

VOLVO CONSTRUCTION EQUIPMENT MATRIS REPORT

Machine model EC220D	SerialNo 210707	Operating Hours 4965.2	Reading Date 13/05/2019
Company name volvo	Dealer arnold machinery	Report Issuer	
Contact name mike seifert	Technician CE Tech	Primary Application Building material handling	
Site	Workorder	Ground Condition	

MATRIS Reading, Summary / Recommendation

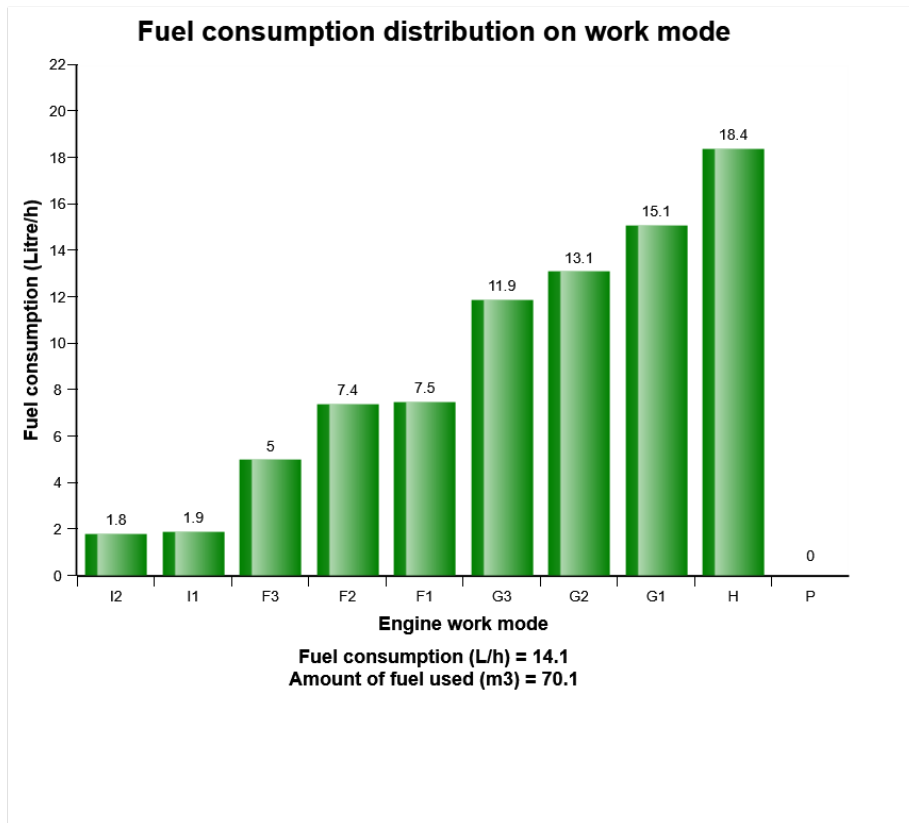


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Main equipment	Type	Equipment
	Track chain	
	Hydraulic Fluid	
	Bucket size	
	X3 piping	
	Main Attachment	



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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)

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

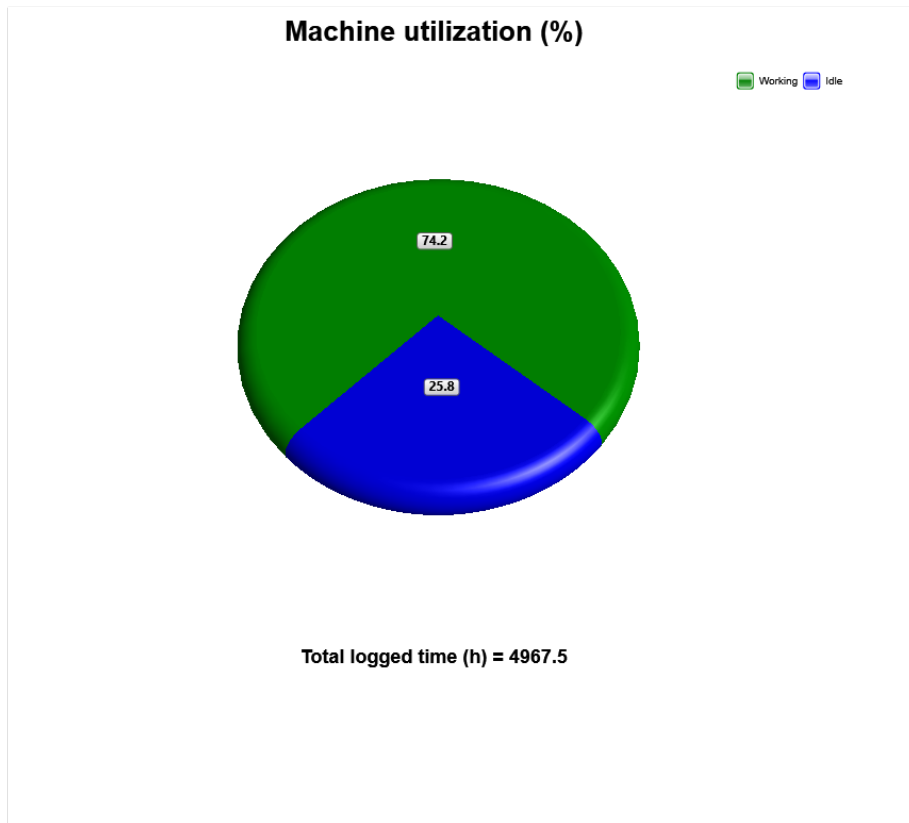


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Average fuel consumption per hour is listed below the diagram



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Definition:

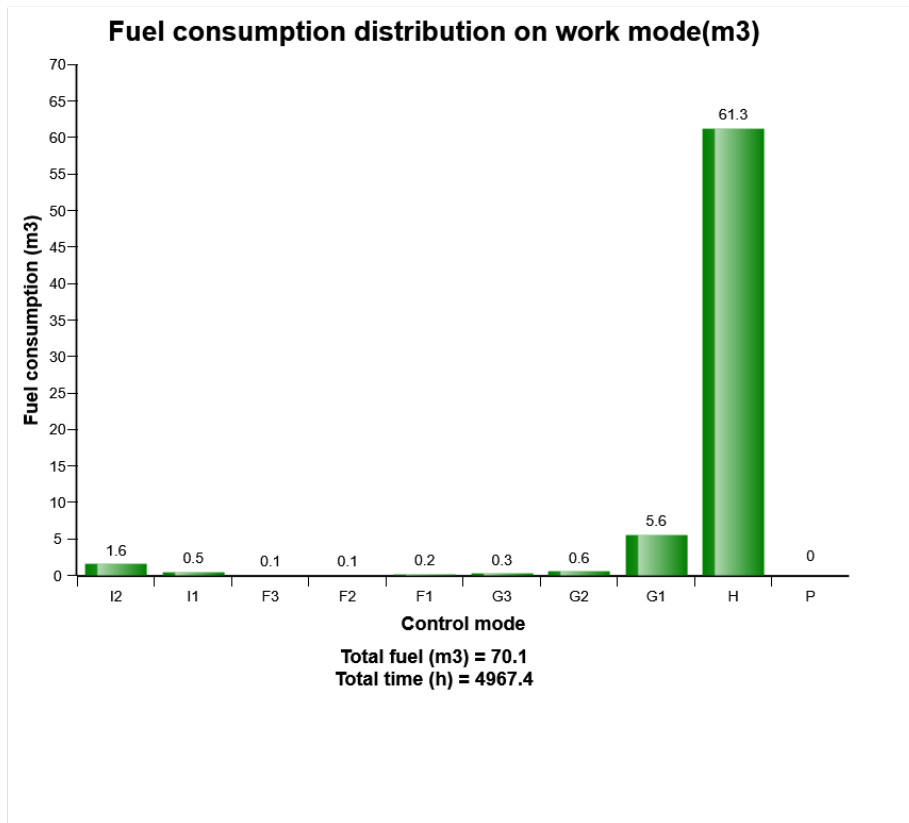
The graph shows the distribution of the operating time for the machine. The operating time is defined as the time with engine on

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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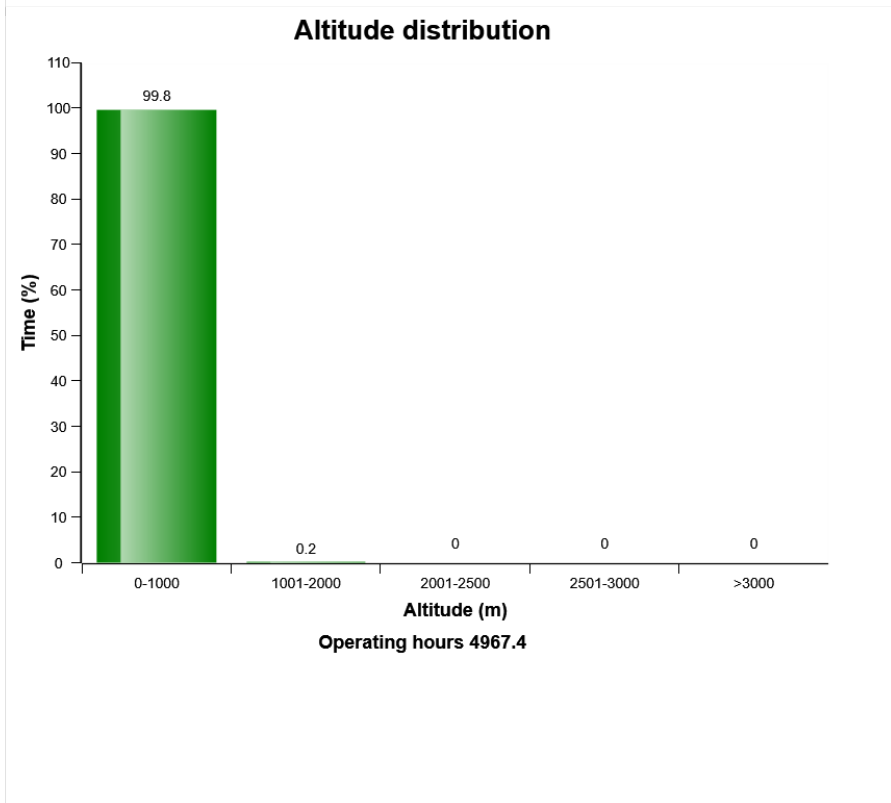
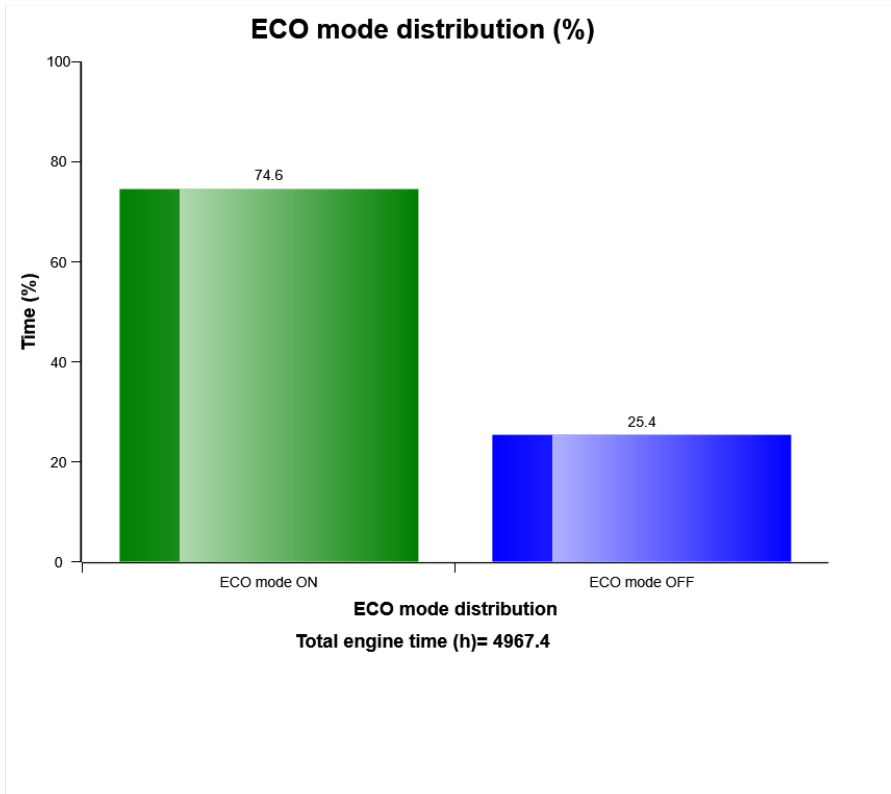
Definition:

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.

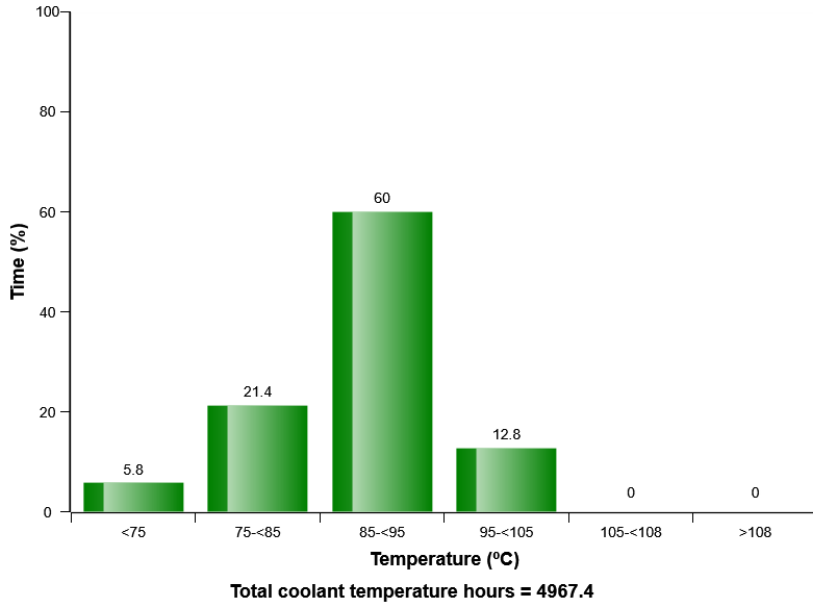


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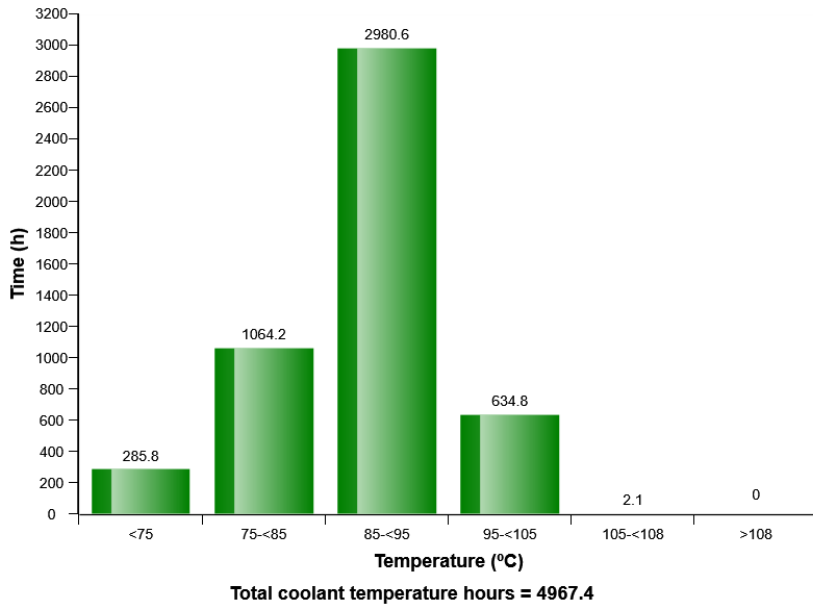


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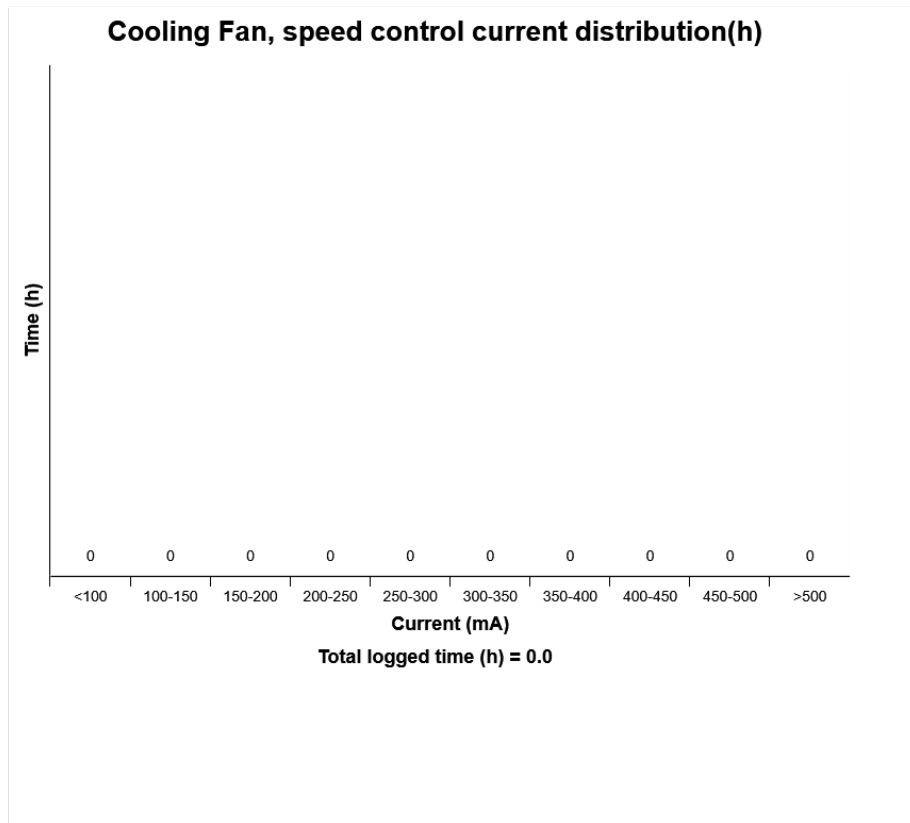
Engine coolant temperature, distribution (%)



Engine coolant temperature, distribution (h)



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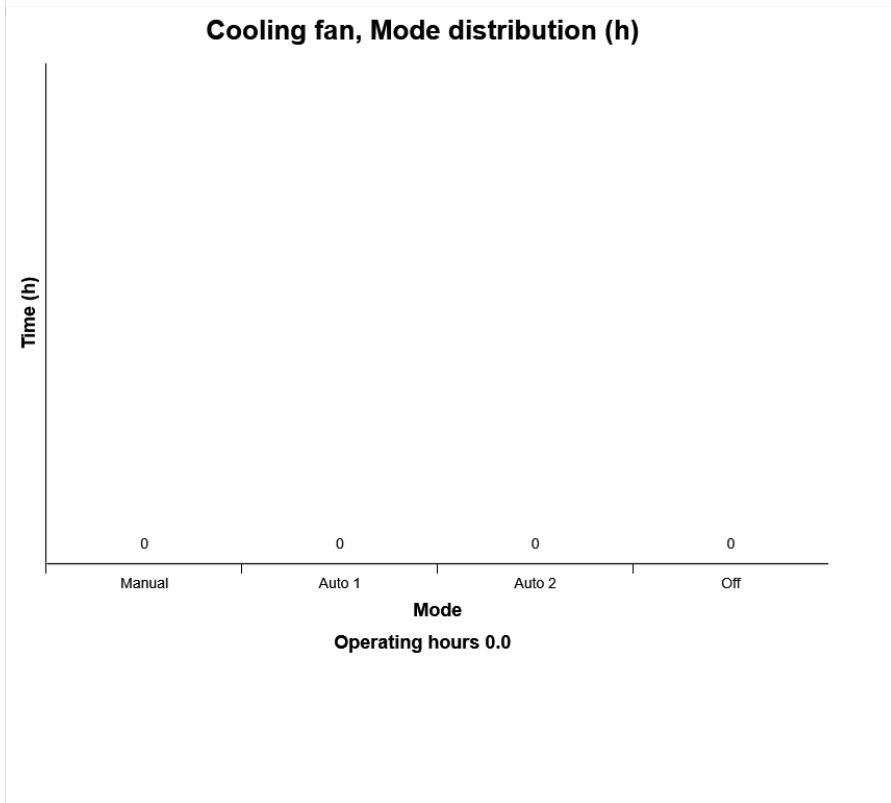
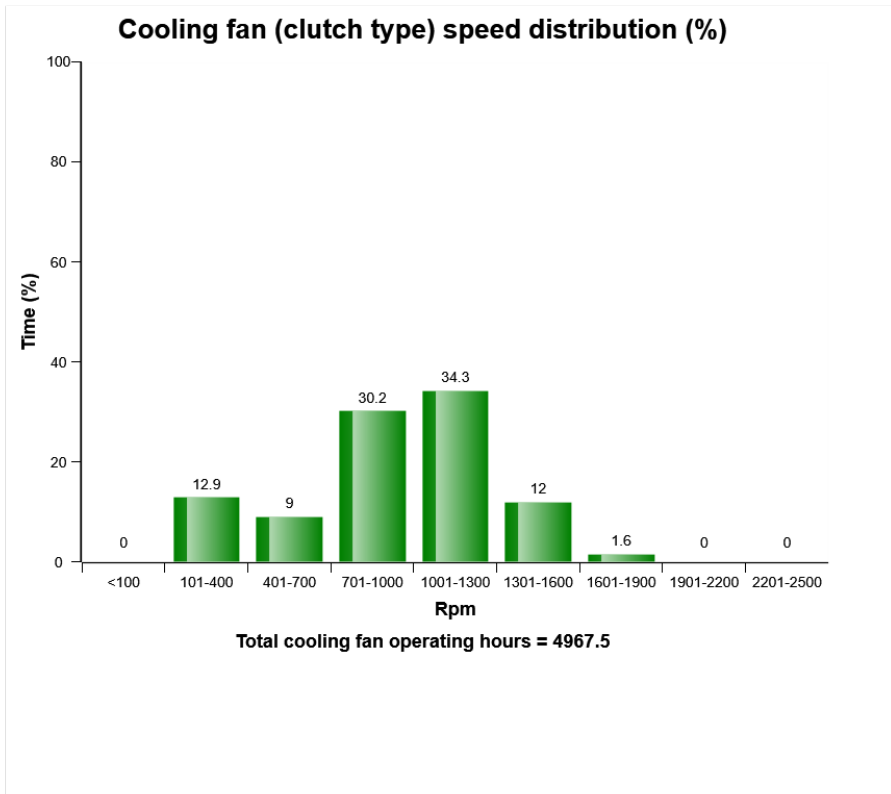
Definition:

The diagram describes Hydraulic Cooling fan speed control, Current (mA) distribution, on fan speed Control..

Total time (hours) in above means the sum of the time for Hydraulic Cooling fan operation.

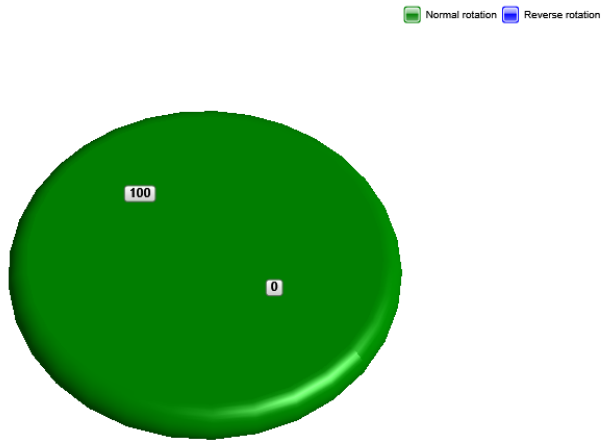


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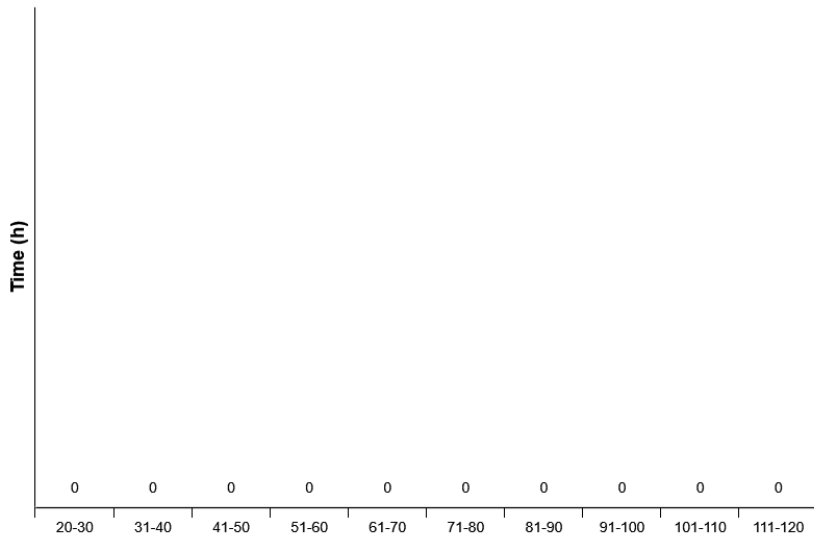
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Cooling fan, Normal-Reverse rotation distribution (%)



Total operating time (h) = 4967.5

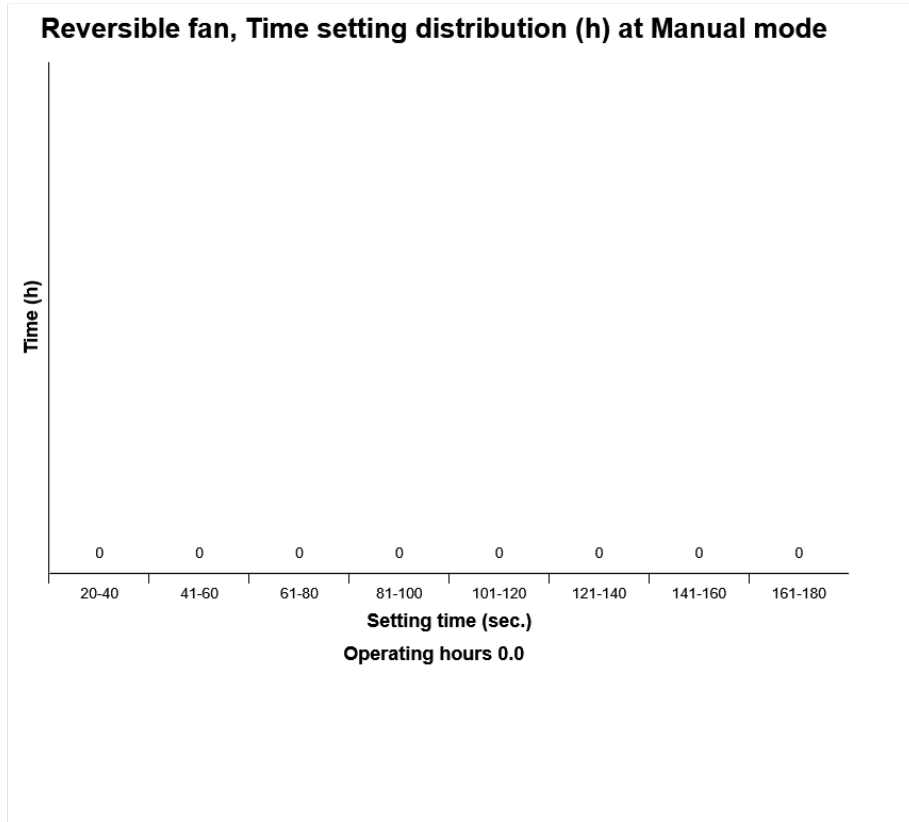
Reverisble fan, Time setting distribution (h) at Auto 1 mode



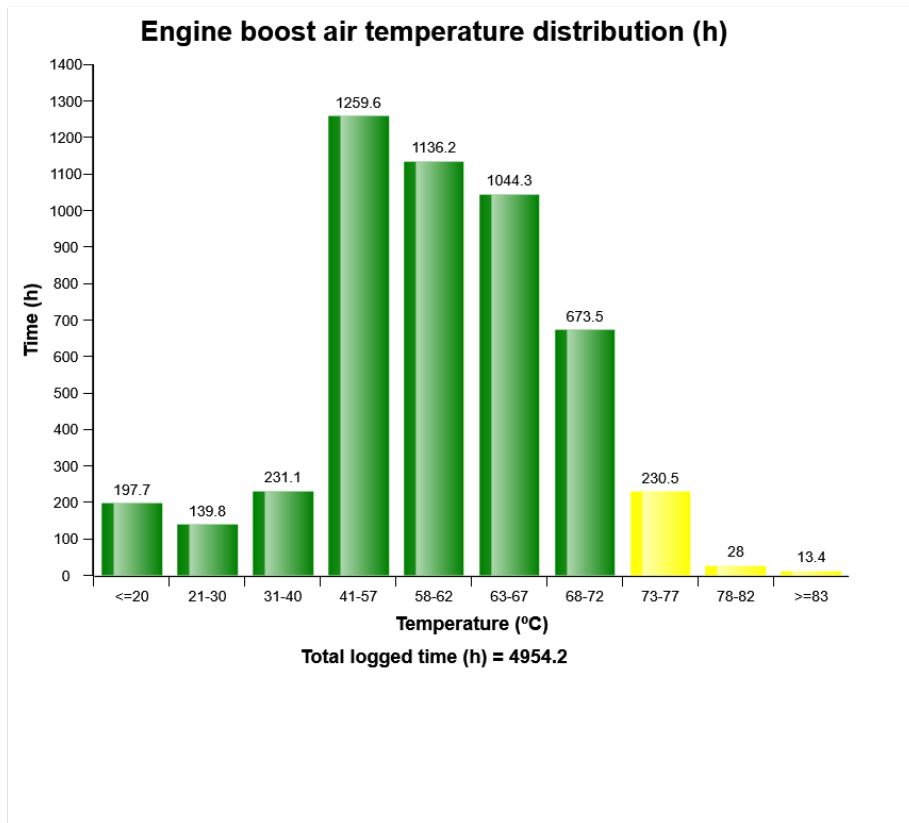
Total operating time at Auto 1 mode (h) = 0.0



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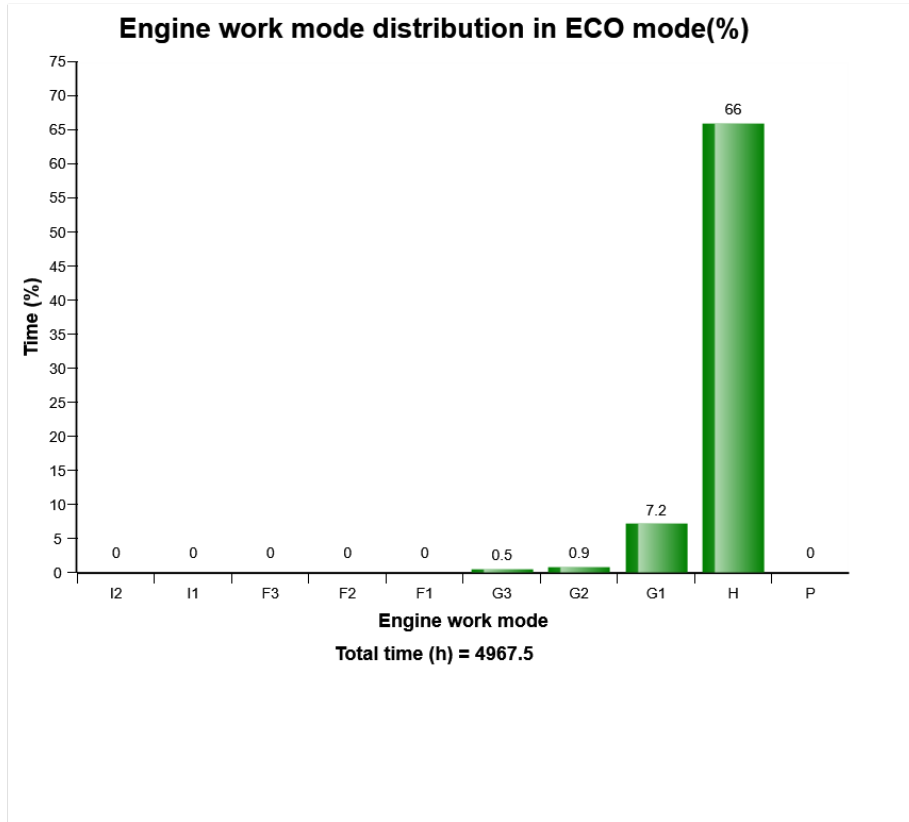


Definition:

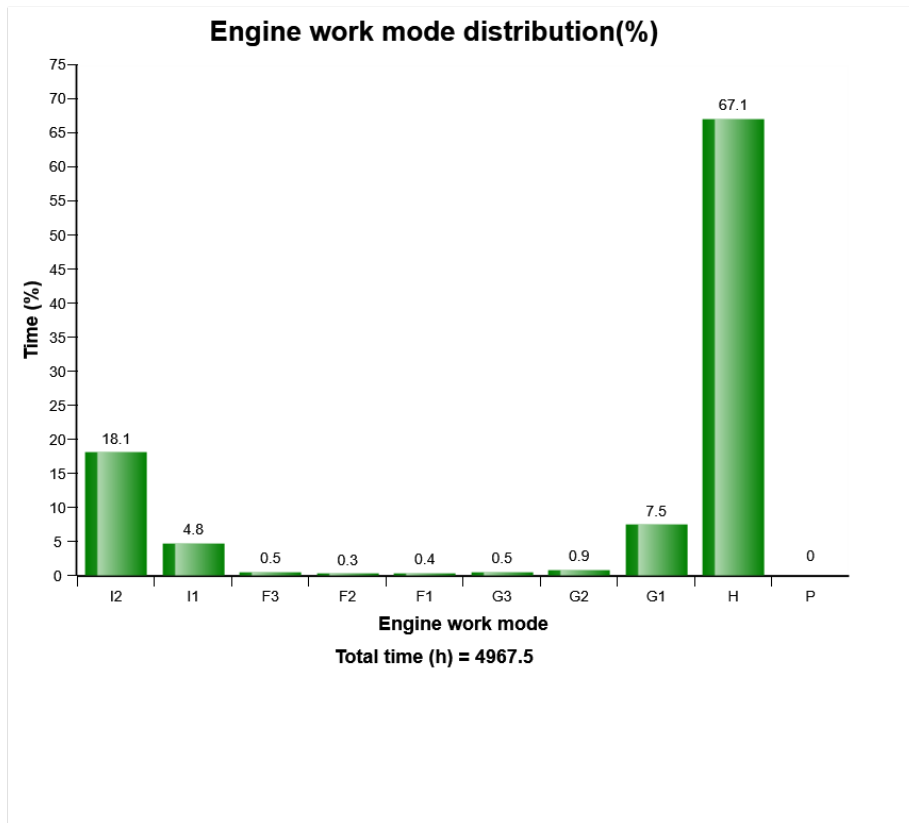
The diagram describes Engine boost air temperature distribution of the machine when the engine is on.



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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)

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



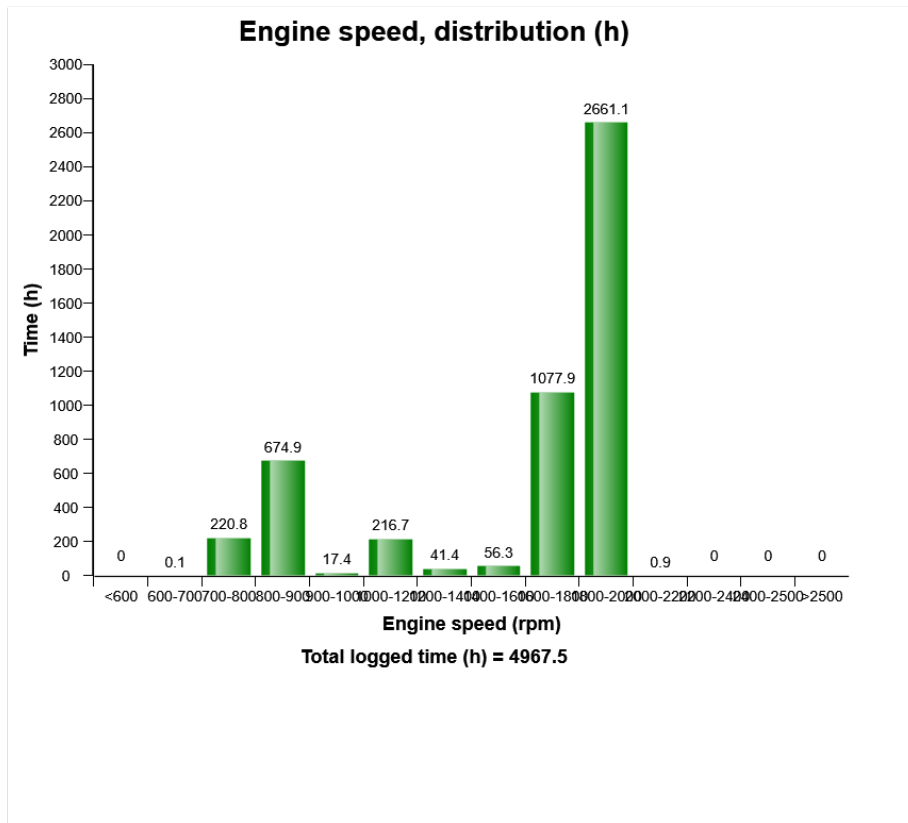
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The sum of time distribution in percentage is 100

Total time (h) is listed below the diagram



Machine model	SerialNo	Operating Hours	Reading Date
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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.

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

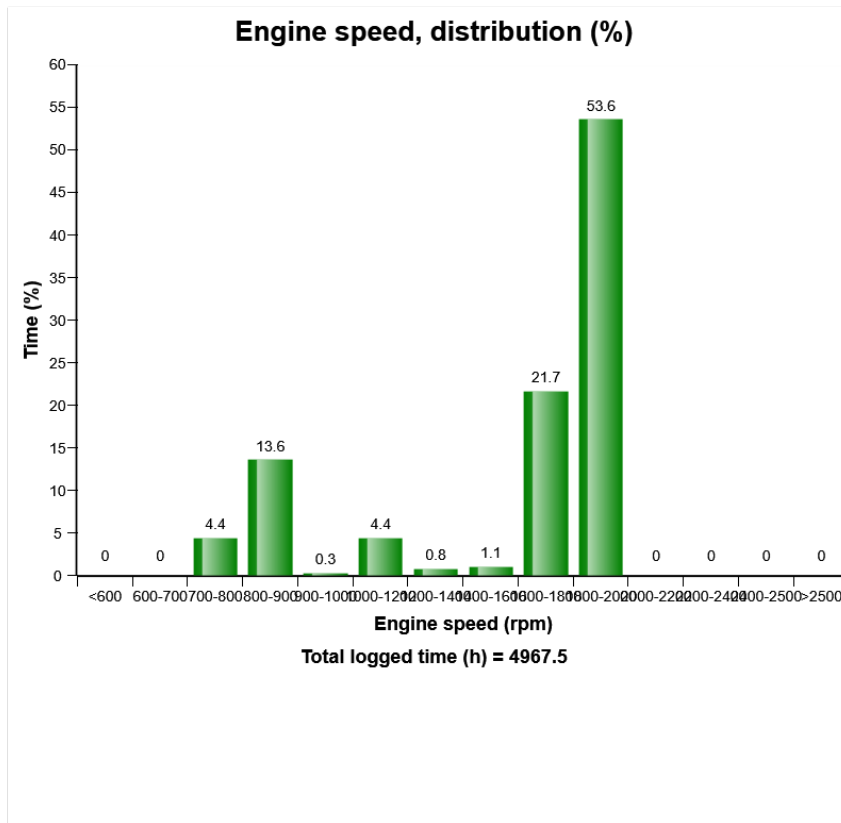


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Exceeding the maximum design speed may cause severe damage to the engine.



Machine model	SerialNo	Operating Hours	Reading Date
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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.



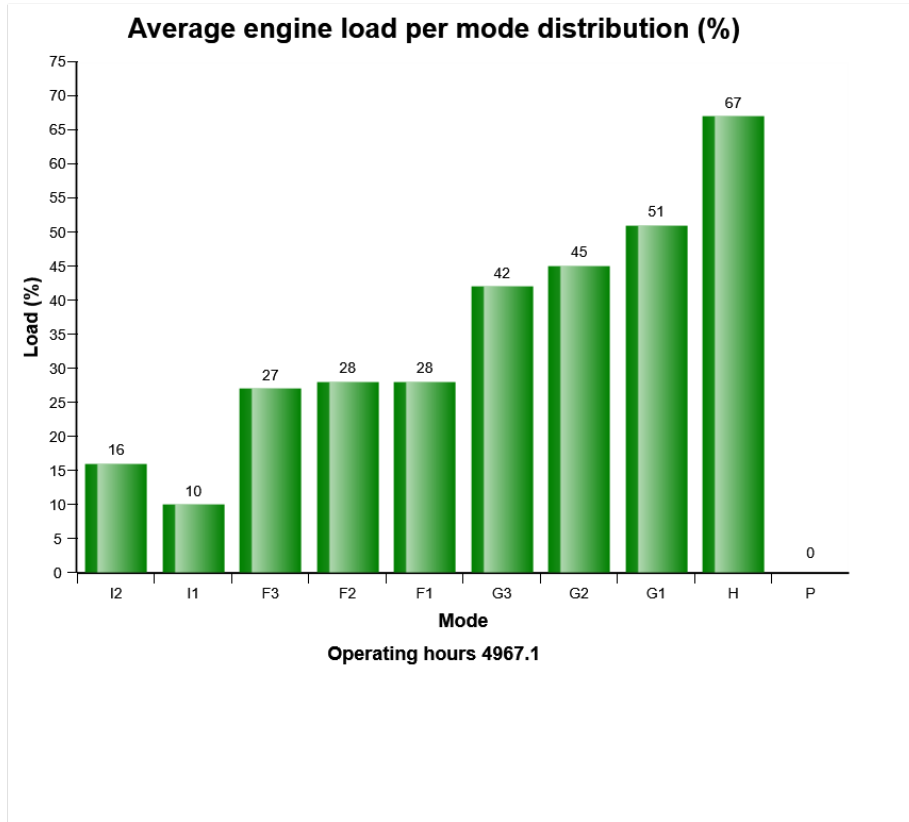
Machine model	SerialNo	Operating Hours	Reading Date
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Red bars =The engine speed has exceeded the maximum design speed.

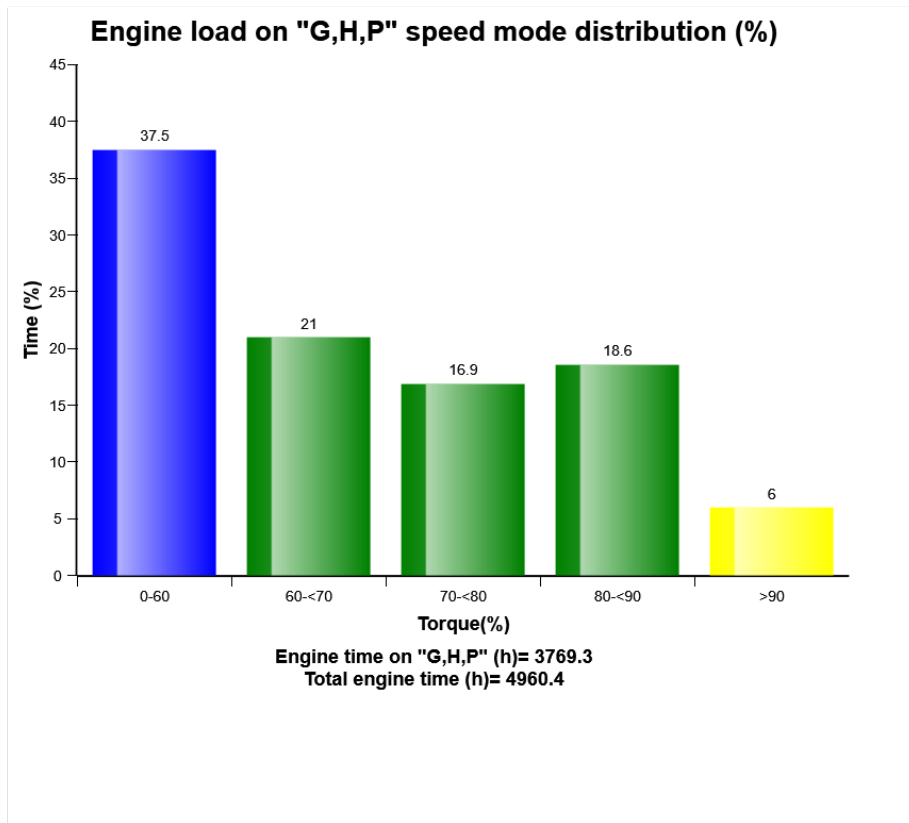
Exceeding the maximum design speed may cause severe damage to the engine



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This graph shows the distribution of the engine load.

Blue bar: Low load

Green bar: Normal load

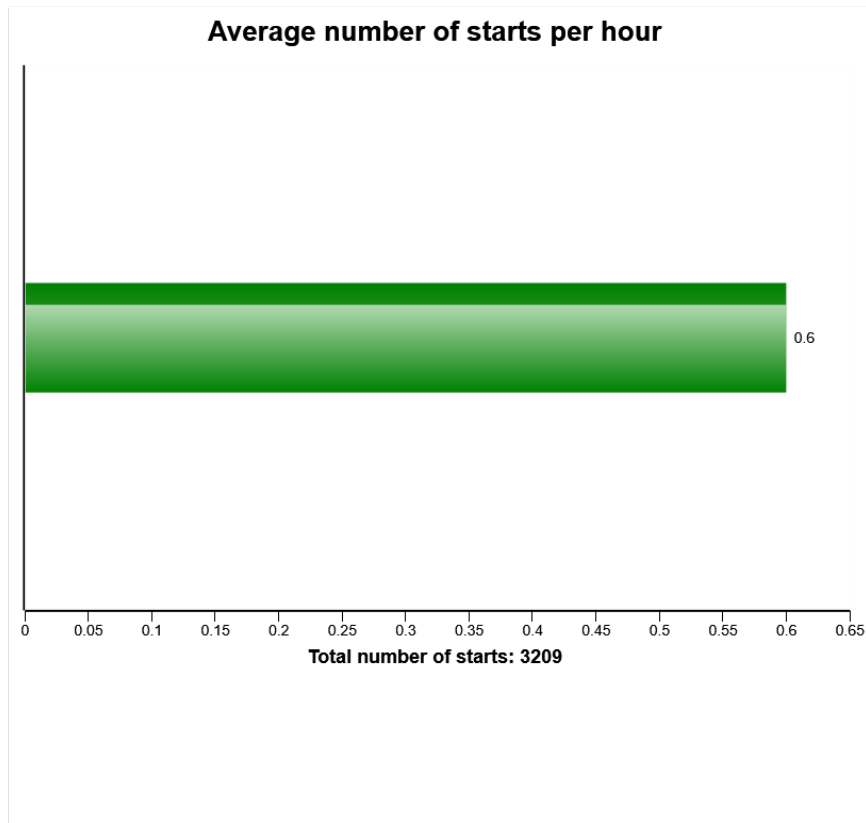
Yellow bar: Excessive load

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

The sum of bars is 100%.



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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.

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

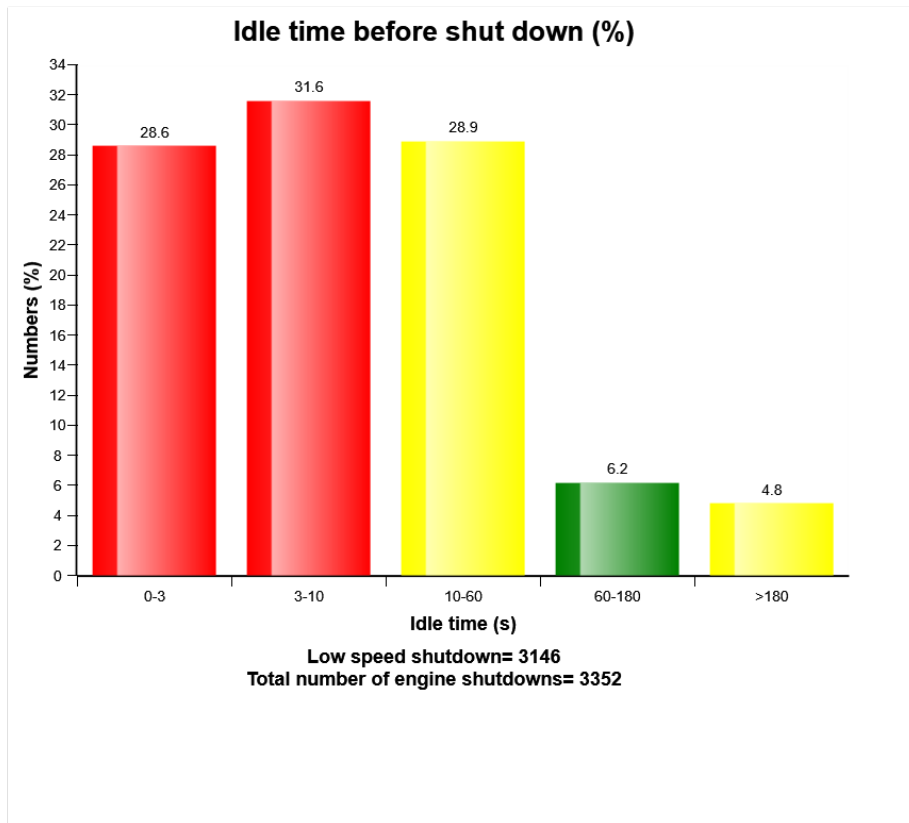


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Green bar = Number of average starts per hour



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Definition:

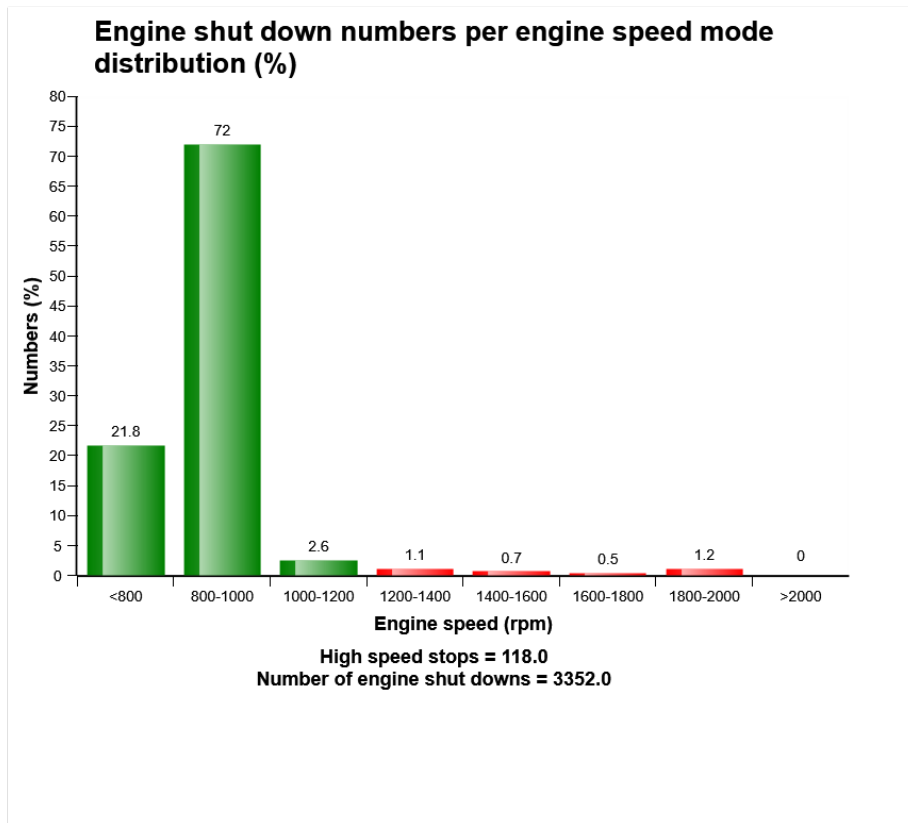
This graph shows the distribution of delayed time at low idle speed until the engine is turned off.

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

The sum of bars is 100%.



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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.



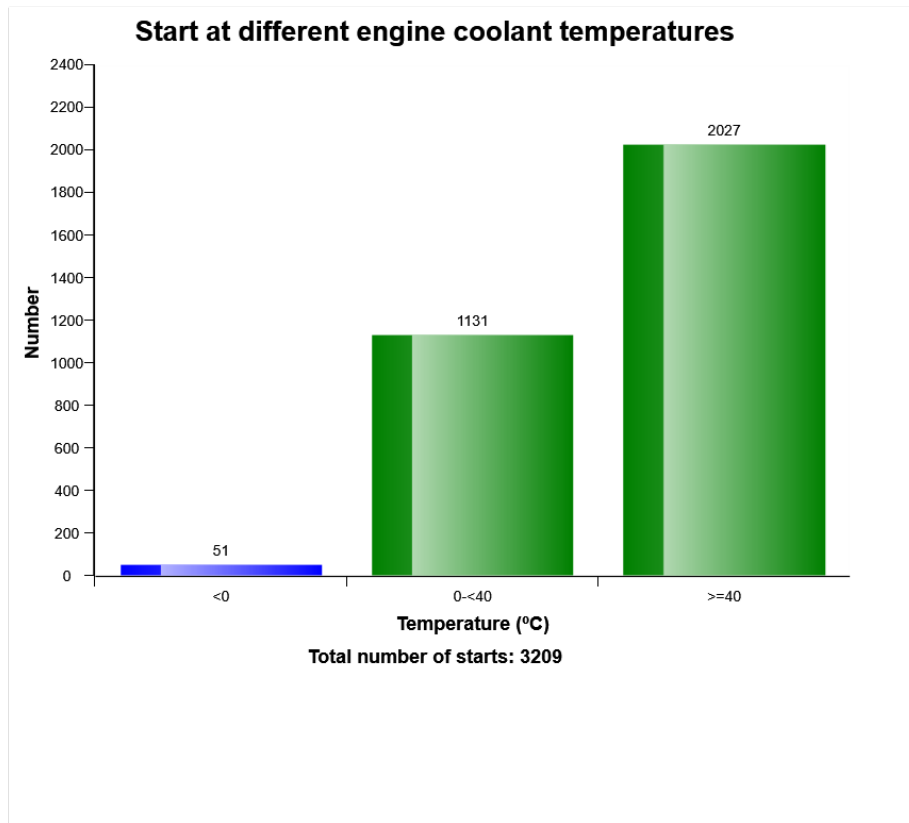
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Distribution of each work mode is shown on top of its column in number.

Total number of shut down is listed below the diagram.



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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.



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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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Low coolant level
Total number of occurrences = 539

	Op hours	Year	Month	Day	Hour	Minute
*	4924	2018	12	11	13	4
*	4925	2018	12	11	15	20
*	4933	2018	12	26	9	50
*	4938	2018	12	27	7	54
*	4938	2018	12	27	8	3
*	4943	2018	12	27	13	35
*	4943	2018	12	27	13	53
*	4943	2018	12	27	13	57
*	4943	2018	12	27	14	1
*	4943	2018	12	27	14	11
*	4944	2018	12	27	15	26
*	4944	2018	12	27	14	27
*	4946	2018	12	31	8	17
*	4947	2018	12	31	10	31
*	4948	2018	12	31	11	45
*	4948	2018	12	31	13	3
*	4950	2018	12	31	14	28
*	4951	2018	12	31	16	5
*	4953	2019	1	11	15	1
*	4953	2019	1	14	8	6

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



Duration (sec)
2700
2420
18
378
138
843
151
156
438
93
5184
71
4790
1953
2302
4828
4736
3234
7
73



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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."





Minute

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

29



Machine model	SerialNo	Operating Hours	Reading Date
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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
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Low Engine Oil Pressure
Total number of occurrences = 0

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)
A	0	2000	0	0	0	0	0
R	0	2000	0	0	0	0	0
Q	0	2000	0	0	0	0	0
P	0	2000	0	0	0	0	0
O	0	2000	0	0	0	0	0
N	0	2000	0	0	0	0	0
M	0	2000	0	0	0	0	0
L	0	2000	0	0	0	0	0
K	0	2000	0	0	0	0	0
J	0	2000	0	0	0	0	0
I	0	2000	0	0	0	0	0
H	0	2000	0	0	0	0	0
G	0	2000	0	0	0	0	0
F	0	2000	0	0	0	0	0
E	0	2000	0	0	0	0	0
D	0	2000	0	0	0	0	0
C	0	2000	0	0	0	0	0
B	0	2000	0	0	0	0	0
S	0	2000	0	0	0	0	0
T	0	2000	0	0	0	0	0

Definition :

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**Extreme
(bar)**

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0



Machine model	SerialNo	Operating Hours	Reading Date
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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 engine oil pressure to be recorded in a data point and the count to increment by 1, the engine 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."





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Fuel Filter Clogging
Total number of occurrences = 2

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
3056	2017	8	9	12	47	1
3055	2017	8	9	12	0	37
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
0	2000	0	0	0	0	0



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Low Air filter pressure
Total number of occurrences = 0

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)
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
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

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



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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.

Criteria :

The criteria to get an registration, is that the alarm signal for air filter clogged is active, and that the diesel engine is running.



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High Charge air temperature
Total number of occurrences = 11

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
336	2015	6	11	16	15	229	75
431	2015	7	2	10	5	5132	79
434	2015	7	2	14	16	5778	82
2847	2017	5	23	14	51	3113	79
3060	2017	8	10	10	30	4819	74
3089	2017	8	16	15	16	2430	76
3155	2017	9	12	16	14	4761	73
4432	2018	7	13	8	50	6959	74
4567	2018	8	29	15	39	10017	78
4661	2018	9	27	14	38	8347	75
4773	2018	10	26	15	7	777	73

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



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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 high engine charge air temperature to be recorded and the count to increment by 1, the engine charge air temperature must change from "normal" to "high." The event of high engine charge air temperature will end when the status changes from "high" back to "normal."



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Regeneration ignored
Total number of ignored regenerations 117

	Op hours	Year	Month	Day	Hour	Minute
*	4008	2018	3	27	8	56
*	4008	2018	3	27	9	6
*	4015	2018	3	28	6	5
*	4015	2018	3	28	6	0
*	4264	2018	6	4	11	1
*	4377	2018	6	28	8	56
*	4406	2018	7	6	12	54
*	4533	2018	8	22	12	12
*	4533	2018	8	22	12	18
*	4586	2018	8	31	9	17
*	4594	2018	9	3	11	37
*	4601	2018	9	4	10	30
*	4631	2018	9	18	10	59
*	4631	2018	9	18	11	1
*	4631	2018	9	18	11	35
*	4631	2018	9	18	7	6
*	4728	2018	10	22	10	59
*	4728	2018	10	22	11	7
*	4873	2018	11	19	11	58
*	4960	2019	2	19	14	7



Duration (min)
9
58
29
1
28
28
29
6
28
29
30
33
2
1
35
20
2
29
79
101



Machine model	SerialNo	Operating Hours	Reading Date
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Regeneration aborted
Total number of occurrences = 185

Op hours	Year	Month	Day	Hour	Minute	Reason
4458	2018	7	19	8	43	1
4458	2018	7	19	9	9	1
4463	2018	7	31	11	39	1
4524	2018	8	21	9	51	1
4525	2018	8	21	10	20	1
4525	2018	8	21	10	57	1
4629	2018	9	17	14	40	1
4631	2018	9	18	7	26	1
4661	2018	9	27	14	31	2
4717	2018	10	12	11	6	1
4718	2018	10	15	8	9	1
4728	2018	10	22	11	1	1
4910	2018	12	4	14	1	1
4911	2018	12	5	13	54	1
4911	2018	12	4	16	23	1
4911	2018	12	5	10	56	1
4912	2018	12	6	16	49	1
4926	2018	12	11	16	1	1
4927	2018	12	12	13	33	1
4959	2019	2	18	14	56	1



Machine model	SerialNo	Operating Hours	Reading Date
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Regeneration duration
Total number of occurrences = 1115

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
4911	2018	12	5	13	52	3
4911	2018	12	5	10	53	3
4911	2018	12	4	16	17	6
4912	2018	12	6	16	47	2
4913	2018	12	7	8	36	31
4922	2018	12	10	14	18	0
4926	2018	12	12	8	54	15
4926	2018	12	11	15	51	10
4927	2018	12	12	13	14	19
4928	2018	12	13	12	31	29
4932	2018	12	14	8	39	0
4934	2018	12	26	11	31	0
4938	2018	12	27	8	28	27
4942	2018	12	27	12	24	0
4948	2018	12	31	11	59	0
4949	2018	12	31	13	37	26
4959	2019	2	18	14	33	24
4959	2019	2	19	13	1	0
4959	2019	2	19	13	21	46
4961	2019	2	19	15	16	33



Machine model	SerialNo	Operating Hours	Reading Date
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**High engine coolant temperature
Total number of occurrences = 71**

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
4462	2018	7	31	10	15	106	103
4463	2018	7	31	11	30	563	107
4463	2018	7	31	10	42	846	105
4464	2018	7	31	12	14	157	104
4465	2018	7	31	13	15	430	105
4465	2018	7	31	13	5	158	105
4465	2018	7	31	12	51	609	105
4486	2018	8	9	9	51	93	103
4487	2018	8	9	10	43	99	104
4488	2018	8	9	11	54	292	103
4488	2018	8	9	12	4	76	103
4533	2018	8	22	12	5	501	105
4824	2018	11	6	15	35	13	101
4824	2018	11	6	15	34	42	102
4835	2018	11	7	16	41	505	107
4920	2018	12	10	11	44	977	106
4920	2018	12	10	11	20	414	106
4922	2018	12	10	13	26	511	106
4922	2018	12	10	13	51	1298	107
4943	2018	12	27	13	25	158	104

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



Machine model	SerialNo	Operating Hours	Reading Date
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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 :

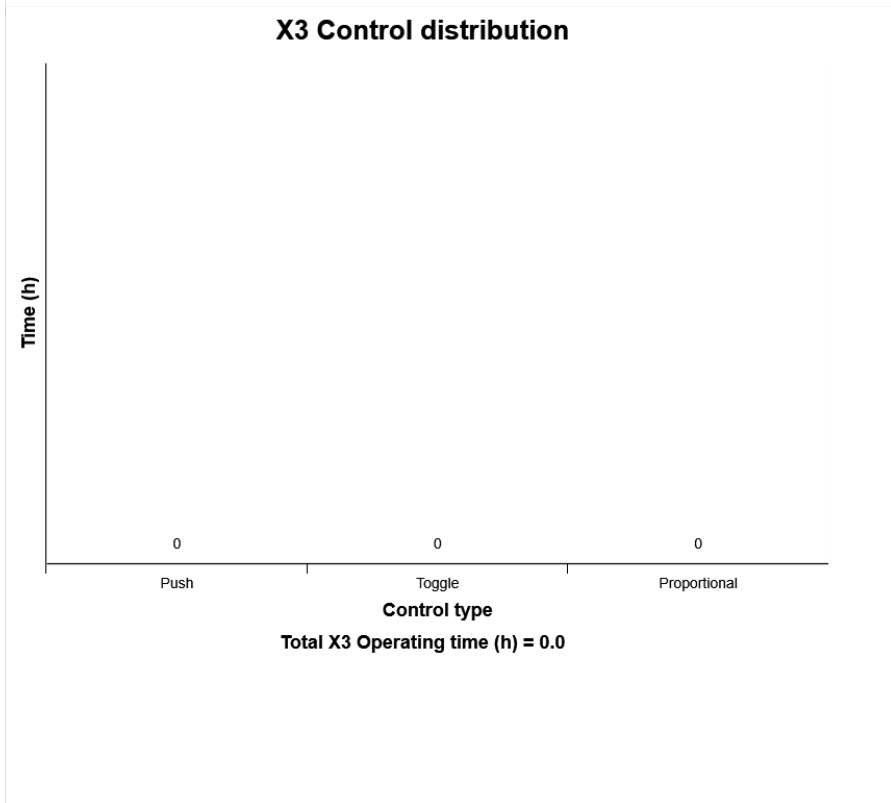
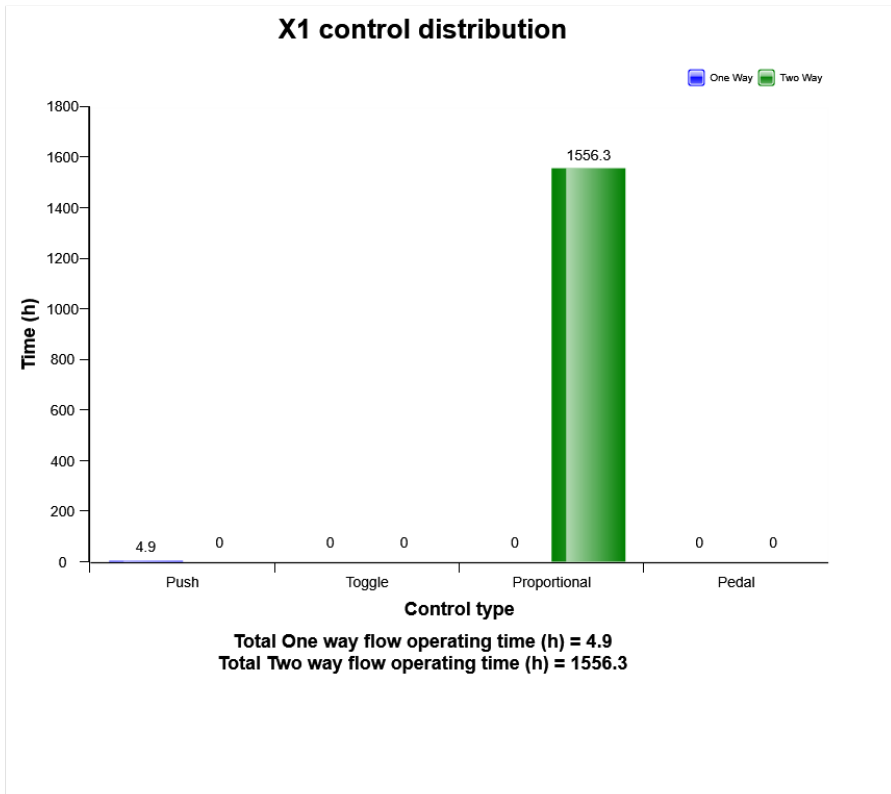
The extreme value column displays the most extreme value during the event.

Criteria :

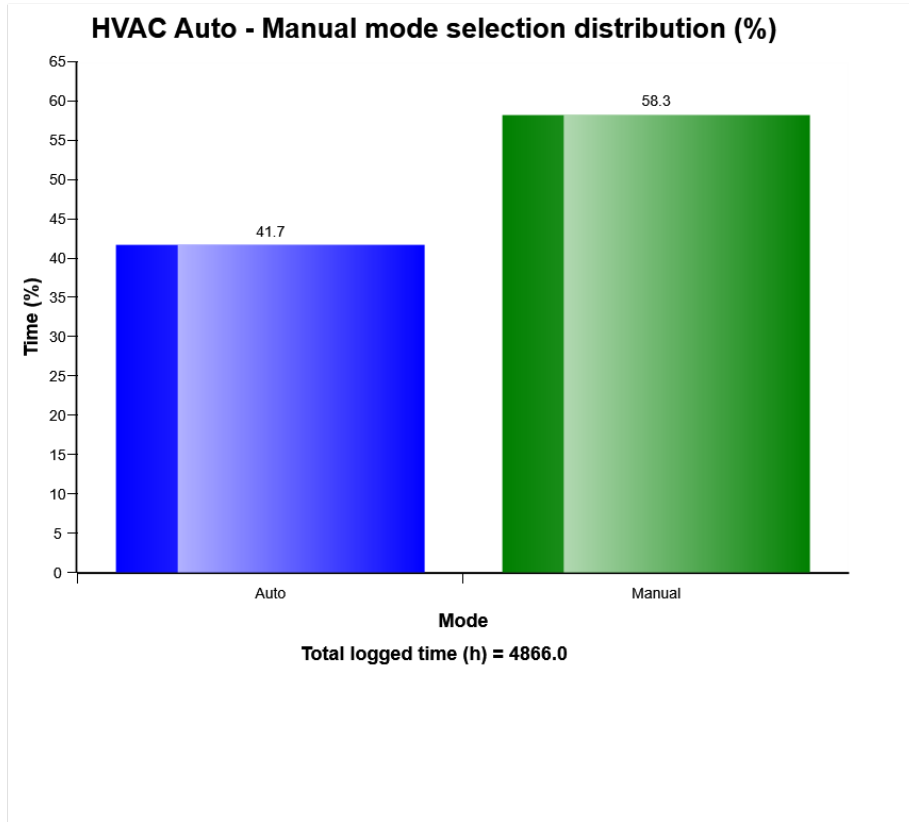
The criteria to get an registration, is that the alarm signal for high engine coolant temperature is active and that the diesel engine is running.



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Machine model	SerialNo	Operating Hours	Reading Date
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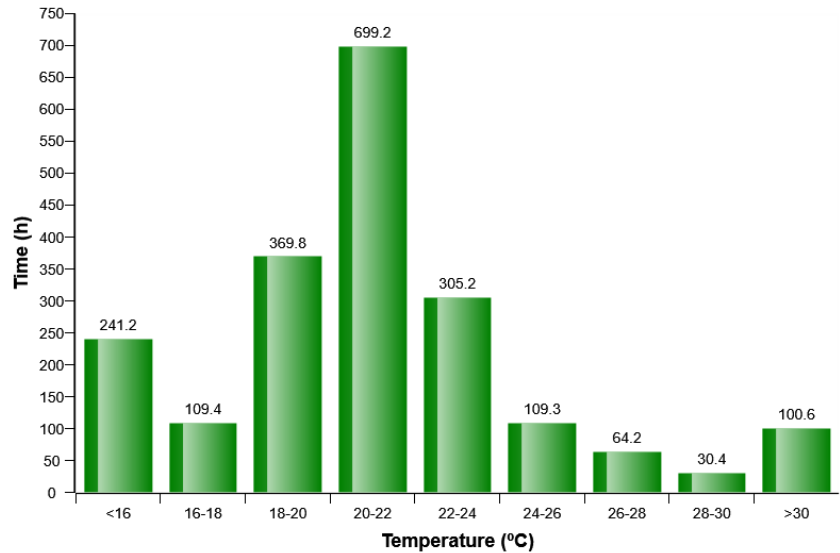
Definition:

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

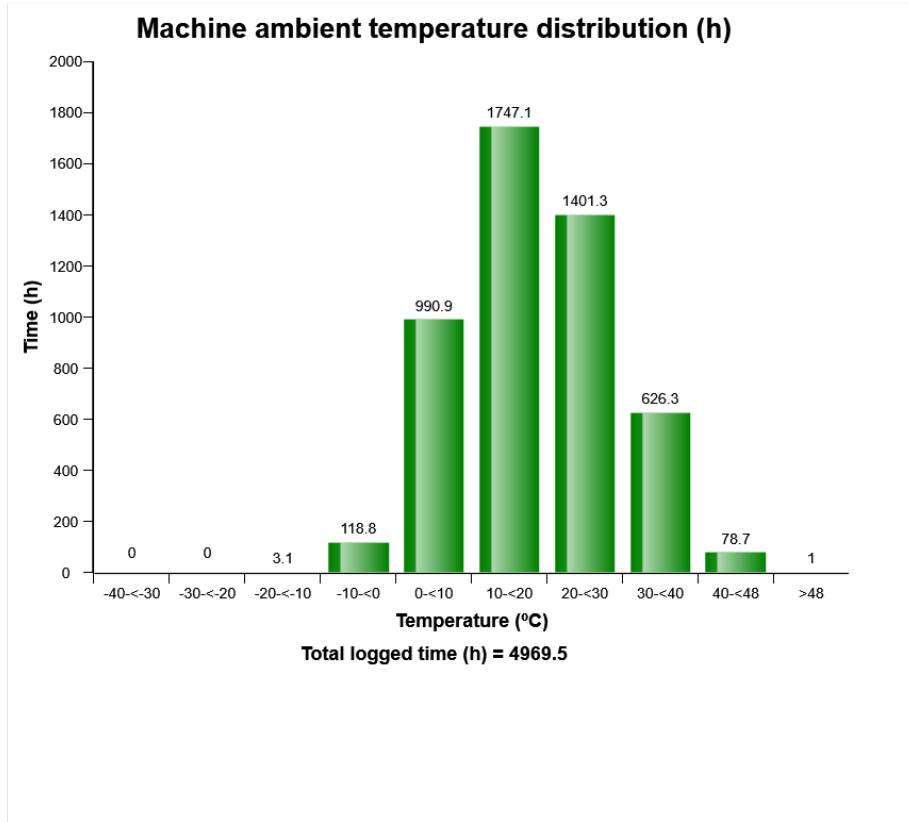


Definition:

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



Machine model	SerialNo	Operating Hours	Reading Date
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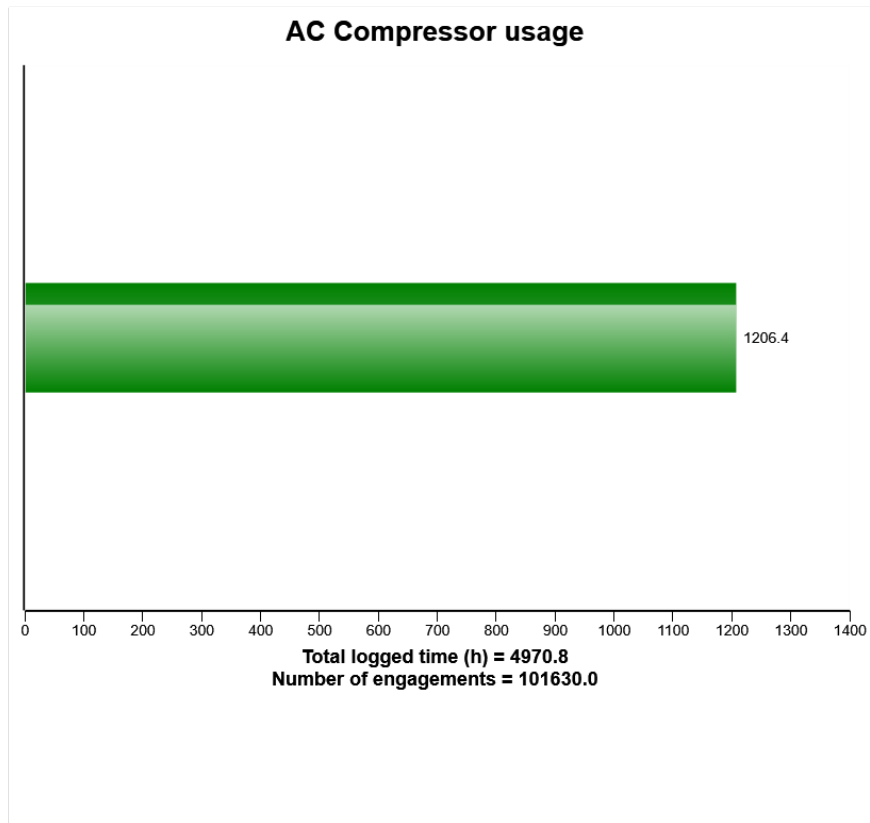


Definition:

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



Machine model	SerialNo	Operating Hours	Reading Date
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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.

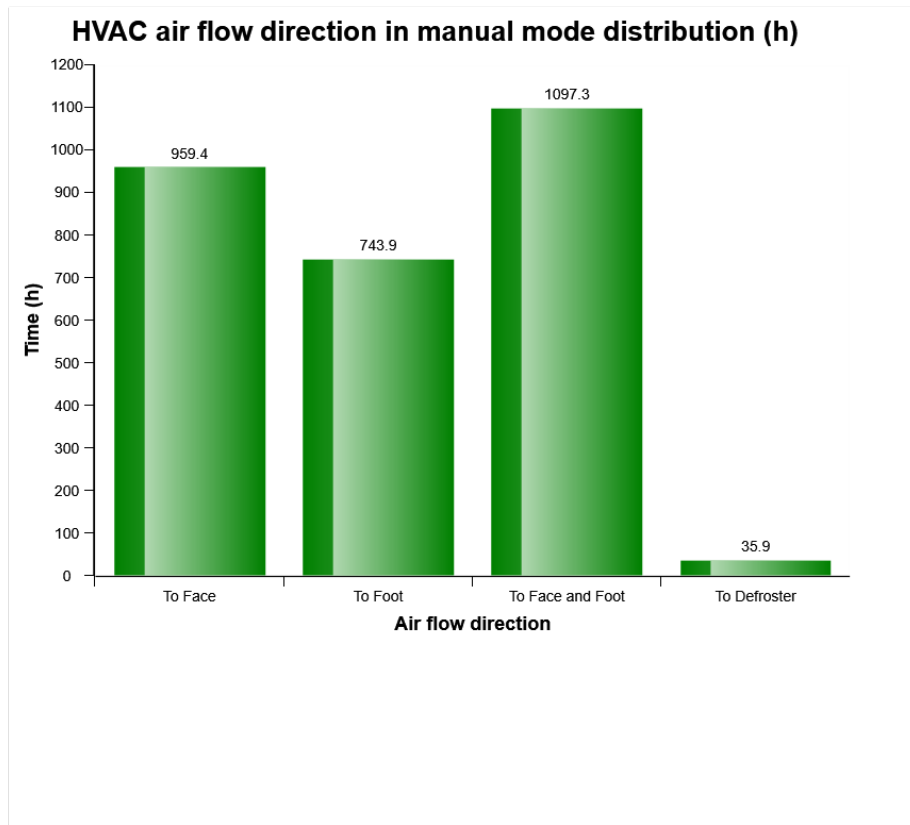
Total number of AC compressor activations is also displayed.



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Machine model	SerialNo	Operating Hours	Reading Date
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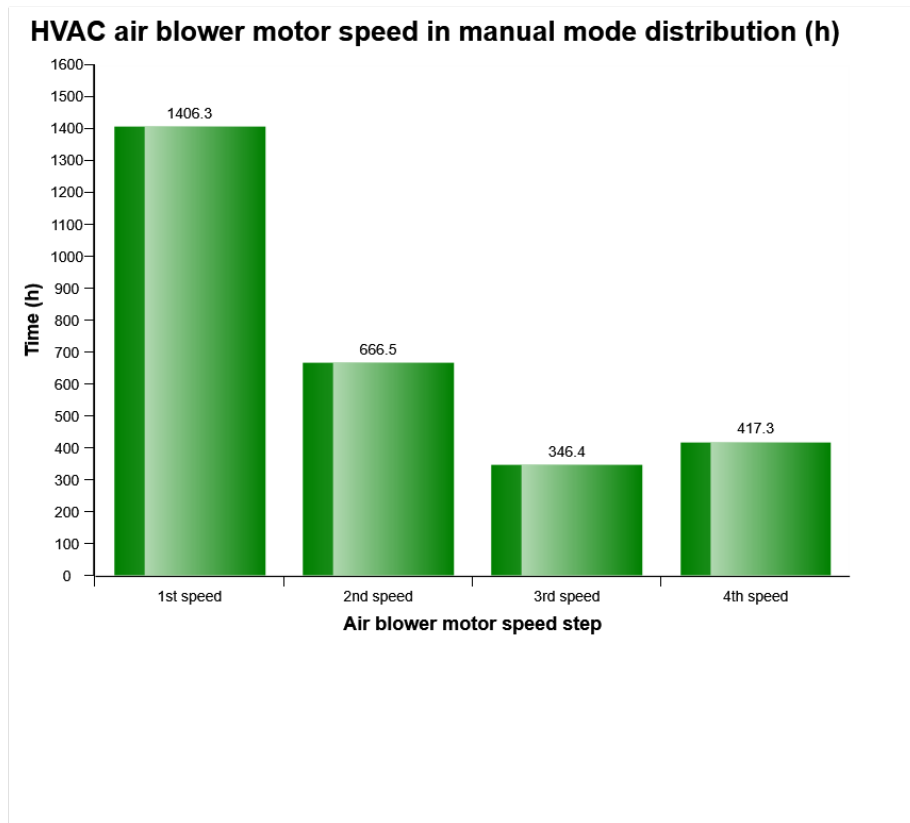


Definition:

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



Machine model	SerialNo	Operating Hours	Reading Date
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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
EC220D	210707	4965.2	13/05/2019

AC High Pressure
Total number of occurrences = 0

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
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	0
0	2000	0	0	0	0	0	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



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

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
EC220D	210707	4965.2	13/05/2019

**AC Boiling Protection
Number of engagements = 0**

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
0	2000	0	0	0	0	0	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



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

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, Boiling protection signal is active. Ambient temp is viewed.



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

AC System Cut Out Pressure
Total number of occurrences = 282

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
3954	2018	3	17	6	18	4	3
3954	2018	3	17	7	15	3	3
3965	2018	3	20	12	27	3	18
3976	2018	3	21	13	15	2	17
3976	2018	3	21	13	24	2	16
3995	2018	3	23	11	54	4	23
3995	2018	3	23	11	25	2	22
3995	2018	3	23	11	31	4	22
3997	2018	3	26	6	6	3	-1
4005	2018	3	27	6	0	0	17
4008	2018	3	27	8	31	3	43
4008	2018	3	27	9	6	2	8
4015	2018	3	28	6	5	3	3
4024	2018	3	28	14	48	3	39
4034	2018	3	30	7	22	1	8
4035	2018	3	30	8	6	2	15
4036	2018	3	30	9	48	4	17
4046	2018	3	31	11	10	3	16
4061	2018	4	3	11	26	2	13
4954	2019	1	15	7	34	0	21

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



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

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 :

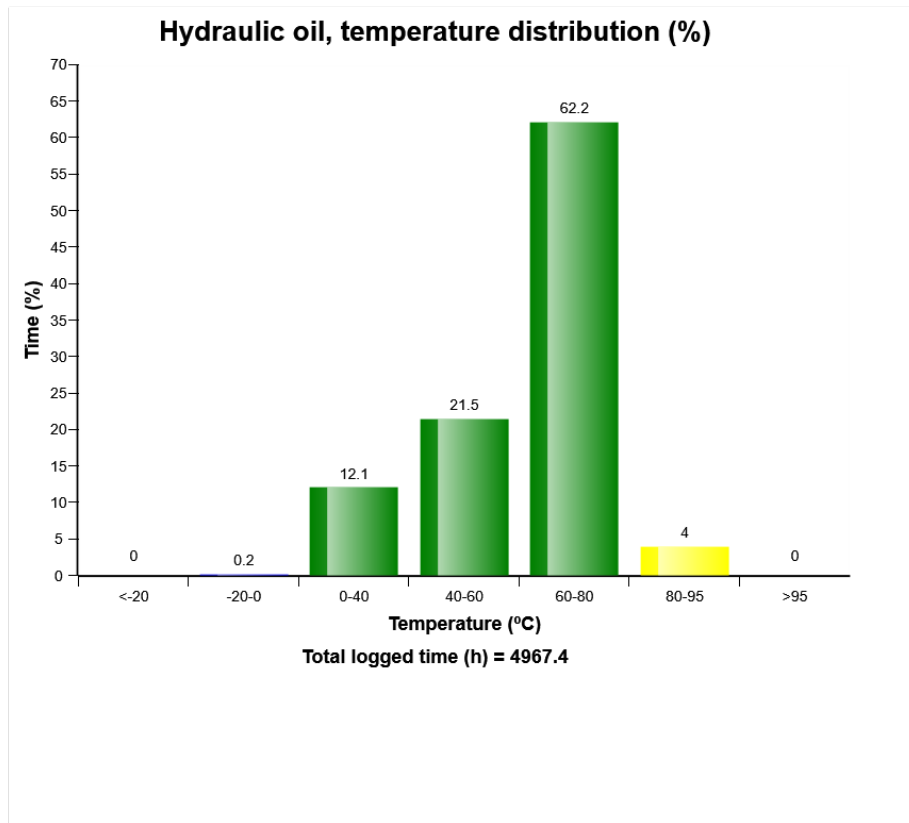
The extreme value column displays the most extreme value during the event.

Criteria :

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



Machine model	SerialNo	Operating Hours	Reading Date
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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.



Machine model	SerialNo	Operating Hours	Reading Date
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Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

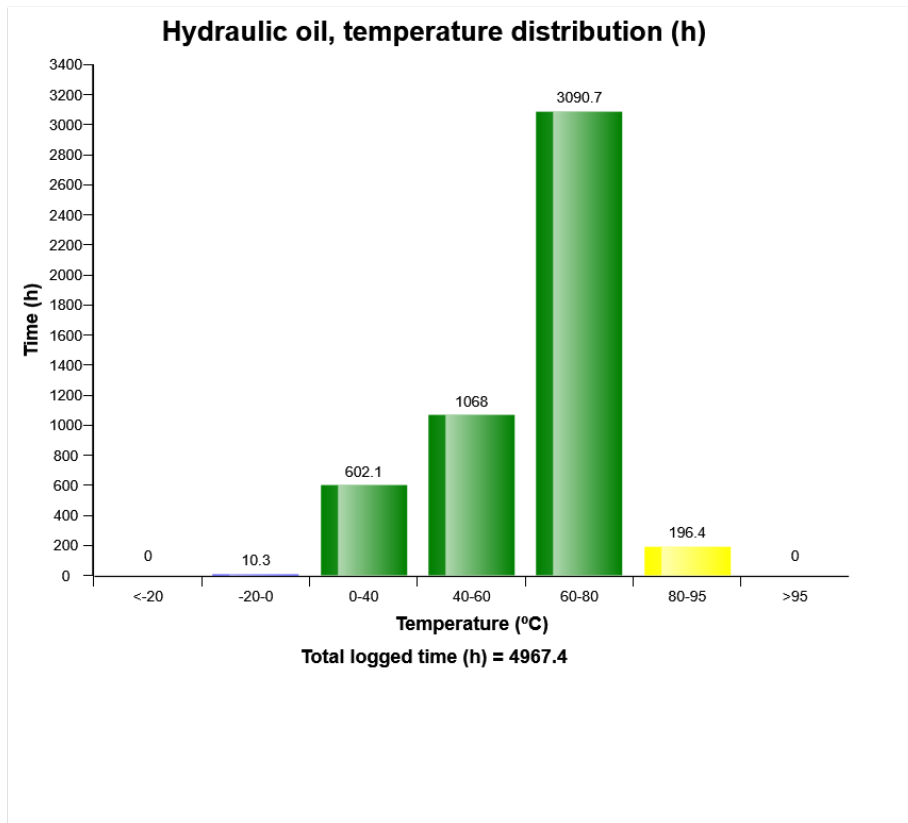
Yellow bar = High working temperature. It is normal to have some registrations in this region.

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
EC220D	210707	4965.2	13/05/2019



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.



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

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

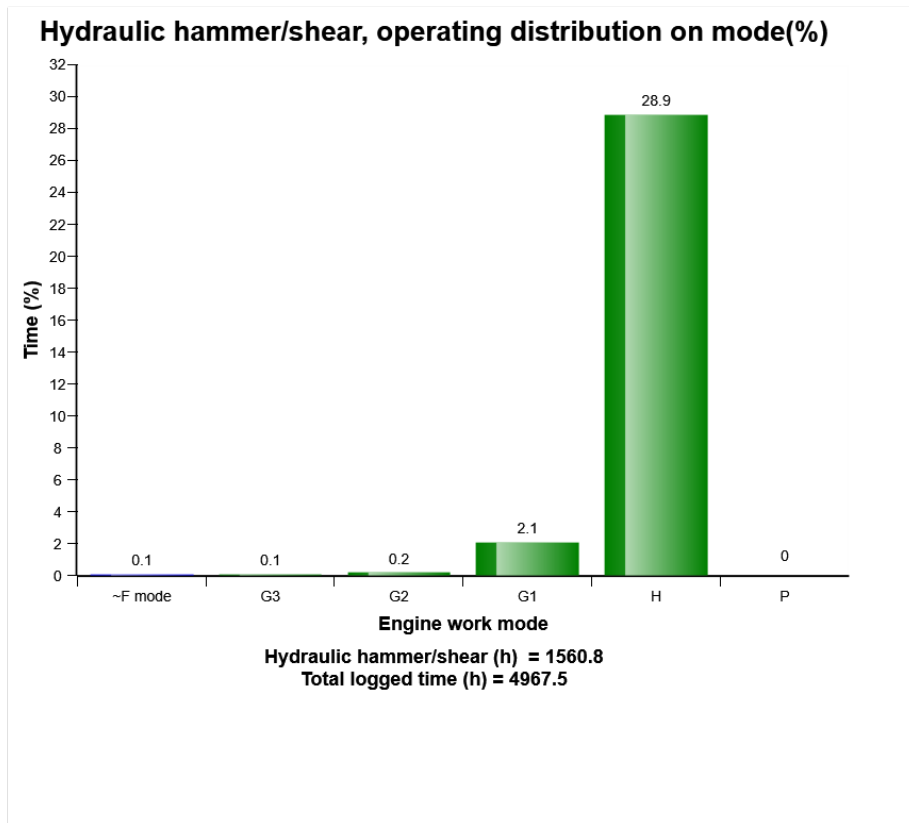
Yellow bar = High working temperature. It is normal to have some registrations in this region.

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
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Definition:

The graph describes the operating hours (%) for hydraulic hammer/shears on each engine control mode .

Recommended to use green column mode of the hammer operation.

I2 = Idle 2

I1 = Idle 1

F3= Fine control 3

F2= Fine control 2



Machine model	SerialNo	Operating Hours	Reading Date
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F1= Fine control 1

G3 = General 3

G2 = General 2

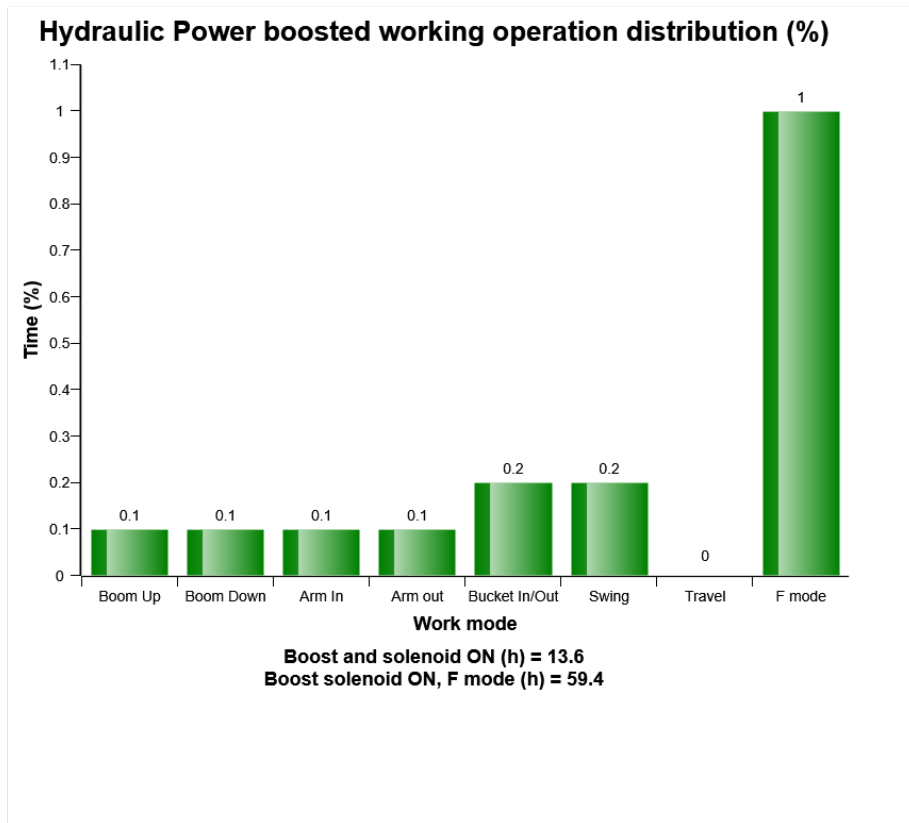
G1 = General 1

H = Heavy Duty

P = Power max



Machine model	SerialNo	Operating Hours	Reading Date
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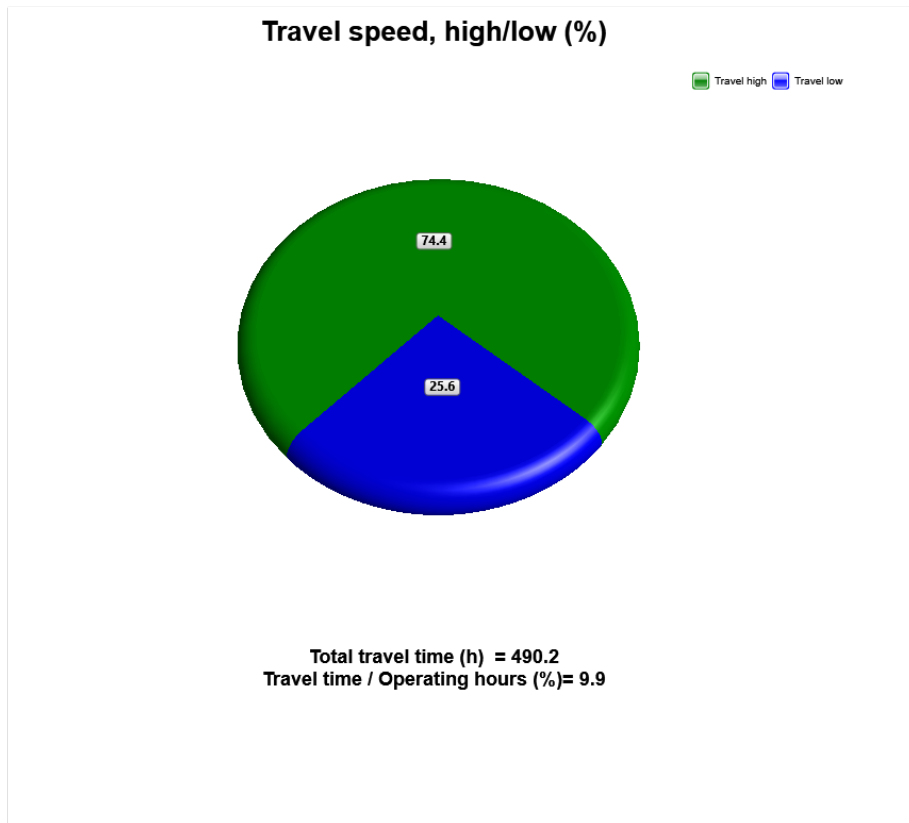
Definition:

The diagram describes Power boosted operating time distribution, when main relief pressure increases on working operation modes. In this diagram, the sum of time (%) of each working operation mode can exceed 100%. It means that customer has been operated several working operations at the same time.

Total operating time with power boosted (hours) in above means sum of the time for Hydraulic Power boosted operation. The base for the percentage calculation is Total operating time with power boost. Time(%) on each working operation mode except travel and F mode above is the time, after the operator press power boost button on the joystick and until main relief pressure is recovered to default pressure.



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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:

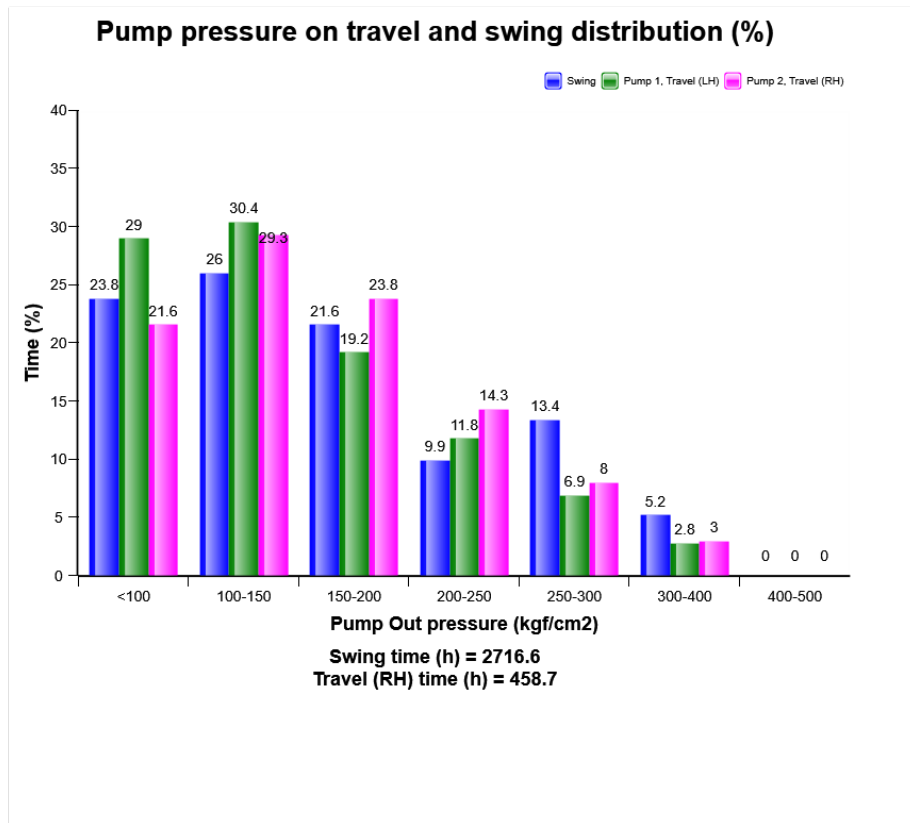
Distribution of each travel time is shown on right of its sector in percentage

The sum of travel time in percentage is 100

Total travel time is listed below the diagram



Machine model	SerialNo	Operating Hours	Reading Date
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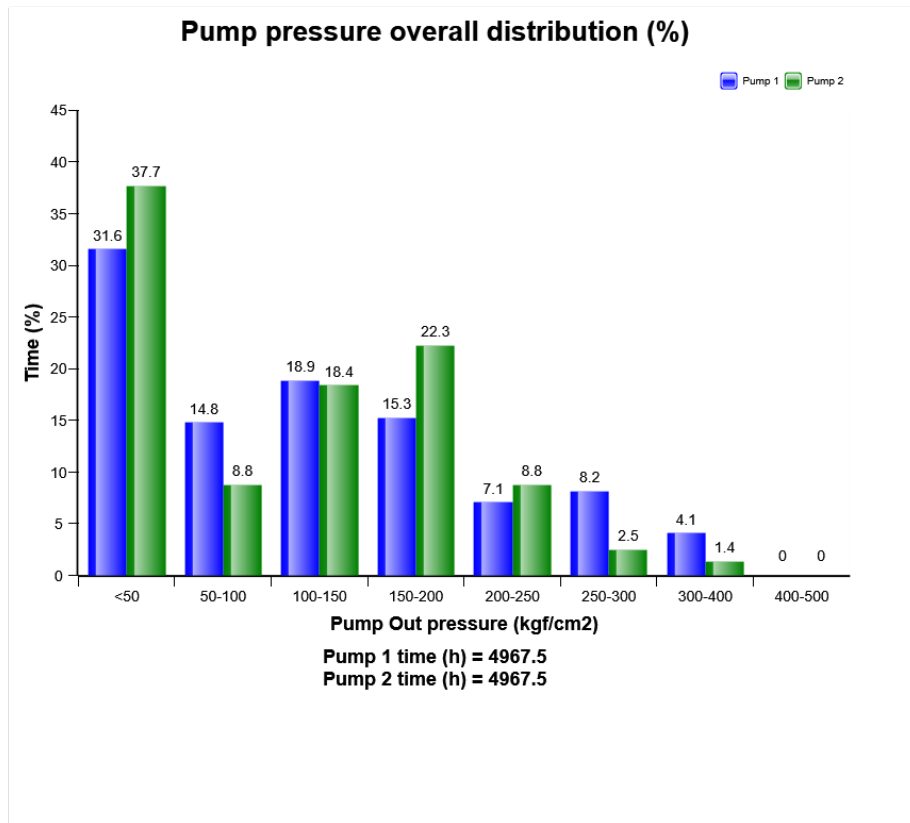


Definition:

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
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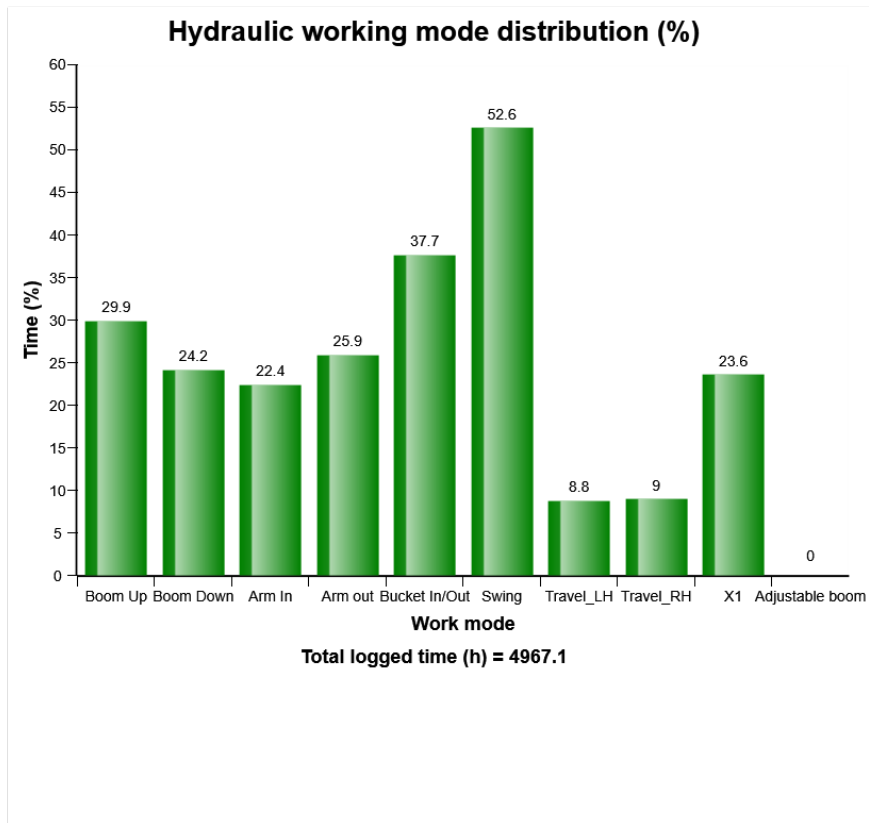


Definition:

The diagram describes Pump outlet pressure of 2 Pumps distribution.



Machine model	SerialNo	Operating Hours	Reading Date
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Definition:

The diagram describes hydraulic working operation mode distribution.



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

**High hydraulic oil temperature
Total number of occurrences = 0**

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
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

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



Machine model	SerialNo	Operating Hours	Reading Date
EC220D	210707	4965.2	13/05/2019

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 :

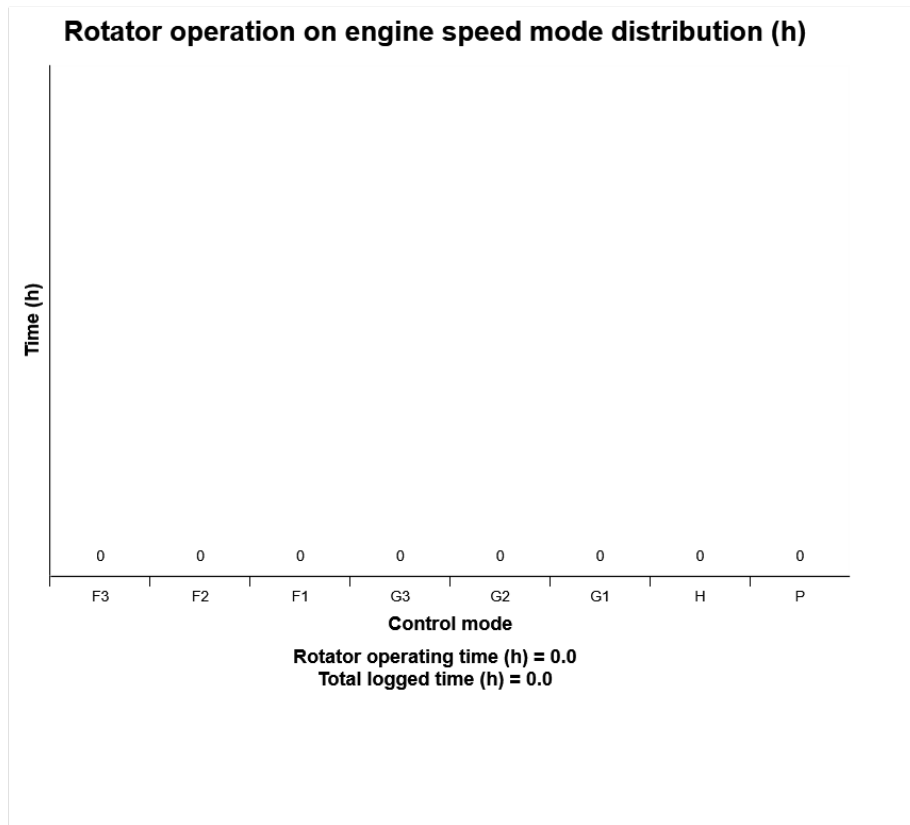
The extreme value column displays the most extreme value during the event.

Criteria :

Logging is performed when, Alarm high hydraulic oil temperature , is active.



Machine model	SerialNo	Operating Hours	Reading Date
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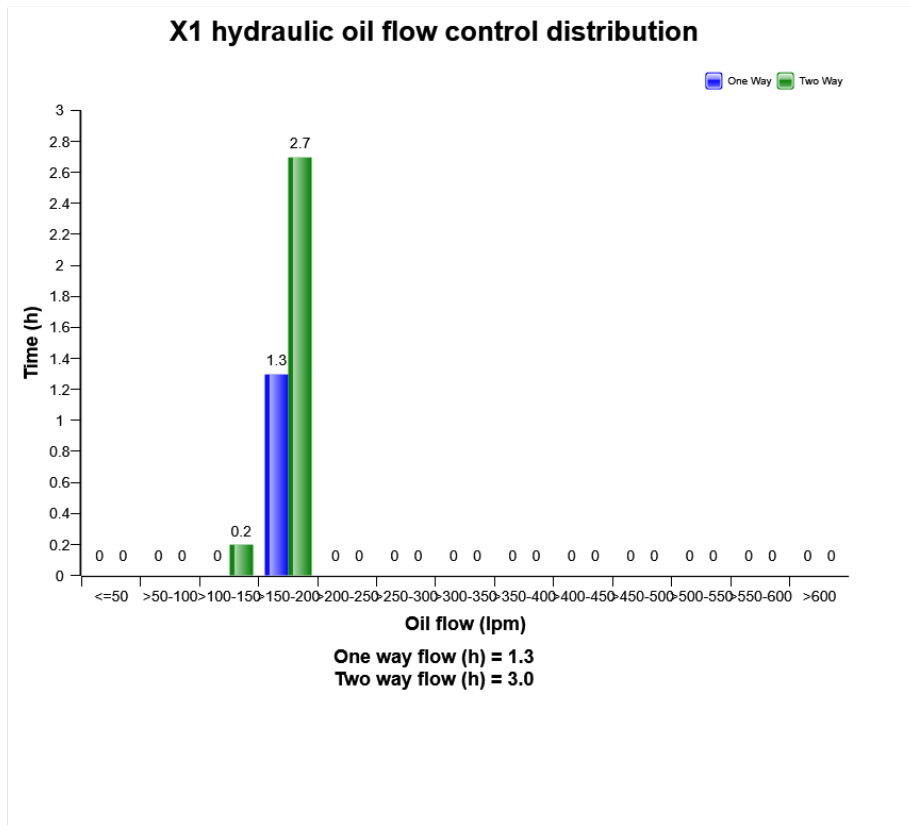


Definition:

The diagram describes the distribution of Rotator operating hours on mode.



Machine model	SerialNo	Operating Hours	Reading Date
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Definition:

The diagram describes X1 hydraulic oil flow control distribution of the machine while machine operates.



Machine model	SerialNo	Operating Hours	Reading Date
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