VOLVO CONSTRUCTION EQUIPMENT

MATRIS REPORT

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Company name	Dealer	Report Issuer
Alta Equipment Company		
Contact name	**Technician**	**Primary Application**
	Anthony M	Civil engineering/Heavy construction
Site	**Workorder**	**Ground Condition**

MATRIS Reading, Summary / Recommendation

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Main equipment	Type	Equipment
	Track chain	
	Hydraulic Fluid	
	Bucket size	
	X3 piping	
	Main Attachment	

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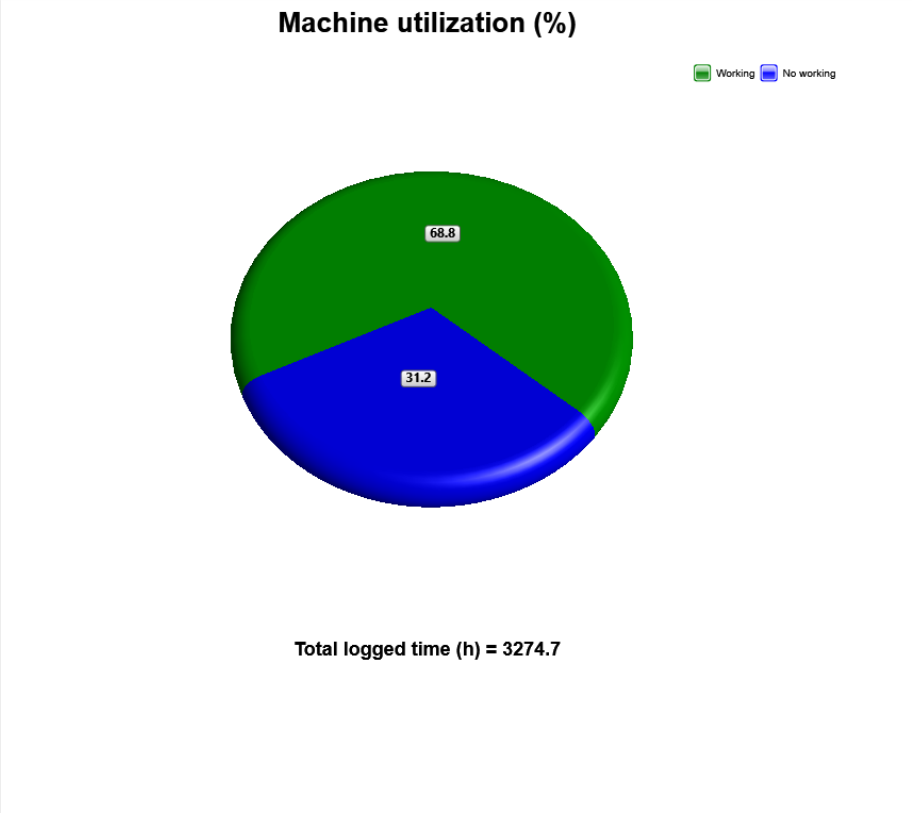

Definition:

The graph shows the distribution of the operating time for the machine. The operating time is defined as the time with engine on

Blue sector = Engine is running, but attachments and tracks are not moved

or operated .

Green sector = Machine in work with the move of attachments and tracks

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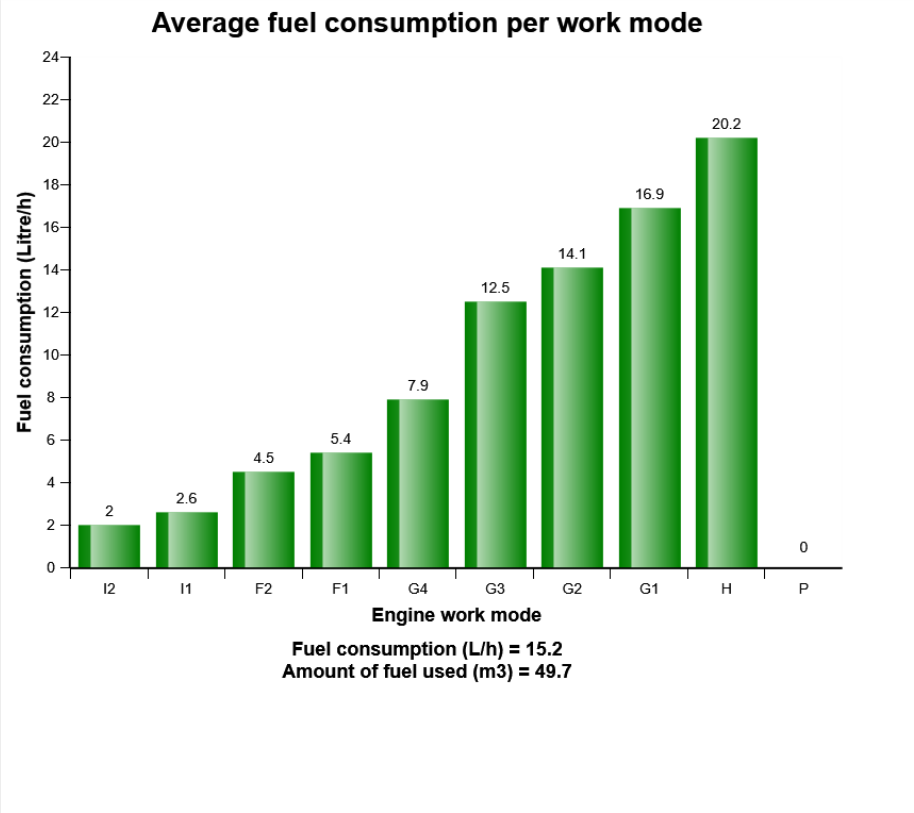

Definition:

This diagram shows the fuel consumption distribution rate on each work mode.

Distribution of each work mode is shown on top of its column in rate

Explanation:

Y-axis: The rate of the fuel consumption on each work mode.

X-axis: The work mode (10 steps in total)

Machine model	SerialNo	Operating Hours	Reading Date
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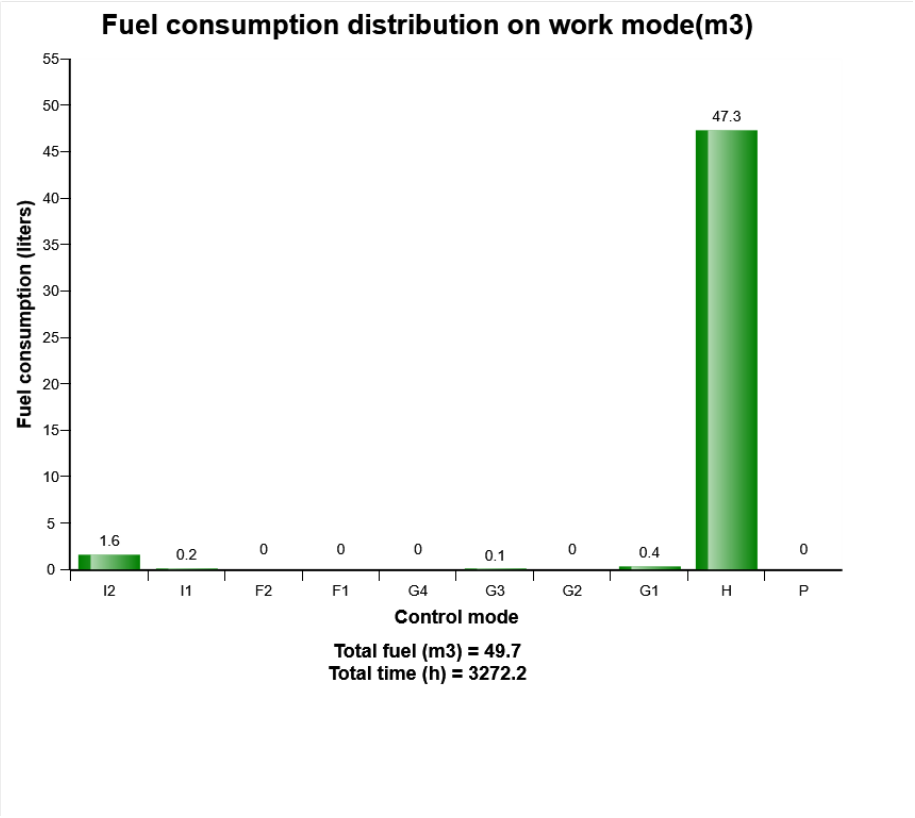
Distribution of each work mode is shown on top of its column in rate

Average fuel consumption per hour is listed below the diagram

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes the amount of fuel consumed per engine speed mode distribution.

Total amount of fuel consumed (m3) in above means that the sum of the fuel while it consumed for engine ON. The values above distribution were calculated from theoretical calculation with logged data in V-ECU so it can be some different from actual performance in field.

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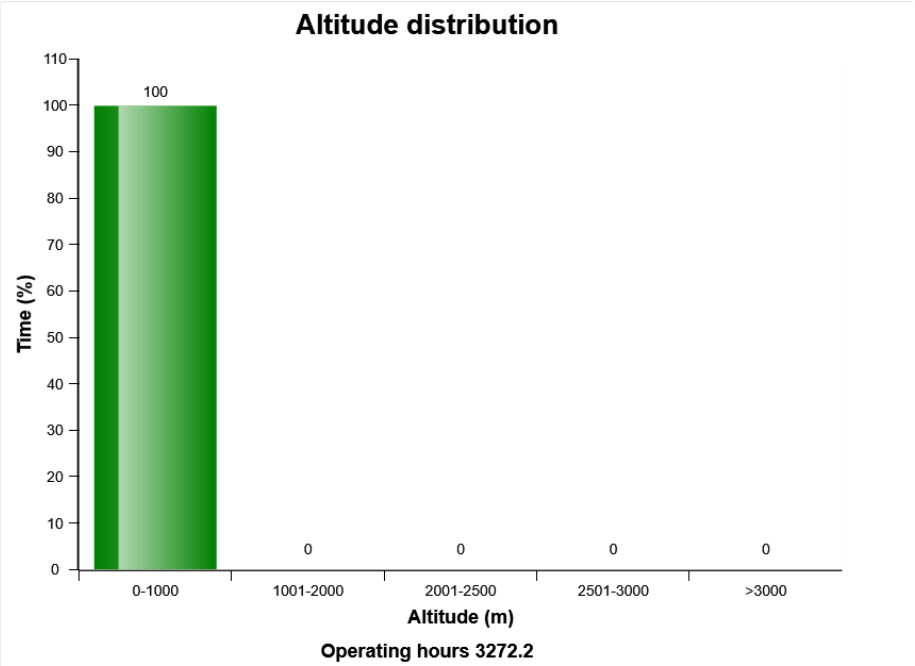

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
'WordSection1' is an unexpected token. The expected token is "" or "'. Line 1, position 18.

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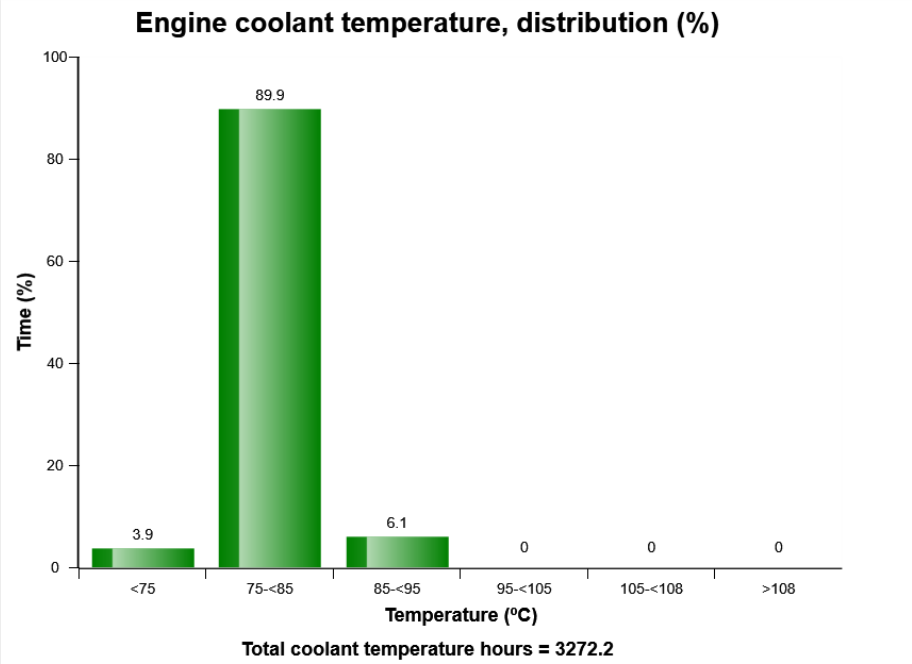

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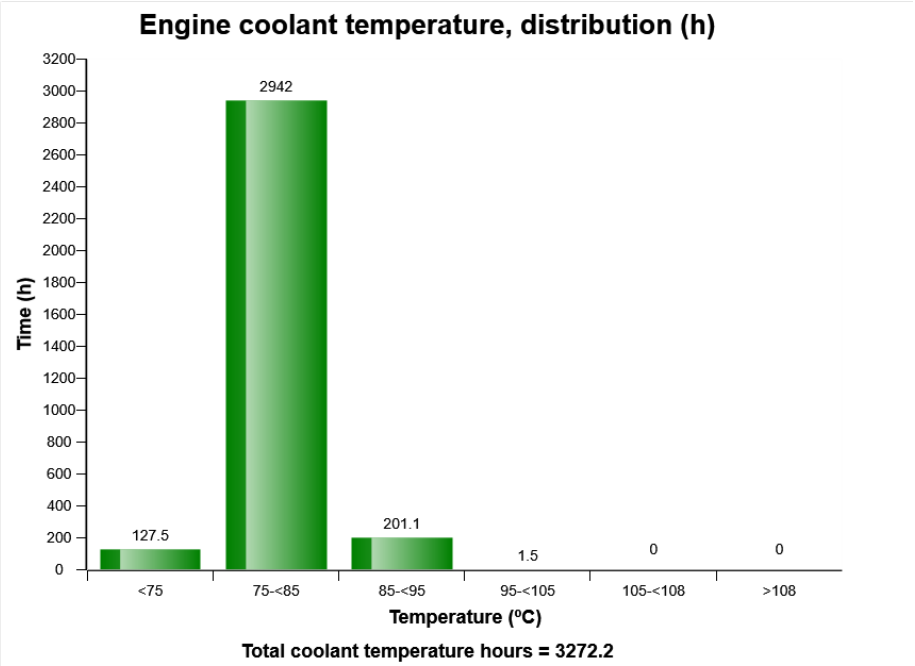

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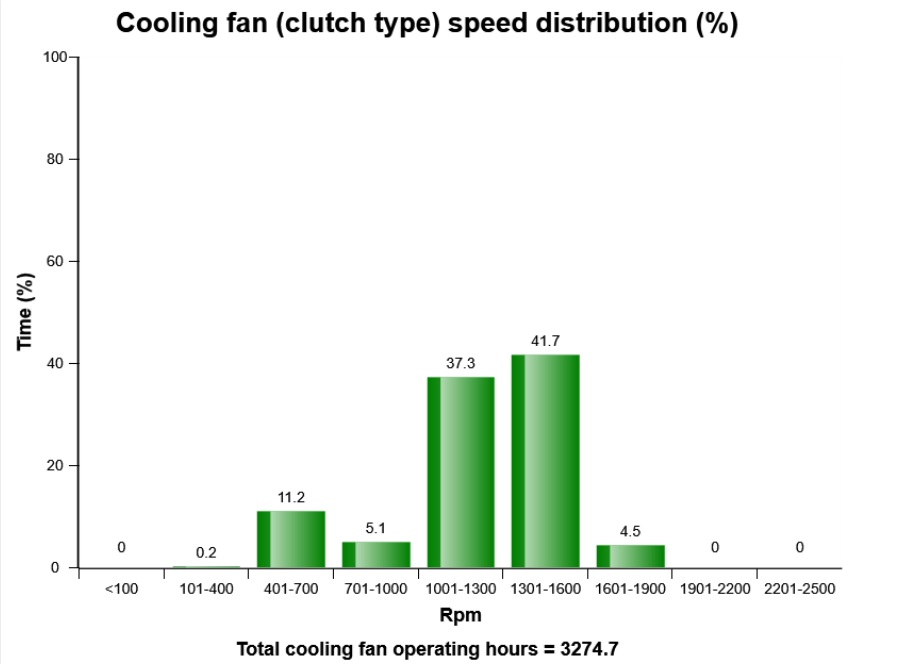

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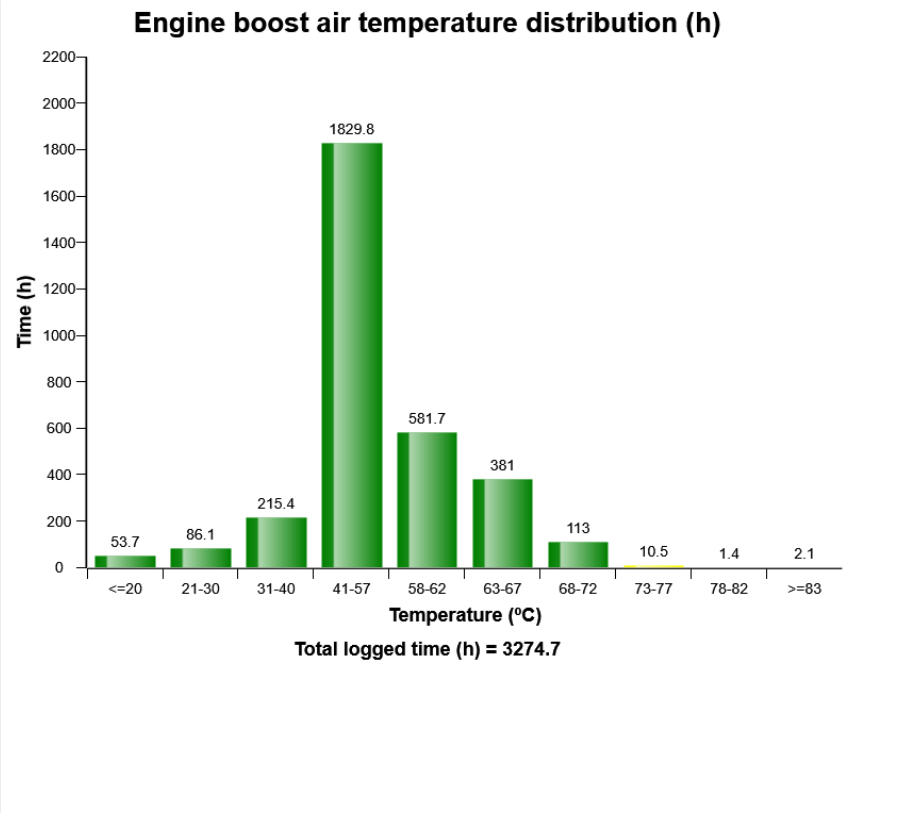

Definition:

The diagram describes Engine boost air temperature distribution of the machine when the engine is on.

Machine model	SerialNo	Operating Hours	Reading Date
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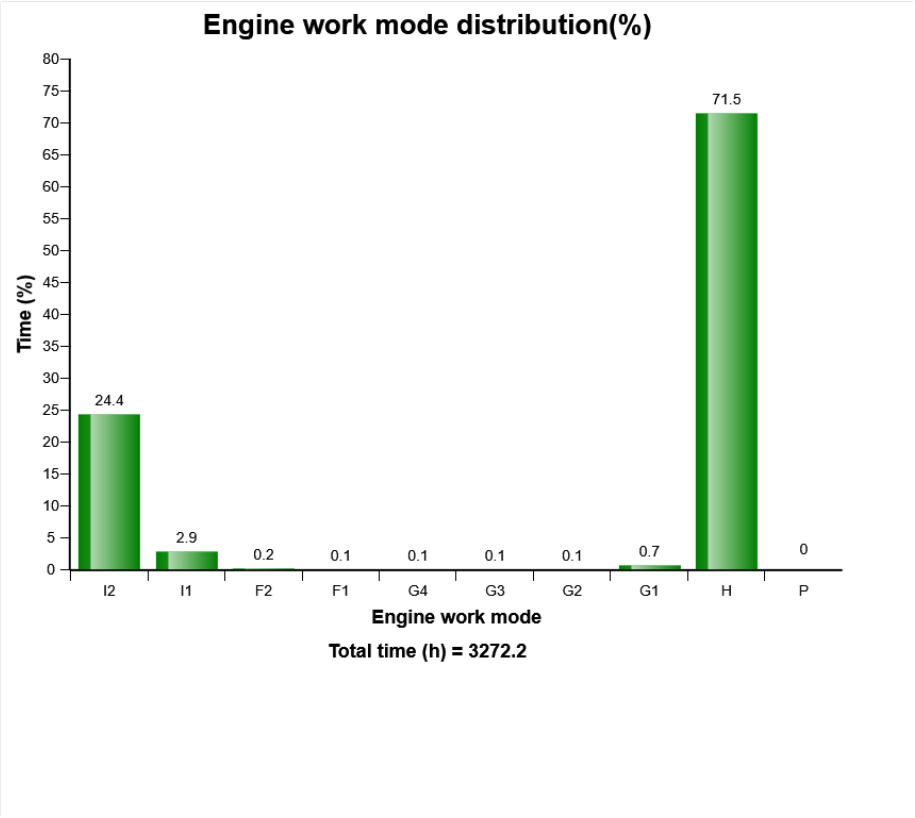


Definition:

This diagram shows the distribution of the engine work mode in time percent.

Distribution of each work mode is shown on top of the column in percentage.

Explanation:

Y-axis: The percentage of the operating hours on each work mode.

X-axis: The engine work mode (10 step in total)

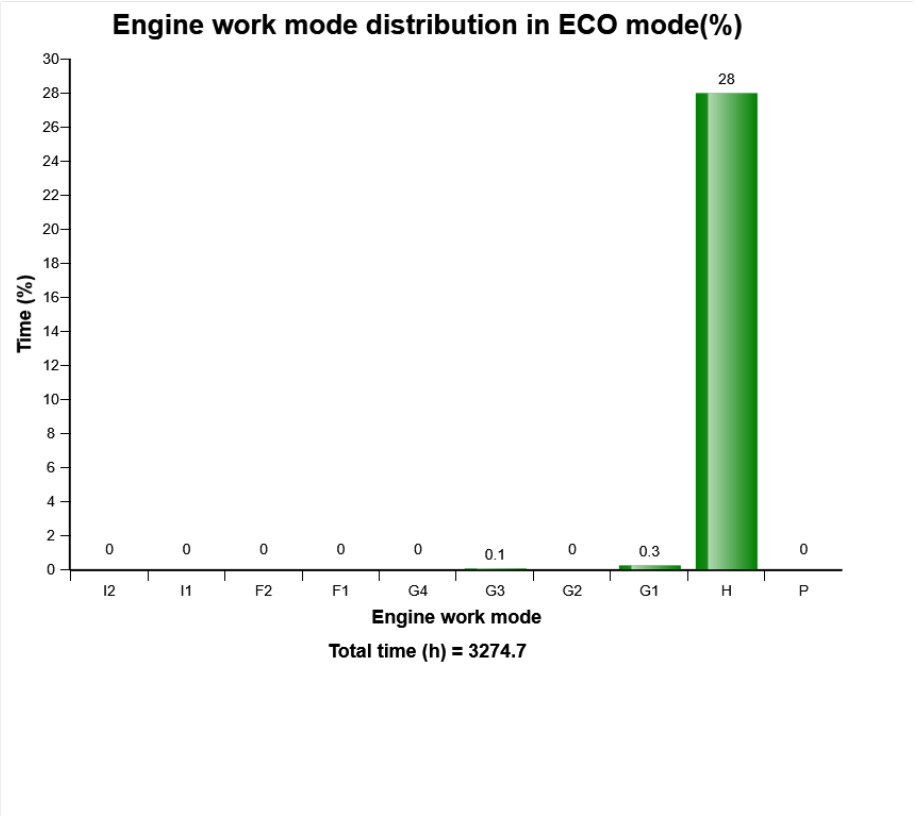
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Distribution of each work mode is shown on top of the column in percentage.

The sum of time distribution in percentage is 100

Total time (h) is listed below the diagram

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

This diagram shows the distribution of the engine work mode in percentage of time when ECO mode is engaged.

Explanation:

Y-axis: The percentage of the operating hours on each work mode when ECO mode is engaged.

X-axis: The engine work mode (10 step in total)

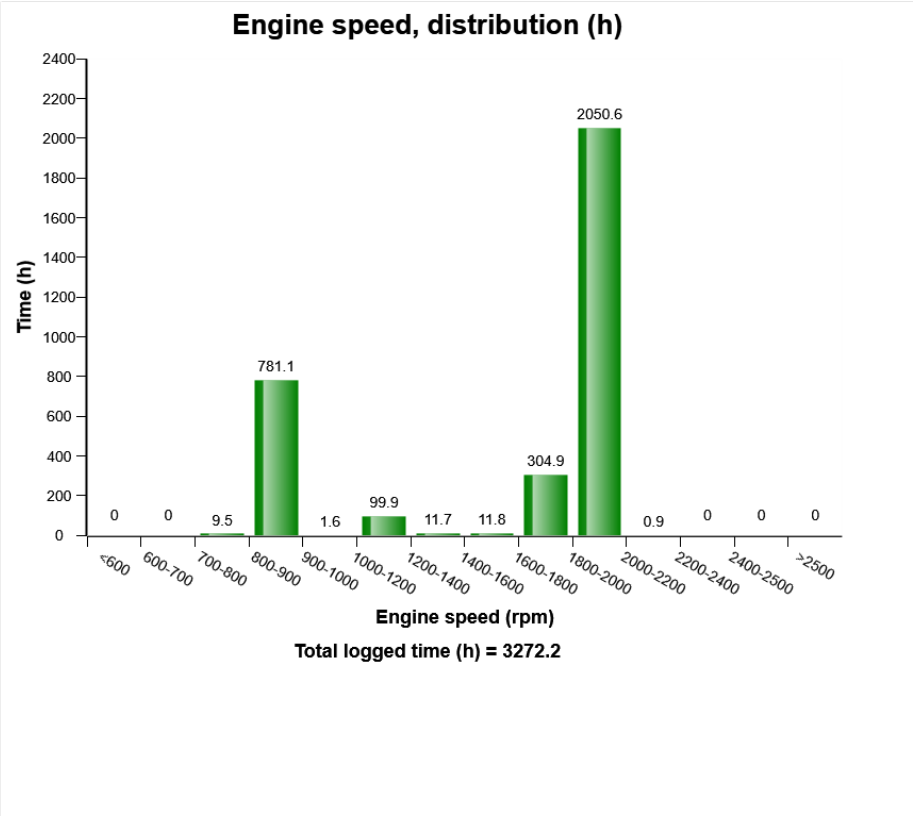
Distribution of each work mode is shown on top of the column in percentage.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

The sum of time distribution in percentage is 100%

Total time (h) is listed below the diagram.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The graph describes the engine speed distribution, in hours.

The sum of all bars = total time of engine running.

Explanation:

Y-axis: Engine running time in hours.

X-axis: Engine speed in rpm.

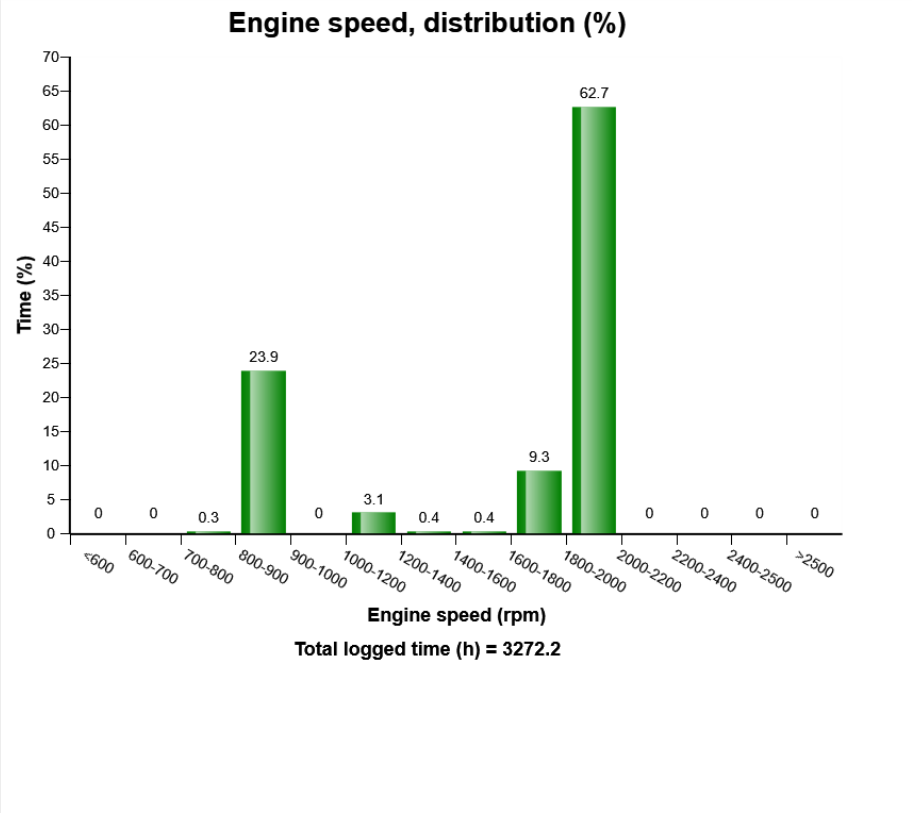
Green bars = Normal engine speed range.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Red bars =The engine speed has exceeded the maximum design speed.

Exceeding the maximum design speed may cause severe damage to the engine.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The graph describes the engine speed distribution in percent of time.

The sum of all bars=100% of engine running time.

Explanation:

Y-axis: Engine running time in percent.

X-axis: Engine speed in rpm.

Green bars = Normal engine speed range

Blue bar = Idling interval.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Red bars =The engine speed has exceeded the maximum design speed.

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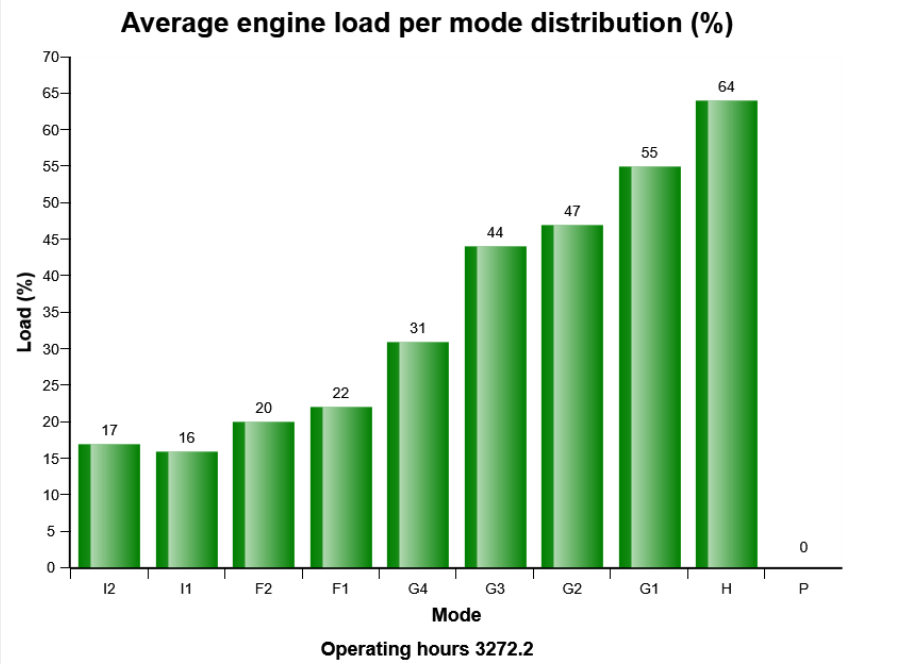

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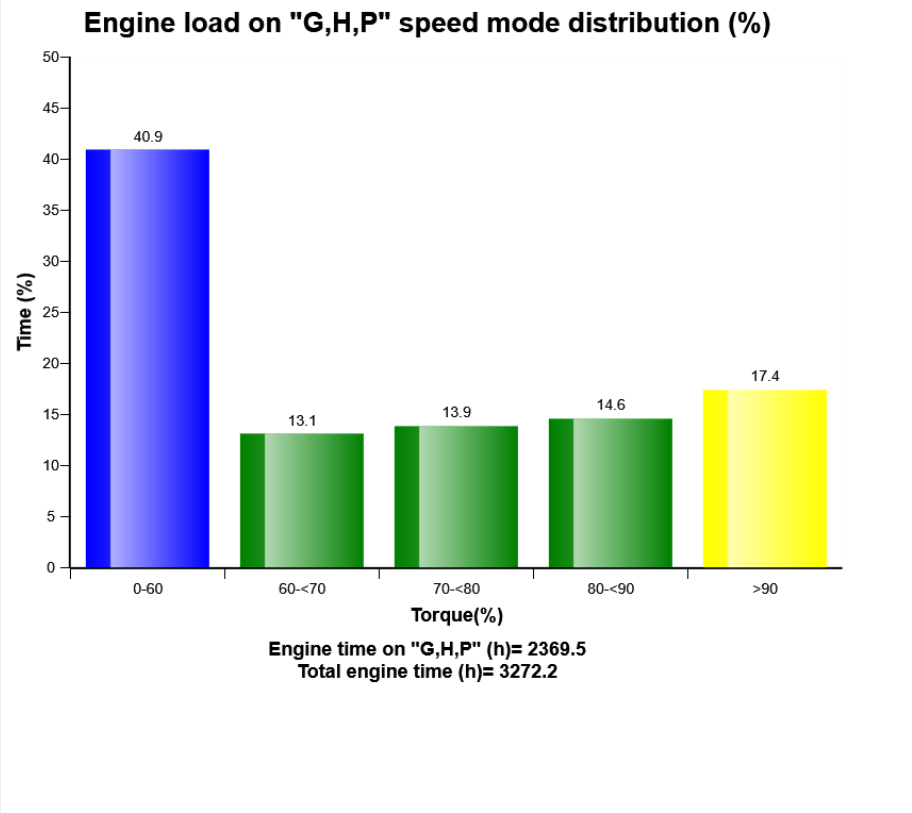


This graph shows the distribution of the engine load.

Blue bar: Low load

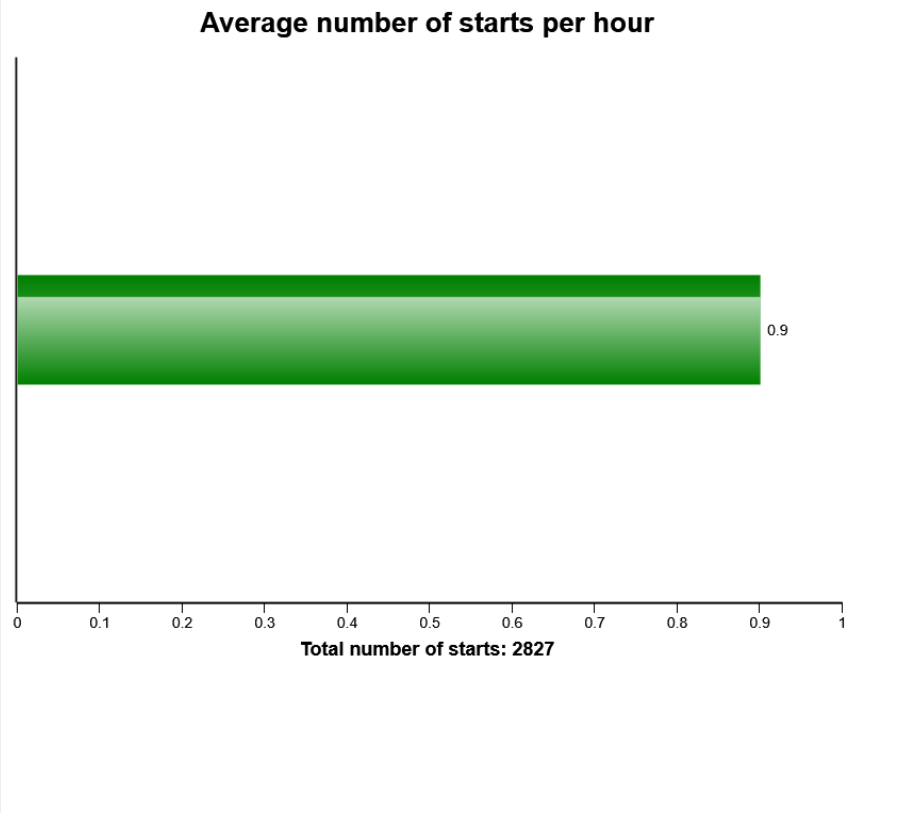
Green bar: Normal load

Yellow ba r: Excessive load

Load distribution for each bar is shown on top of its column in percentage.

The sum of bars is 100%.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



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.

Machine model	SerialNo	Operating Hours	Reading Date
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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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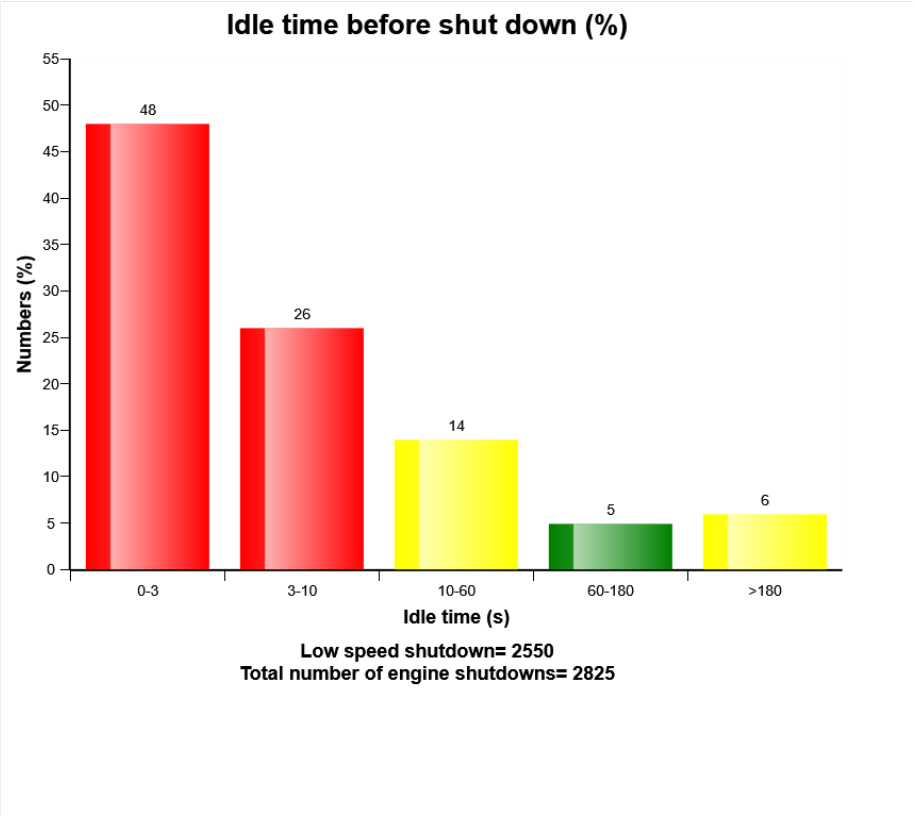


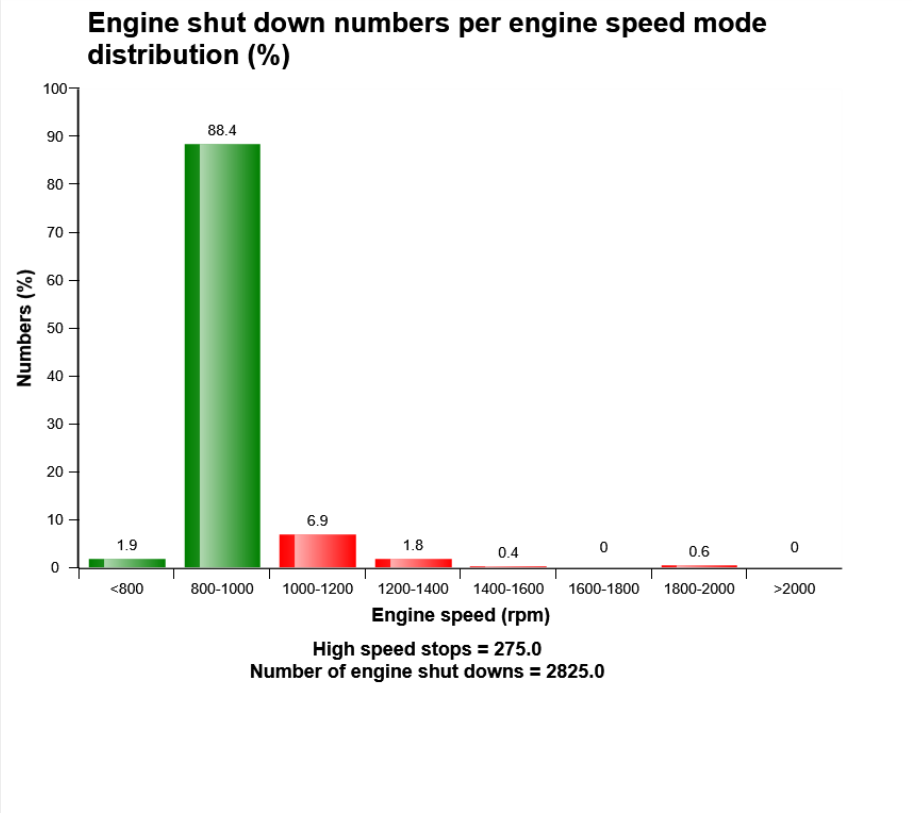
Definition:

This graph shows the distribution of delayed time at low idle speed until the engine is turned off.

The delayed time distribution for each bar is shown on top of its column in percentage.

The sum of bars is 100%.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram shows the number of stops at high idle (I1 ~ P mode).

Green bars = Normal engine stop

Red bars = Abnormal engine stop

Engine stops at a high idle can cause server damage to the turbo charger due to shortage of the oil lubrication. The engine should be stopped at low idle(I2 mode).

Explanation:

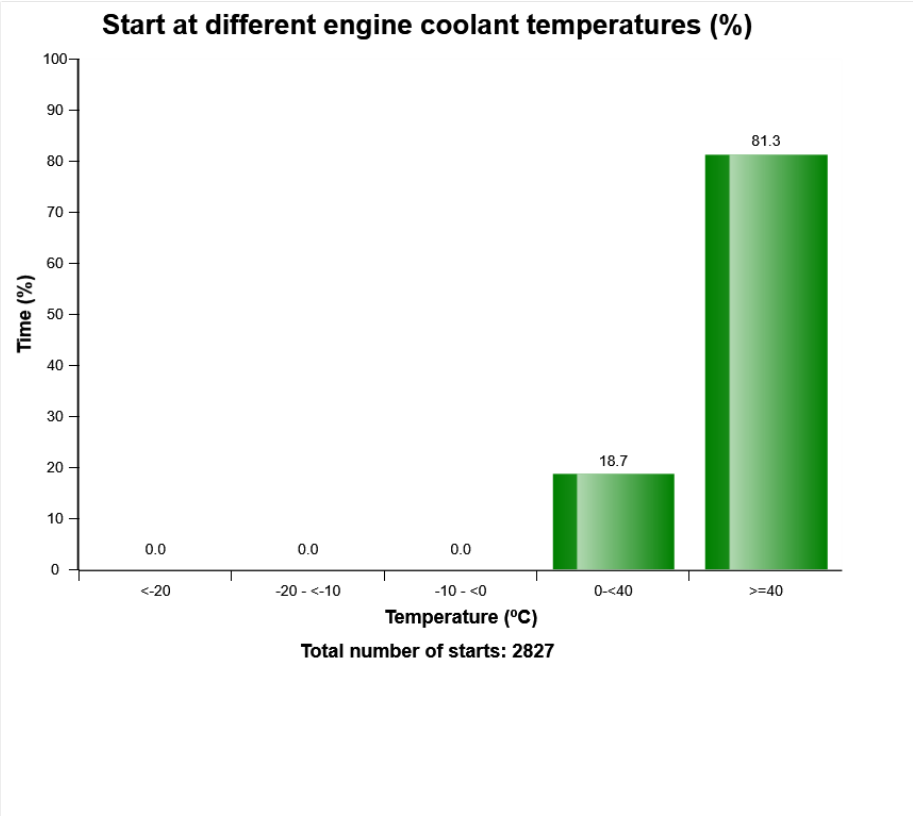
Y-axle: Number of engine stop at each work mode.

X-axle: Work mode.

Distribution of each work mode is shown on top of its column in number.

Total number of shut down is listed below the diagram.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

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

Explanation:

Y-axis: Number of engine starts

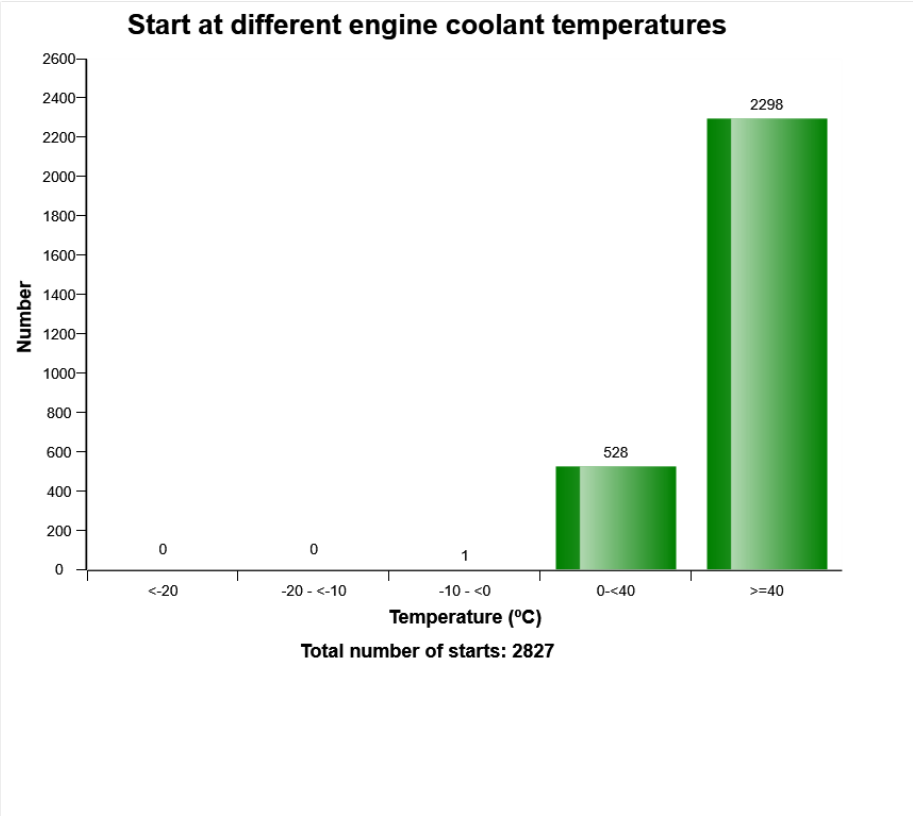
X-axis: Engine coolant temperature.

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

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.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



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.

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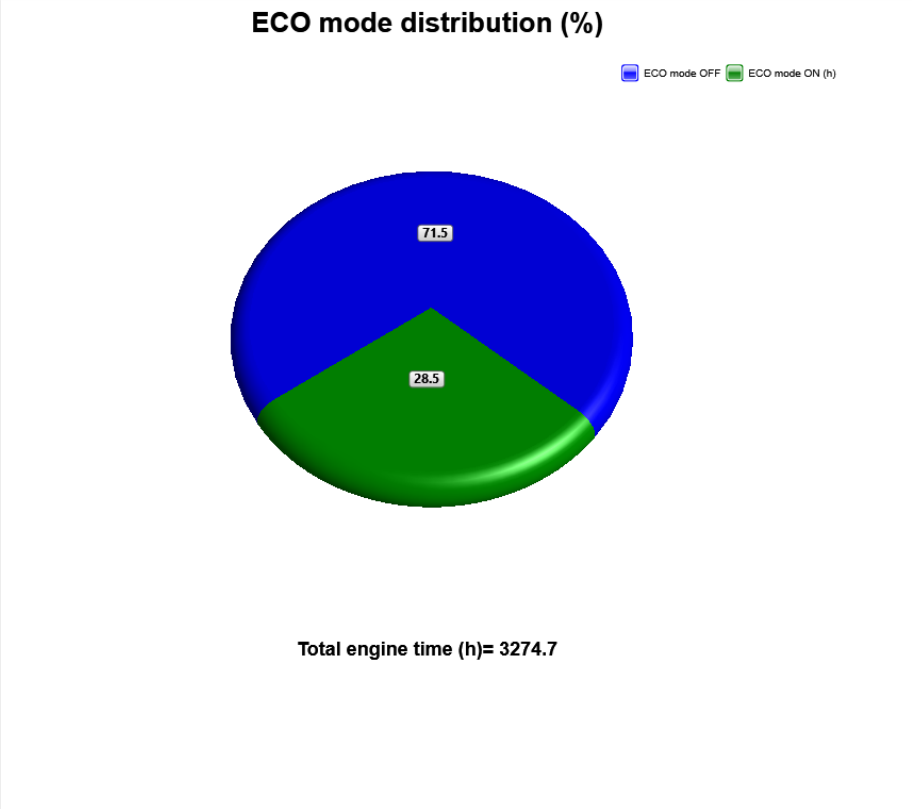

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
The 'font' start tag on line 1 position 114 does not match the end tag of 'BR'. Line 1, position 145.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Low coolant level
Total number of occurences = 15

	Op hours	Year	Month	Day	Hour	Minute	Duration (minutes)
*	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
*	959	2018	10	24	9	37	0
*	959	2018	10	24	12	18	5
*	959	2018	10	24	10	22	0
*	959	2018	10	24	10	12	0
*	959	2018	10	24	9	52	0
*	964	2018	10	25	6	7	3
*	2091	2019	4	20	8	46	0
*	2244	2019	5	14	7	42	1
*	2369	2019	6	2	8	42	0
*	2369	2019	6	2	8	45	0
*	2369	2019	6	2	8	43	0
*	2370	2019	6	4	8	3	1
*	2922	2019	8	19	8	4	1
*	2929	2019	8	20	8	13	0
*	2947	2019	8	22	8	21	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

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

Criteria：

In order for an occurrence of low engine coolant level to be recorded in a data point, the count to increment by 1 the engine coolant level state must change from “normal” to “low.”

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Low engine oil level at start
Total number of occurences = 5

	Op hours	Year	Month	Day	Hour	Minute
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	1408	2018	12	17	7	47
*	1408	2018	12	15	11	46
*	1409	2018	12	17	11	12
*	1410	2018	12	17	12	6
*	1410	2018	12	17	11	37

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

Criteria：

In order for an occurrence of low engine oil level to be recorded in a data point and the count to increment by 1, an Alarm shall have been received at start up of machine

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Fuel Filter Clogging
Total number Fuel filter clogging = 1

	Op hours	Year	Month	Day	Hour	Minute	Duration (minutes)
*	630	2018	7	15	13	19	1
*	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

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
EC220E	310650	3274.7	05/03/2020

Regeneration ignored
Total number of occurences = 6

	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
*	551	2018	7	2	10	9	0
*	551	2018	7	2	9	45	4
*	1103	2018	11	6	17	33	38
*	1662	2019	2	6	9	0	1
*	2220	2019	5	9	14	27	1
*	2773	2019	7	26	13	29	1

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.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

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
*	551	2018	7	2	9	49	64
*	1104	2018	11	6	18	11	45
*	1662	2019	2	6	9	0	44
*	2220	2019	5	9	14	28	44
*	2773	2019	7	26	13	30	44
*	3272	2020	1	3	16	35	29
*	3272	2020	1	3	16	26	8

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Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

High engine coolant temperature
Total number of occurences = 2

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
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
2369	2019	6	4	7	36	2	27
2369	2019	6	3	9	18	143	118

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.

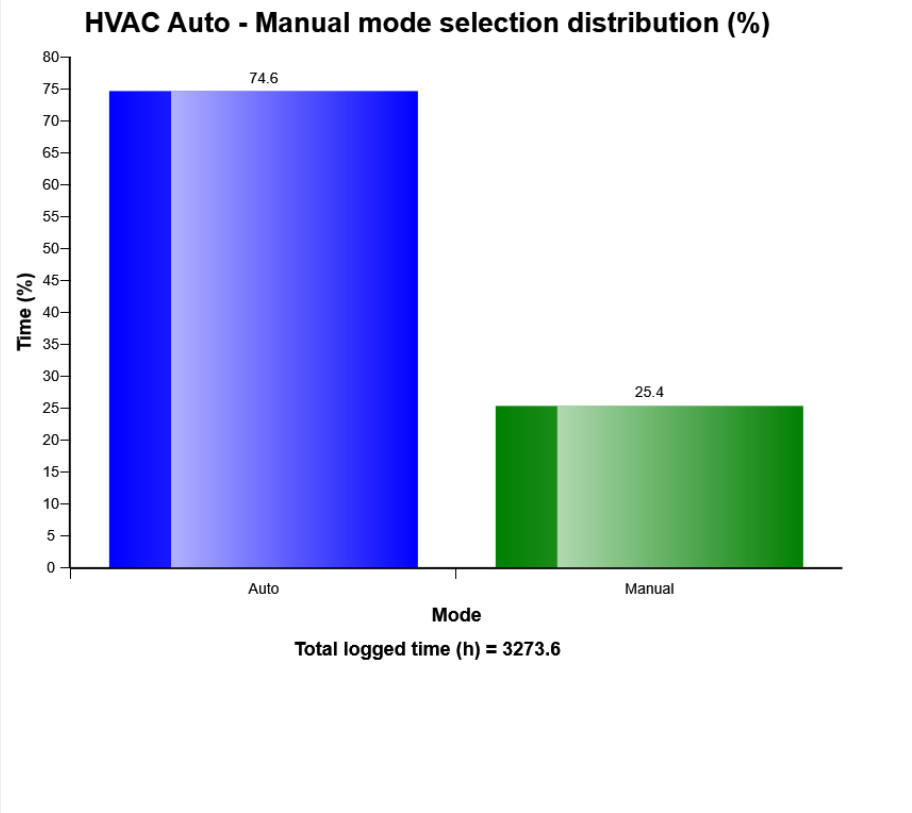
Extreme value :

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

Criteria :

The criteria to get an registration, is that the alarm signal for high engine coolant temperature is active and that the diesel engine is running.

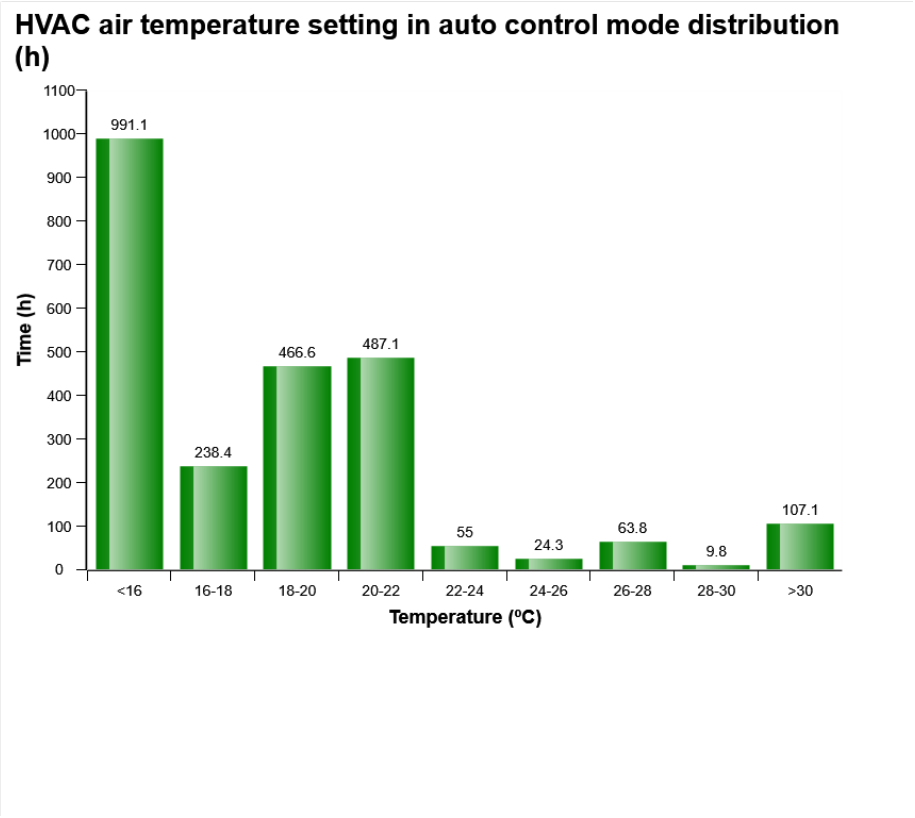
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



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.

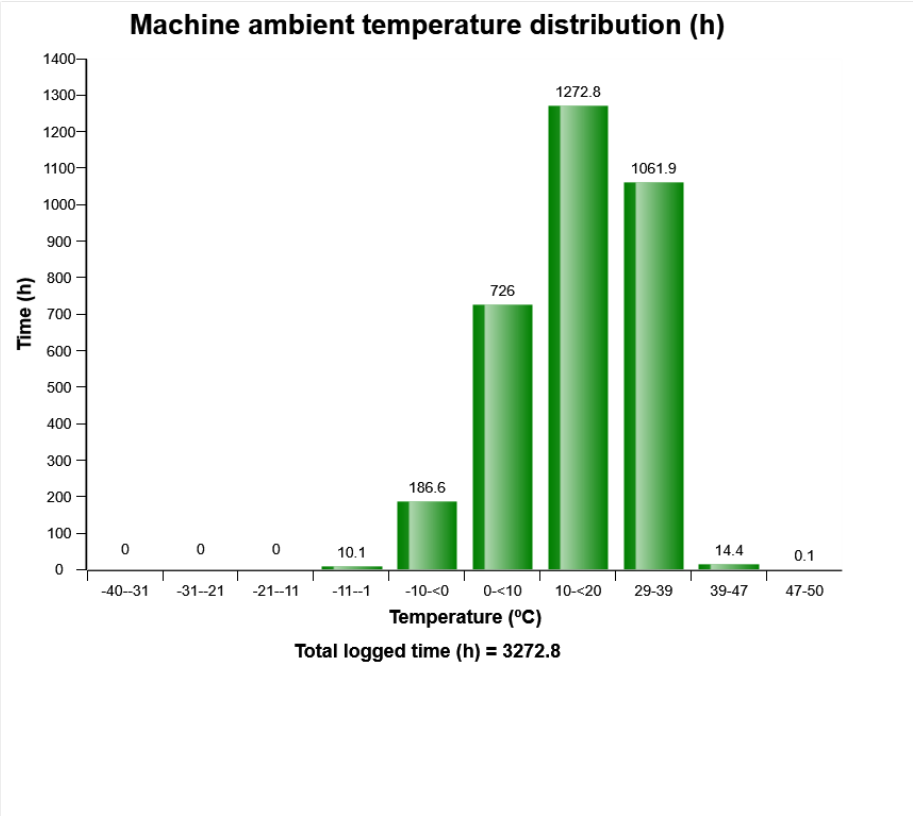
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

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

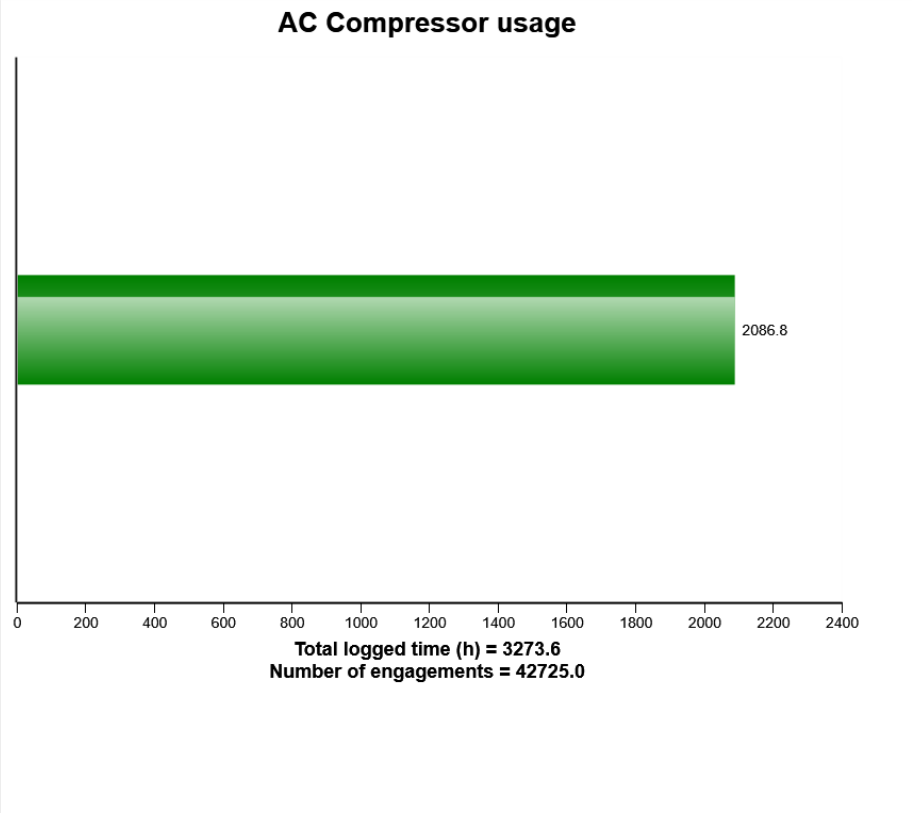
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The graph shows the total time of AC compressor engagement.

Explanation:

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

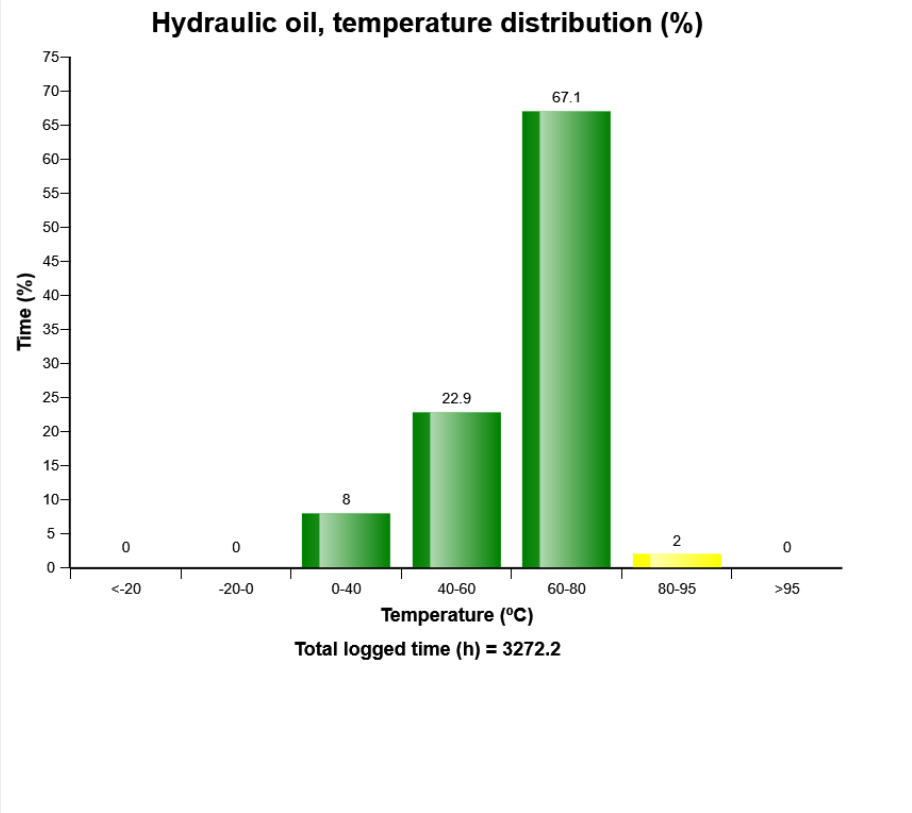
Under the graph the total engine running time (in hours) is displayed.

Total number of AC compressor activations is also displayed.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

-

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



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
EC220E	310650	3274.7	05/03/2020

It is normal to have registrations in this region.

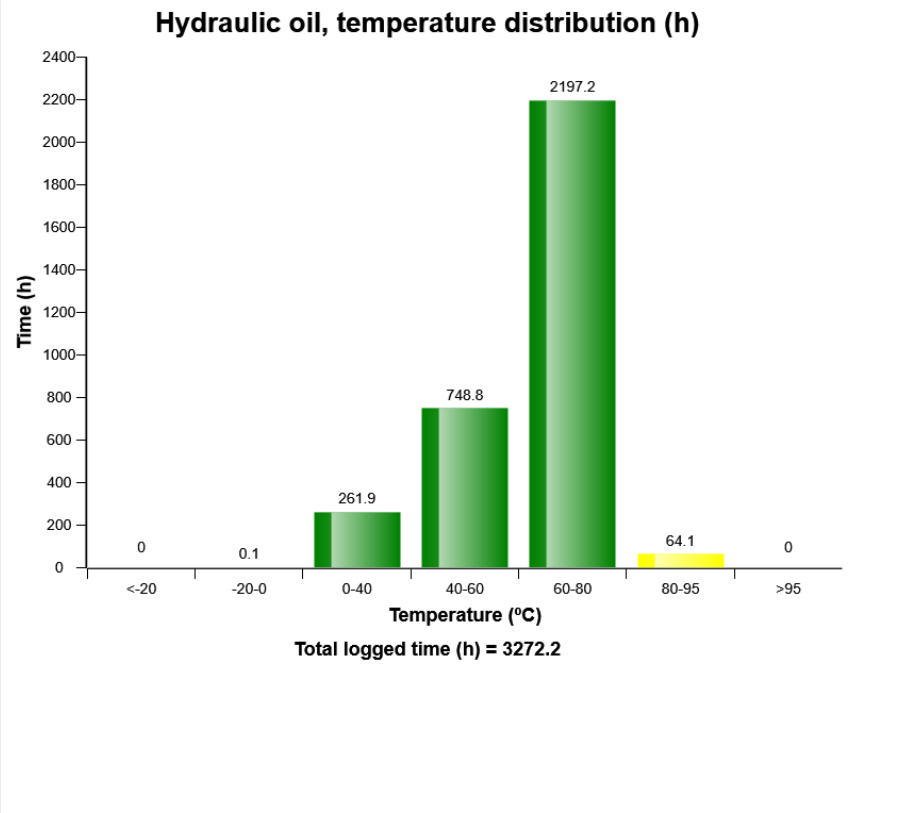
Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

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
EC220E	310650	3274.7	05/03/2020



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.

It is normal to have registrations in this region.

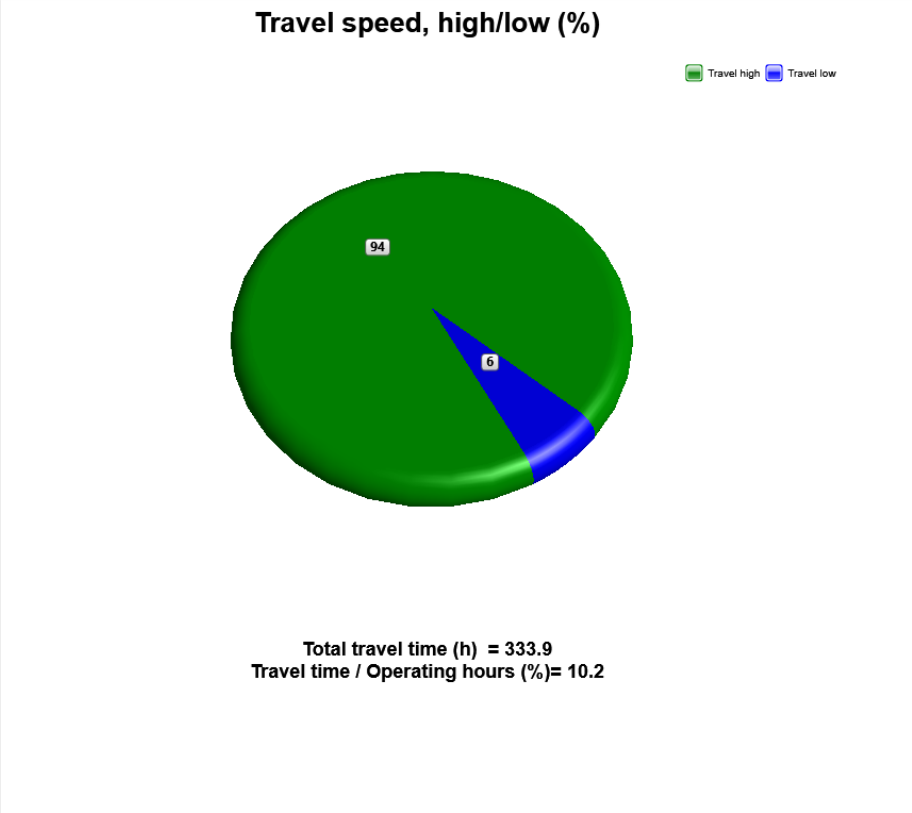
Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

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
EC220E	310650	3274.7	05/03/2020



Definition:

This graph shows operating hour distributions on each travel speed for total travel time.

Blue sector: Travel switch in low position

Green sector: Travel switch in high position

Explanation:

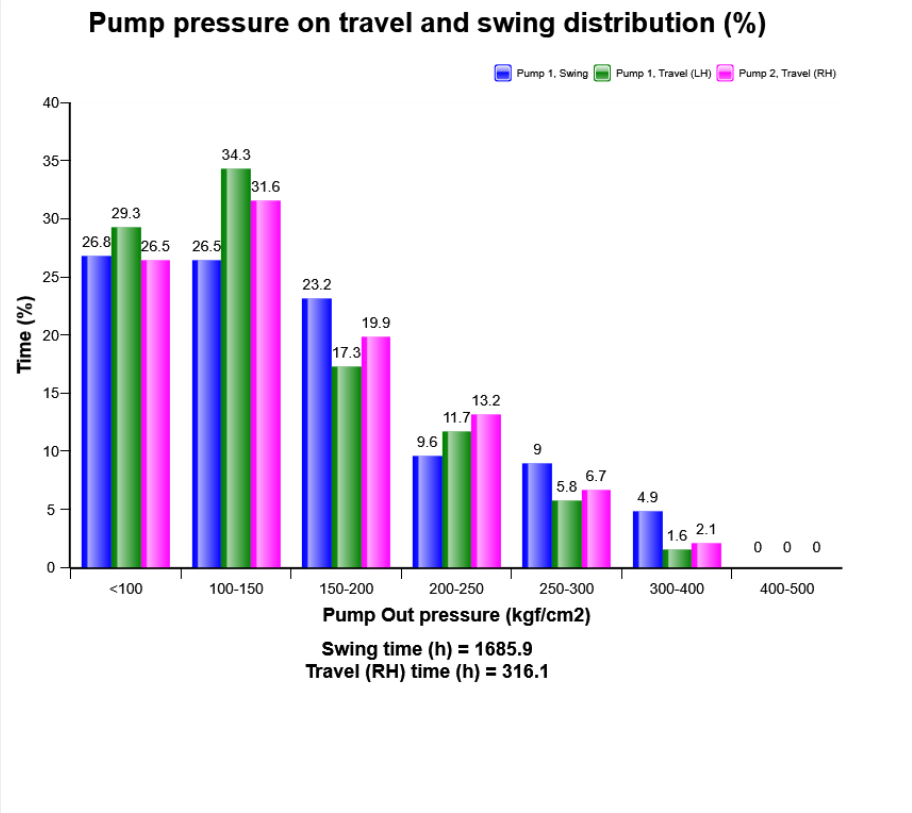
Distribution of each travel time is shown on right of its sector in percentage

The sum of travel time in percentage is 100

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

Total travel time is listed below the diagram

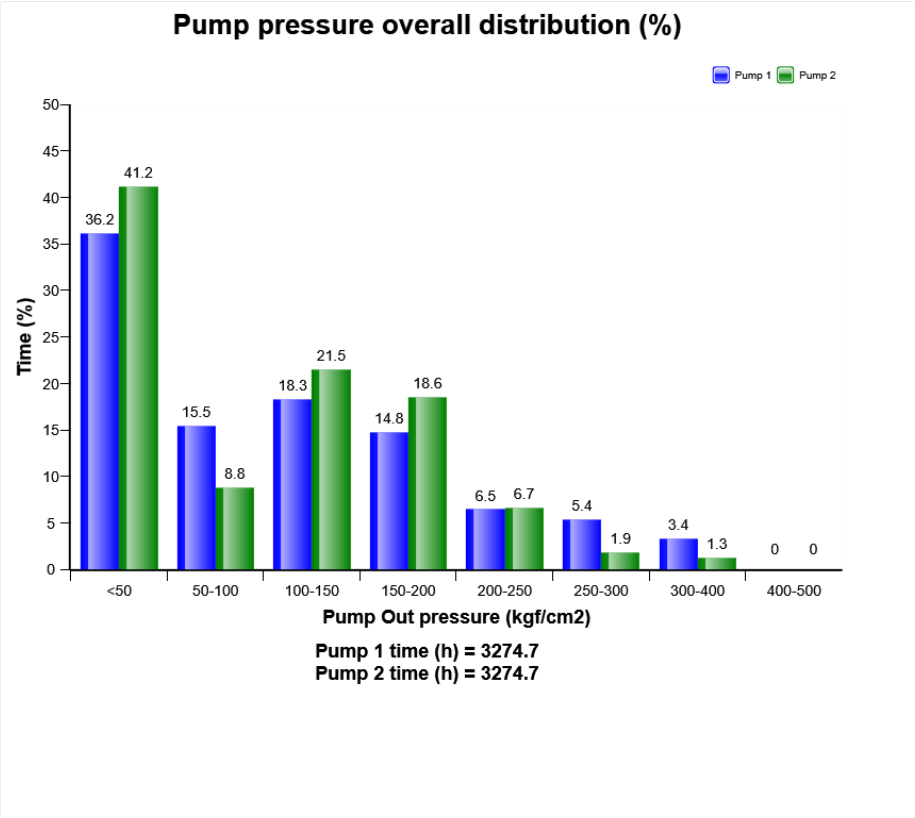
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes Pump outlet pressure of 2 Pumps for travel and swing operation distribution. In case operator use several operations at the same time, this pressure distribution for travel and swing operation can be different from actual operating pressure distribution for travel and swing operation in field.

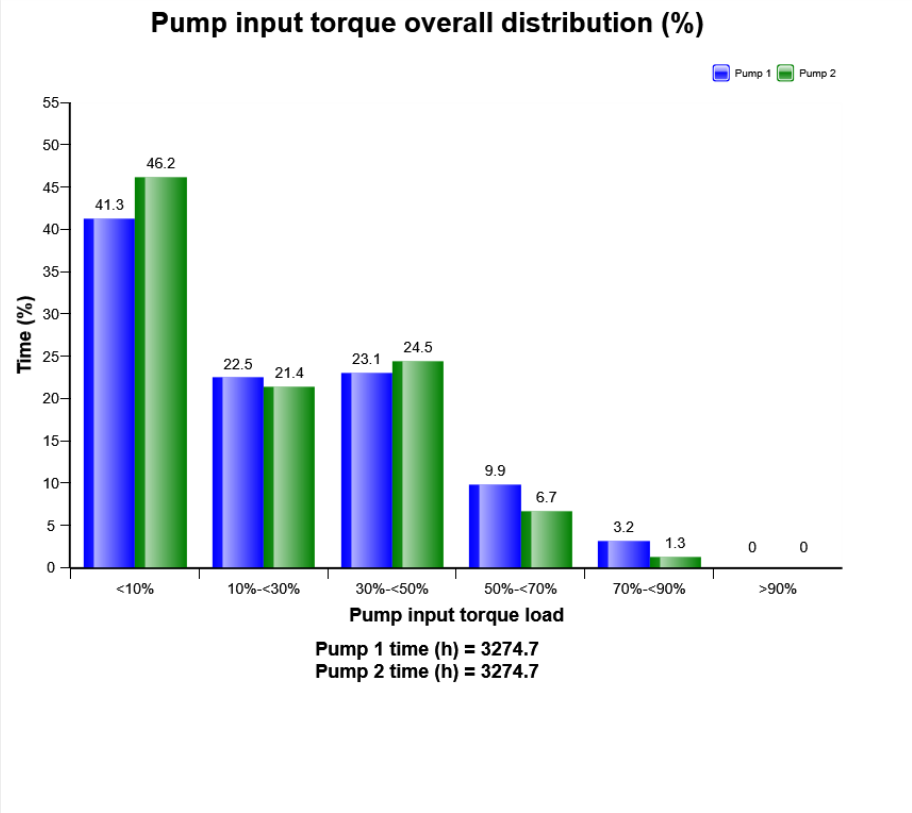
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes Pump outlet pressure of 2 Pumps distribution.

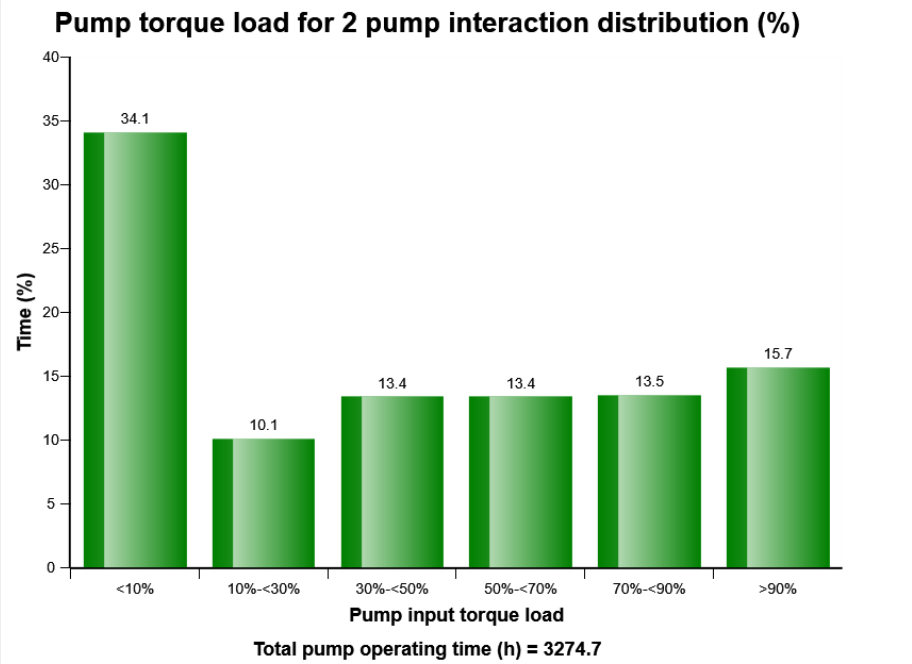
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes Pump torque load of 2 Pumps distribution.

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020

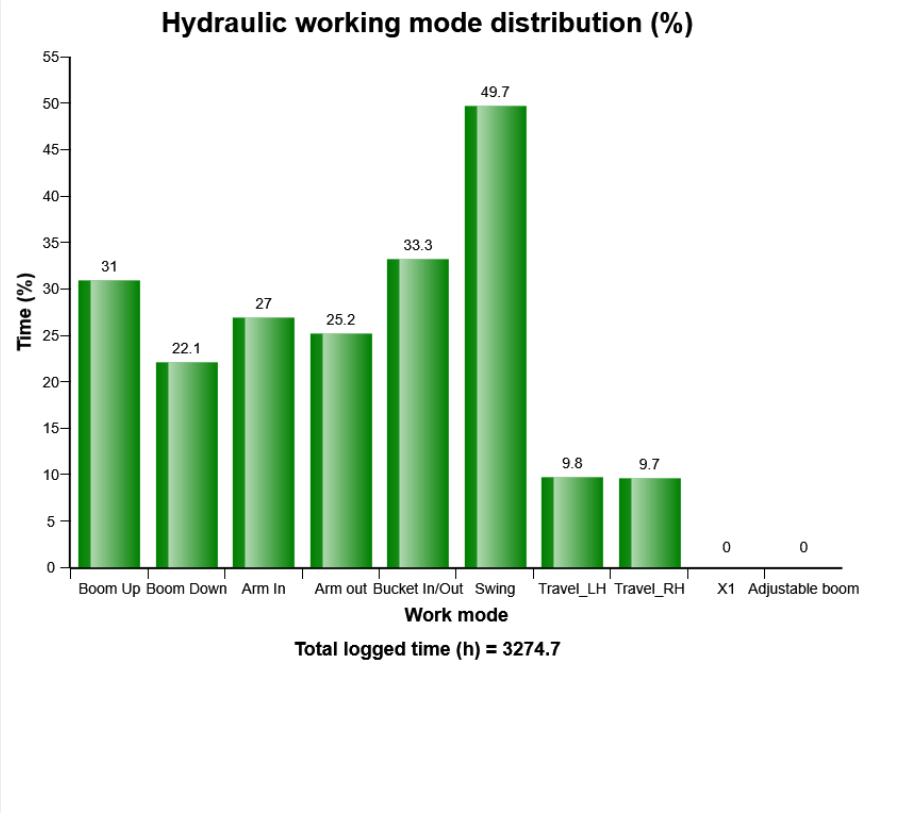


Definition:

This is to see total torque load distribution of 2 pumps when it operates 2 pumps at the same time.

The diagram describes total Pump torque load for 2 Pump’s interaction distribution

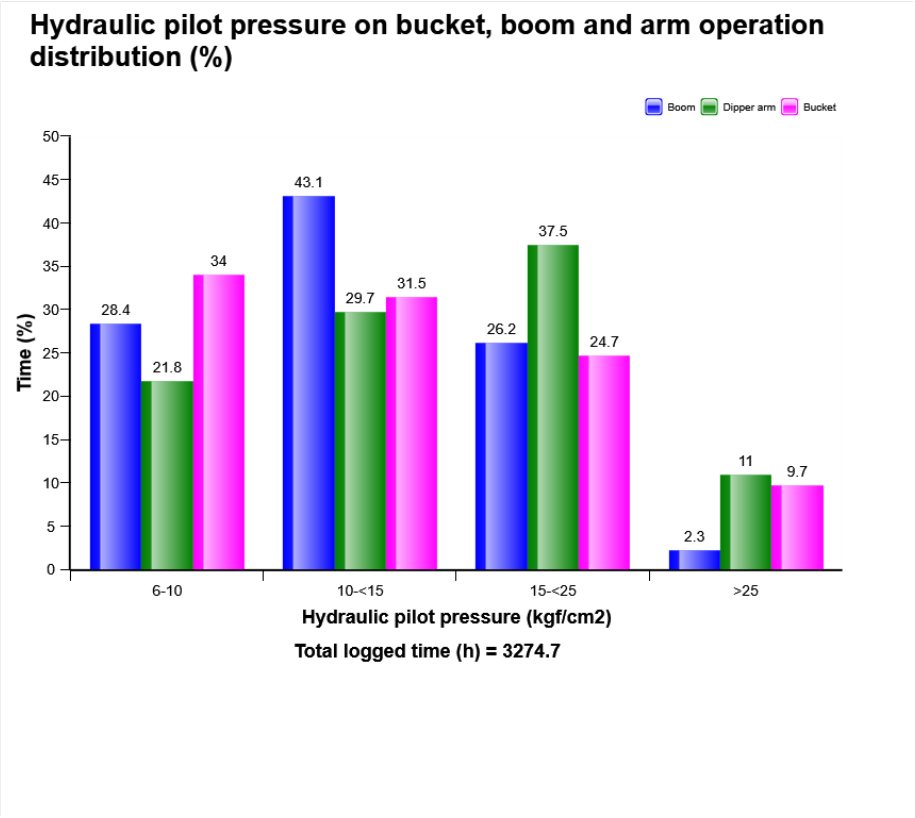
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes hydraulic working operation mode distribution.

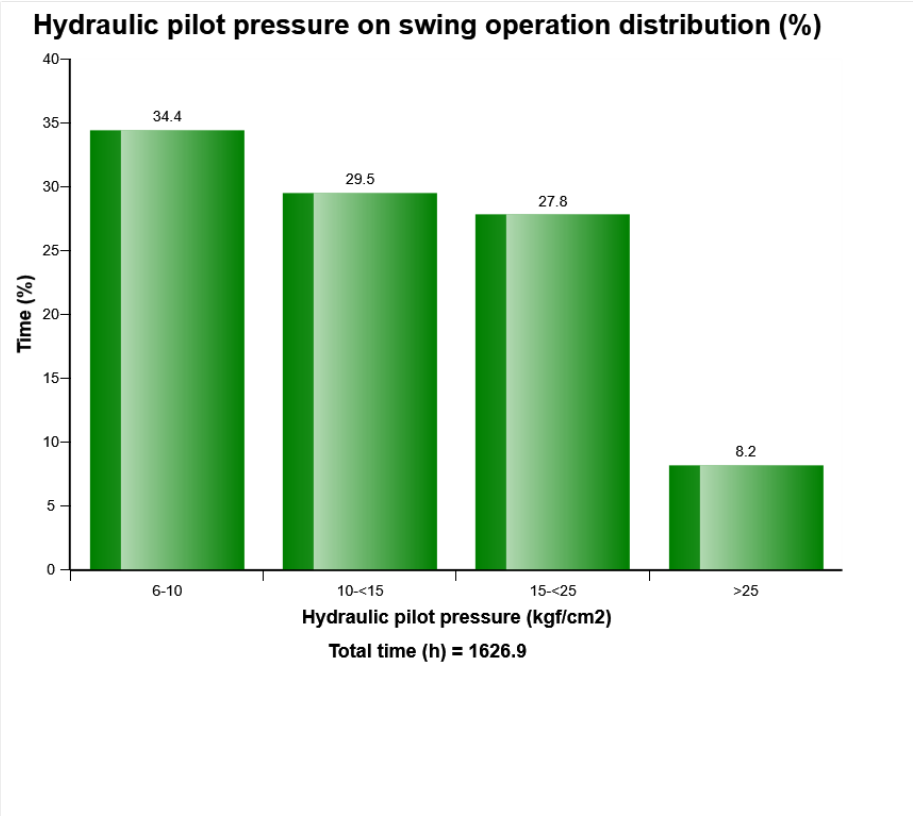
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes the distribution of hydraulic pilot pressure in specified operation

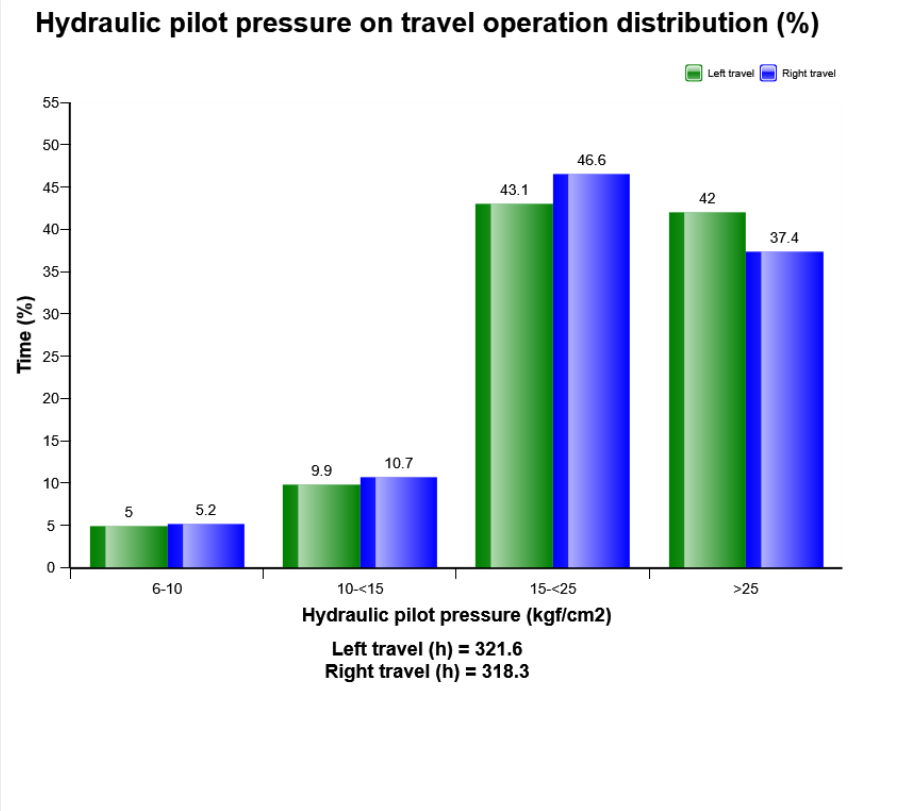
Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes the distribution of hydraulic pilot pressure in specified operation

Machine model	SerialNo	Operating Hours	Reading Date
EC220E	310650	3274.7	05/03/2020



Definition:

The diagram describes the distribution of hydraulic pilot pressure in specified operation