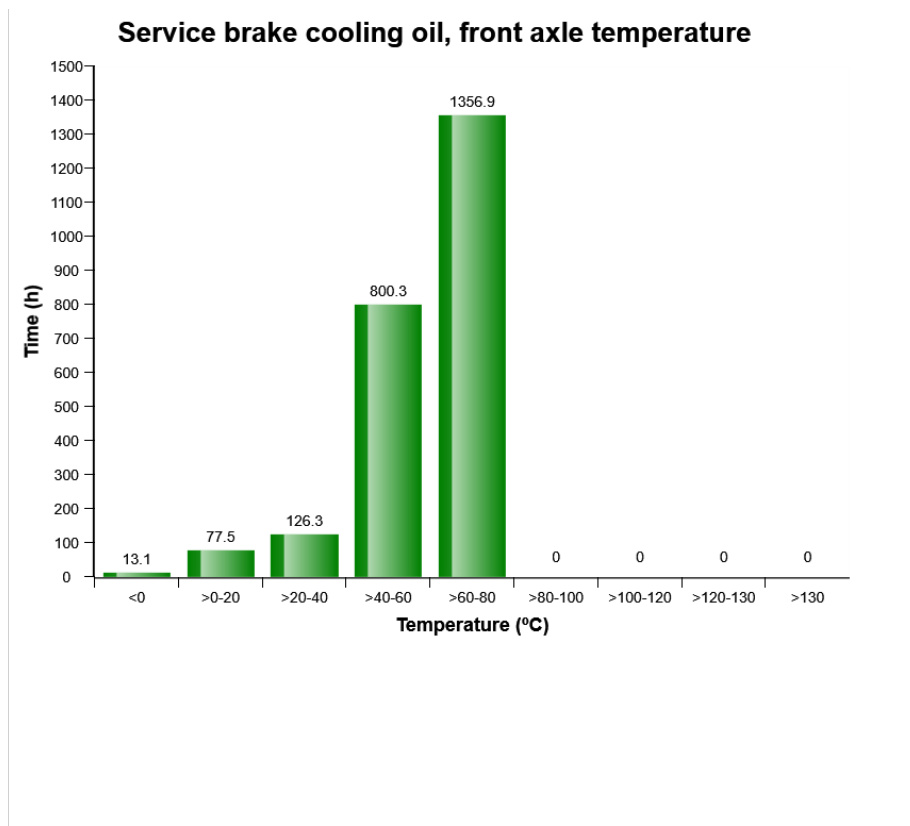
Criteria :

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
A45G	342416	2373.8	02/09/2020

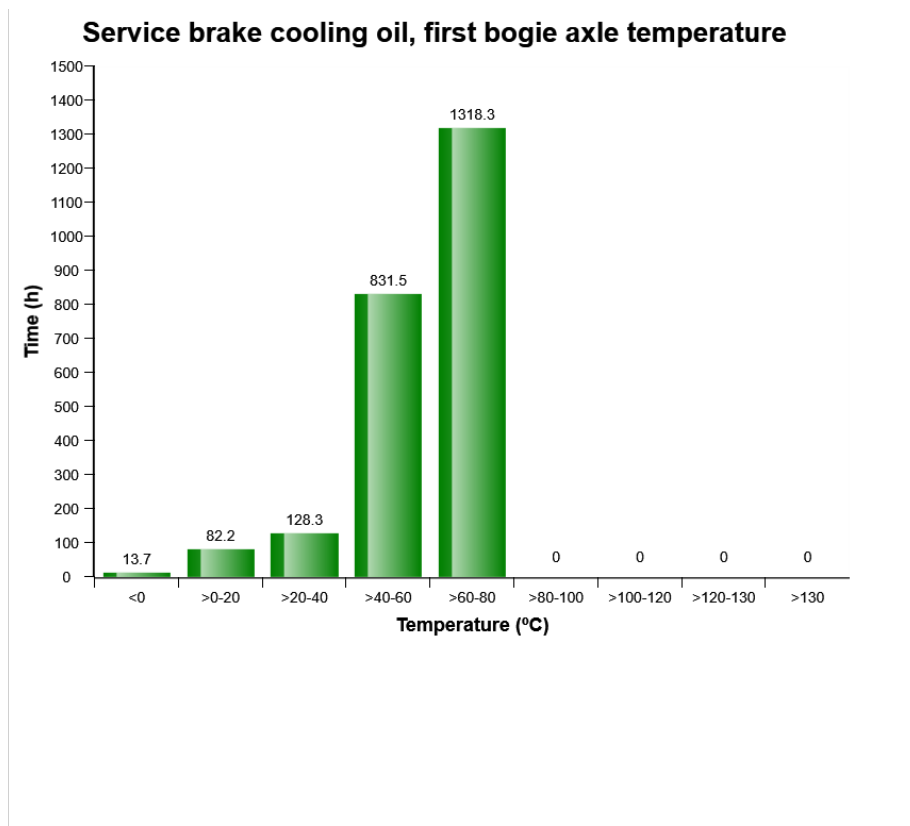


The diagram shows the front axle brake cooling oil temperature. The temperatures are divided into ranges, yellow bar (>120-130°C) and red bar (>130°C) shows abnormal temperatures. The temperature is registered in the line from the front axle to the oil cooler, that is, the warmest oil in the circuit.

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
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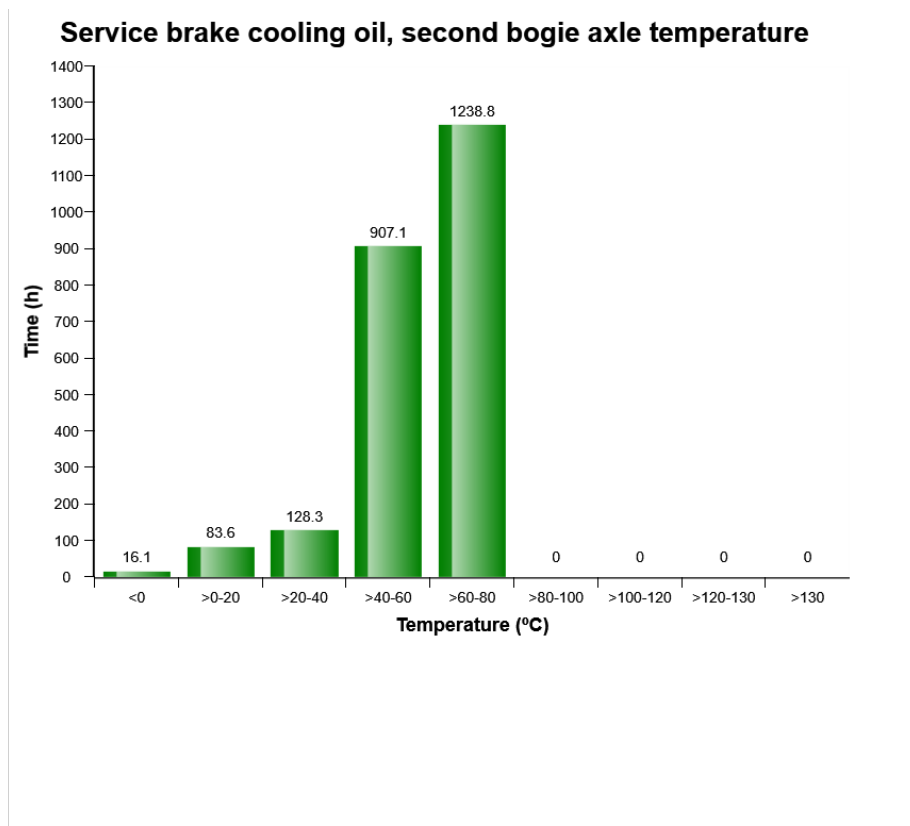


The diagram shows the first bogie axle brake cooling oil temperature. The temperatures are divided into ranges, yellow bar (>120-130°C) and red bar (>130°C) shows abnormal temperatures. The temperature is registered in the line from the first bogie axle to the oil cooler, that is, the warmest oil in 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
A45G	342416	2373.8	02/09/2020

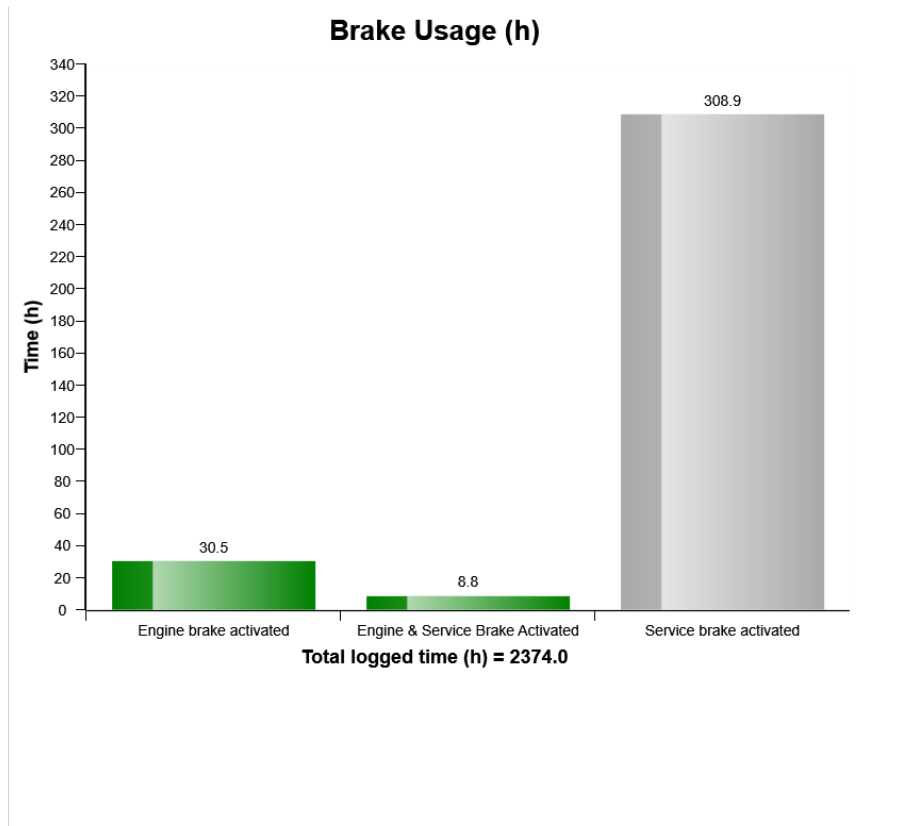


The diagram shows the Service brake cooling oil, second bogie axle temperature. The temperatures are divided into ranges, yellow bar (>120-130°C) and red bar (>130°C) shows abnormal temperatures. The temperature is registered in the line from the second bogie axle to the oil cooler, that is, the warmest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



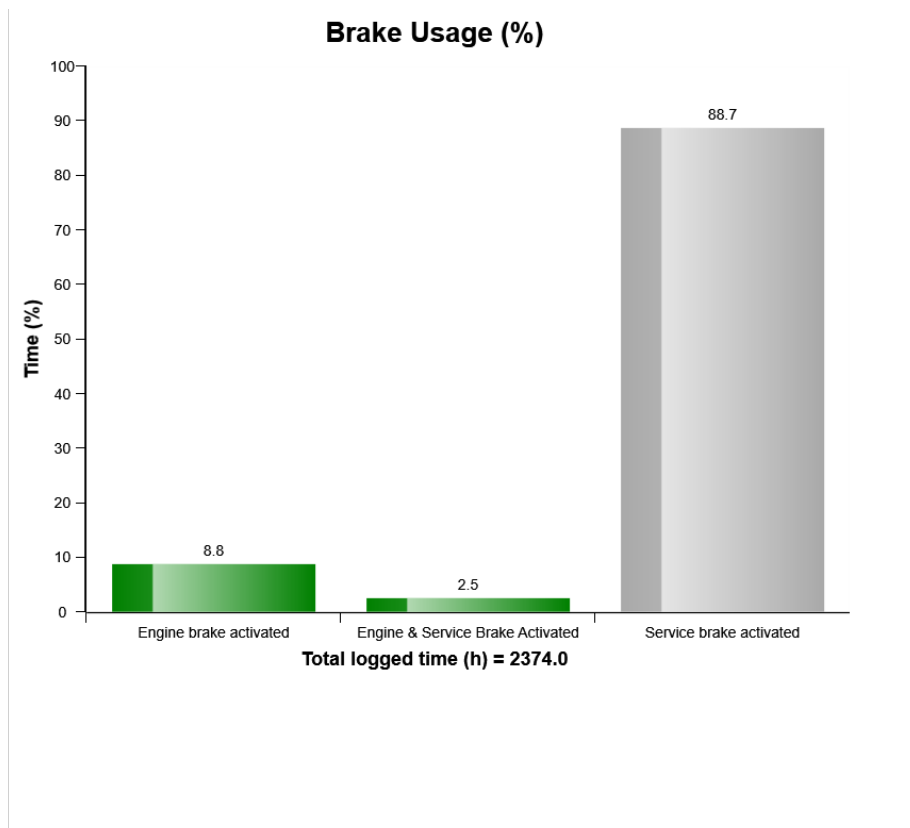
Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



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
A45G	342416	2373.8	02/09/2020



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
A45G	342416	2373.8	02/09/2020

**Low Brake Servo Pressure**  
**Total number of occurrences = 2**

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (bar)
<b>C</b>	0	2000	0	0	0	0	0	0
<b>D</b>	0	2000	0	0	0	0	0	0
<b>E</b>	0	2000	0	0	0	0	0	0
<b>F</b>	0	2000	0	0	0	0	0	0
<b>G</b>	0	2000	0	0	0	0	0	0
<b>H</b>	0	2000	0	0	0	0	0	0
<b>I</b>	0	2000	0	0	0	0	0	0
<b>J</b>	0	2000	0	0	0	0	0	0
<b>A</b>	2372	2020	4	20	9	46	1	125
<b>B</b>	2373	2020	7	19	21	44	3	119

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
A45G	342416	2373.8	02/09/2020

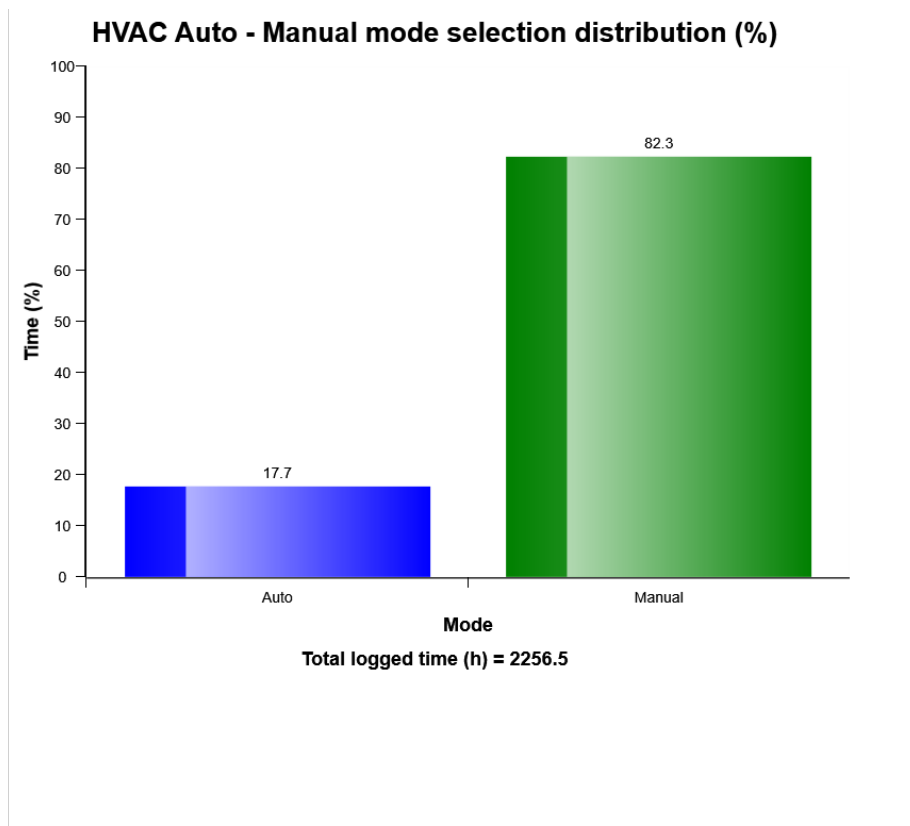
**The extreme value column displays the most extreme value during the event.**

**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
A45G	342416	2373.8	02/09/2020



**Definition:**

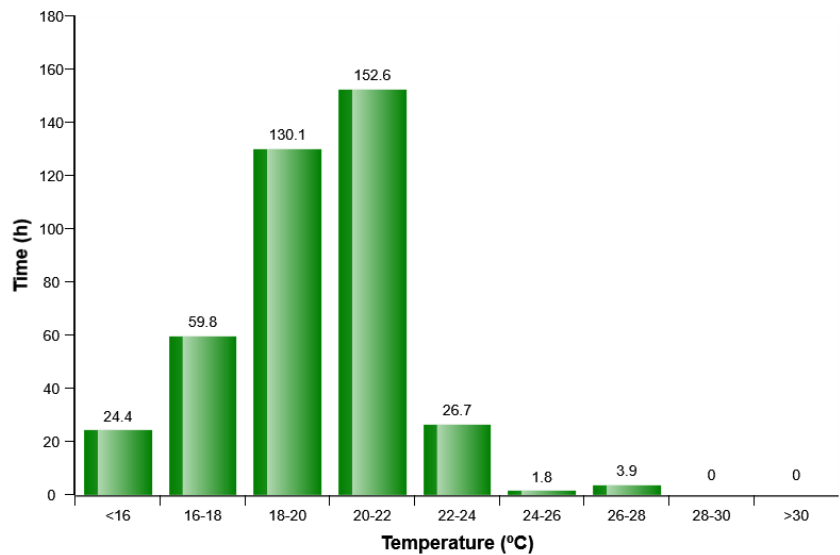
The diagram describes auto-manual mode selection distribution of HVAC system in machine while it Works. The share of each mode compared to Total time of HVAC operation is displayed.





Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

**HVAC air temperature setting in auto control mode distribution (h)**

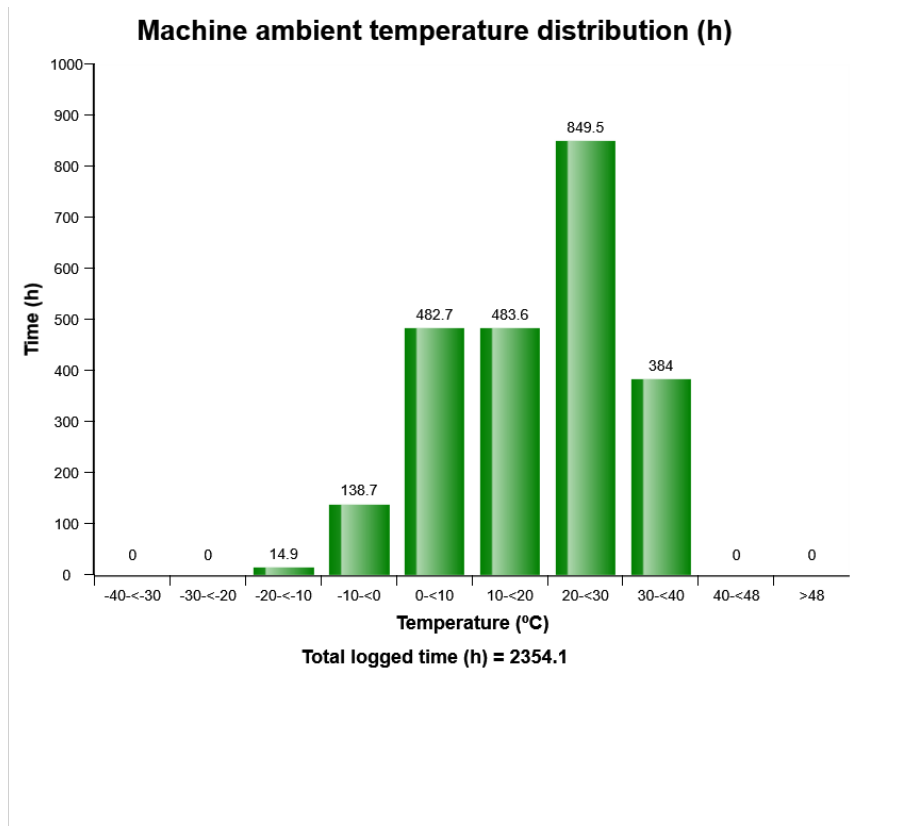


**Definition:**

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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

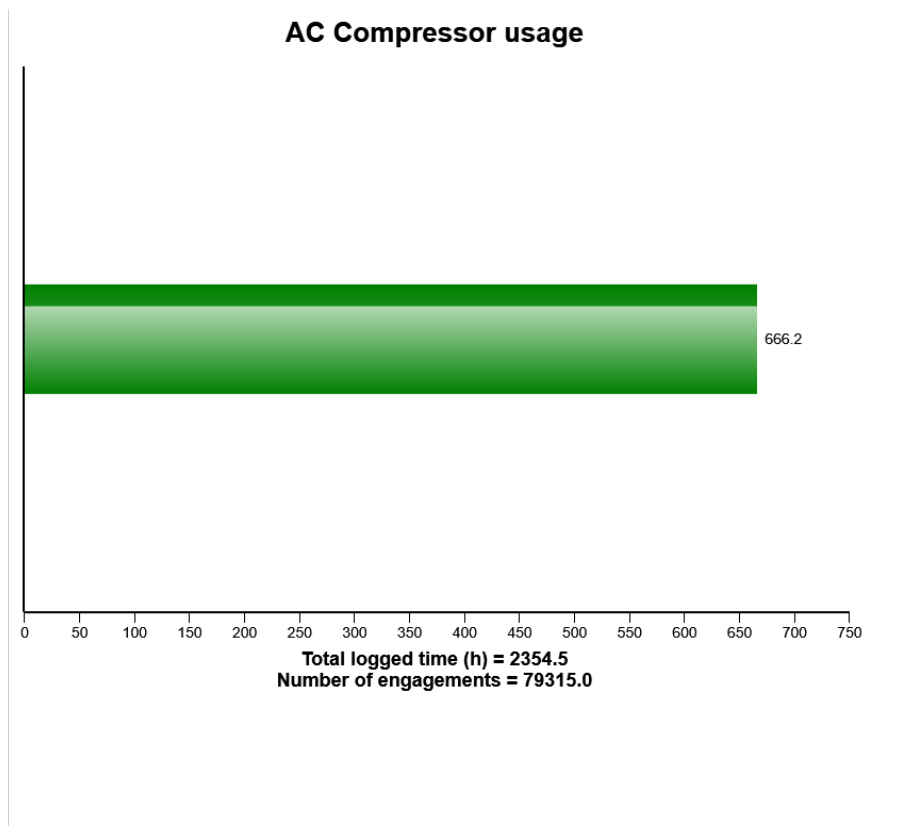


**Definition:**

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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



**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.

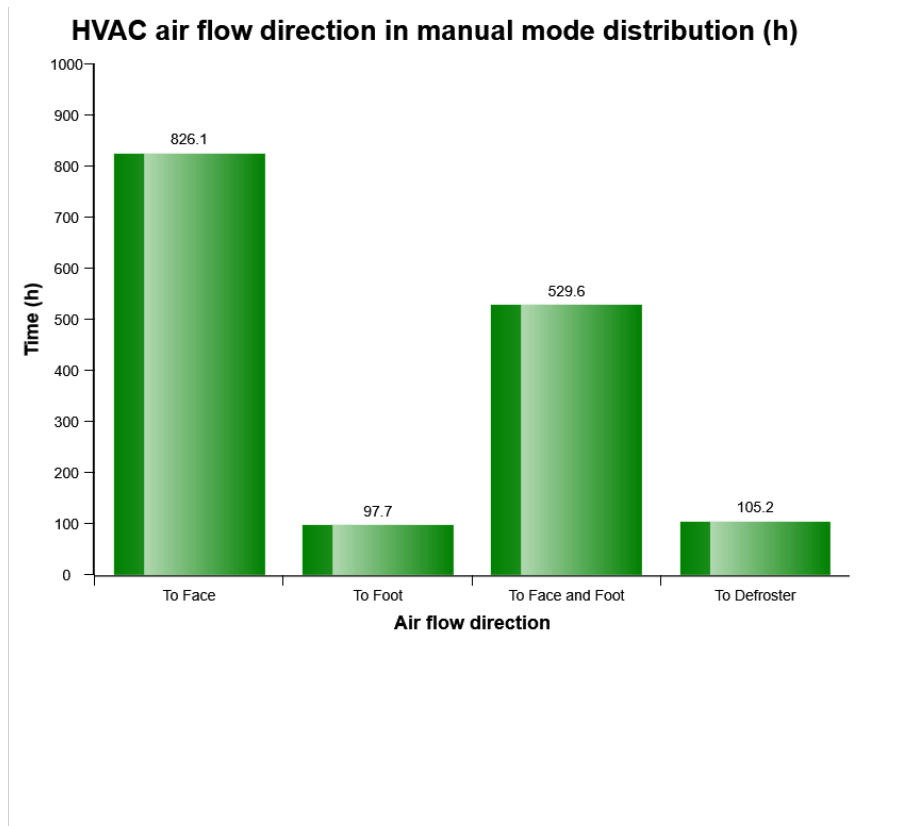


Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

-



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

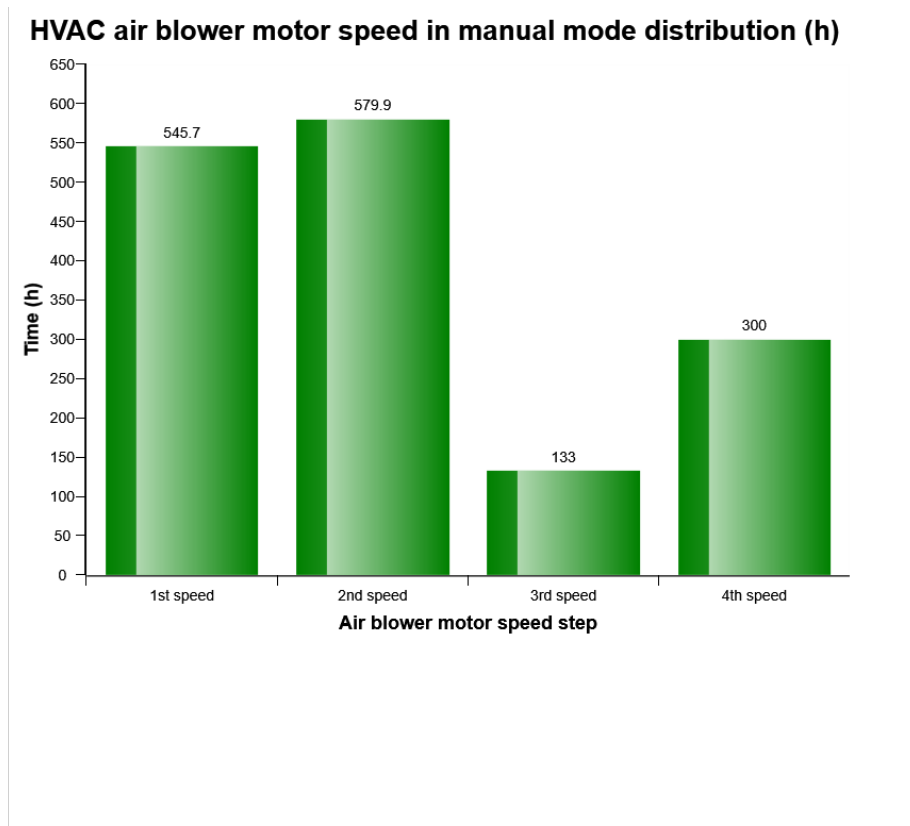


**Definition:**

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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



**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
A45G	342416	2373.8	02/09/2020

**AC High Pressure**  
**Total number of occurrences = 426**

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
1795	2019	12	7	17	10	30	31
1795	2019	12	7	17	41	30	31
1796	2019	12	7	18	48	6	31
1796	2019	12	7	18	20	21	31
1796	2019	12	7	18	39	18	31
1796	2019	12	7	18	57	13	31
1803	2019	12	8	13	25	17	30
1803	2019	12	8	13	34	7	30
1804	2019	12	8	15	23	16	31
1804	2019	12	8	14	48	17	31
1805	2019	12	8	16	6	30	30
1805	2019	12	8	15	49	19	30
1806	2019	12	8	16	43	15	30
1806	2019	12	8	17	0	19	30
1815	2019	12	9	15	20	23	30
1832	2019	12	12	14	33	25	28
1839	2019	12	14	14	29	21	27
1850	2019	12	15	14	45	16	28
1861	2019	12	16	15	18	9	30
1879	2019	12	19	15	10	28	31

**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



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

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
A45G	342416	2373.8	02/09/2020

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 :**

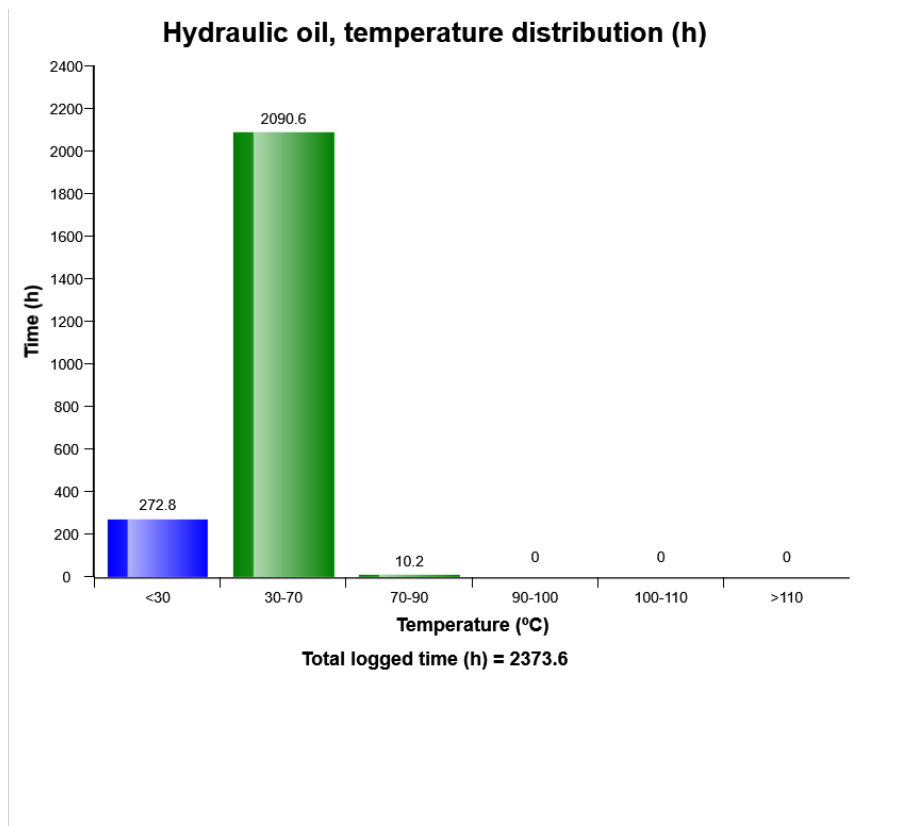
The extreme value column displays the most extreme value during the event.

**Criteria :**

Logging is performed when, AC cut out pressure signal is active. Ambient temp is viewed.



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020



**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.



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

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.

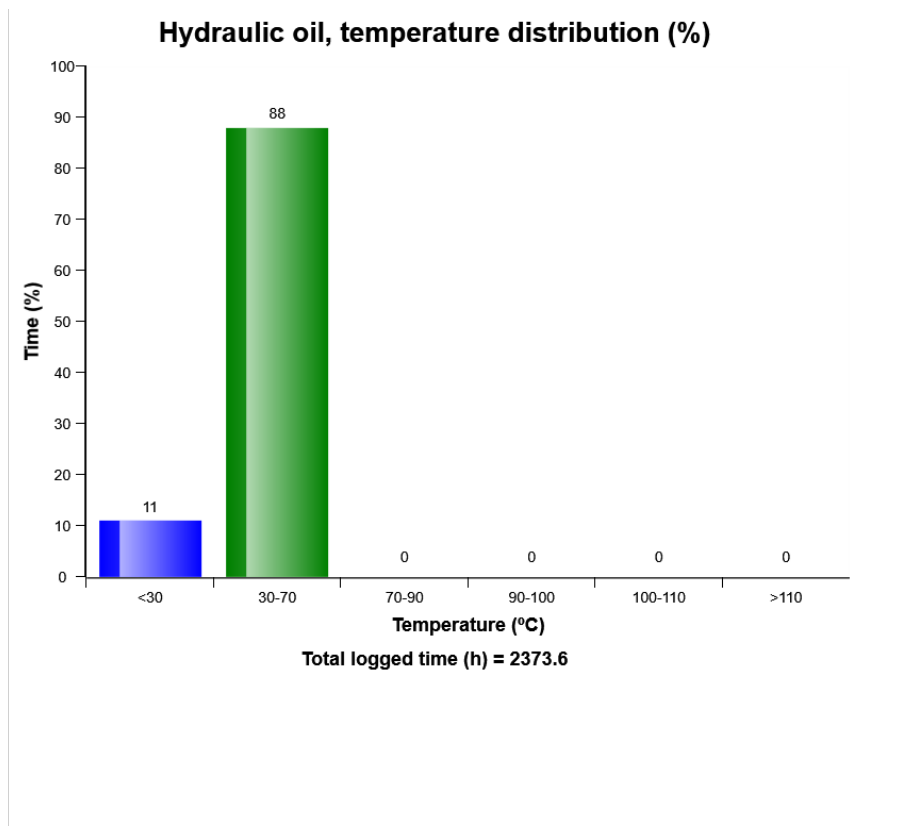
**Yellow bar** = High working temperature. It is normal to have some registrations in this region.

**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
A45G	342416	2373.8	02/09/2020



**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.



Machine model	SerialNo	Operating Hours	Reading Date
A45G	342416	2373.8	02/09/2020

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.

