VOLVO CONSTRUCTION EQUIPMENT

MATRIS REPORT

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

Company name	Dealer	Report Issuer
Hoffman		
Contact name	**Technician**	**Primary Application**
	vcad	Site Preparation
Site	**Workorder**	**Ground Condition**
	2829	

MATRIS Reading, Summary / Recommendation

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

Main equipment	Type	Equipment
	Hydraulic Fluid	
	X1 Piping	
	Track chain	
	Main Attachment	
	Attachment Interface	
	Hose Rupture Valve on Boom	
	Hose Rupture Valve on Arm	
	X3 piping	

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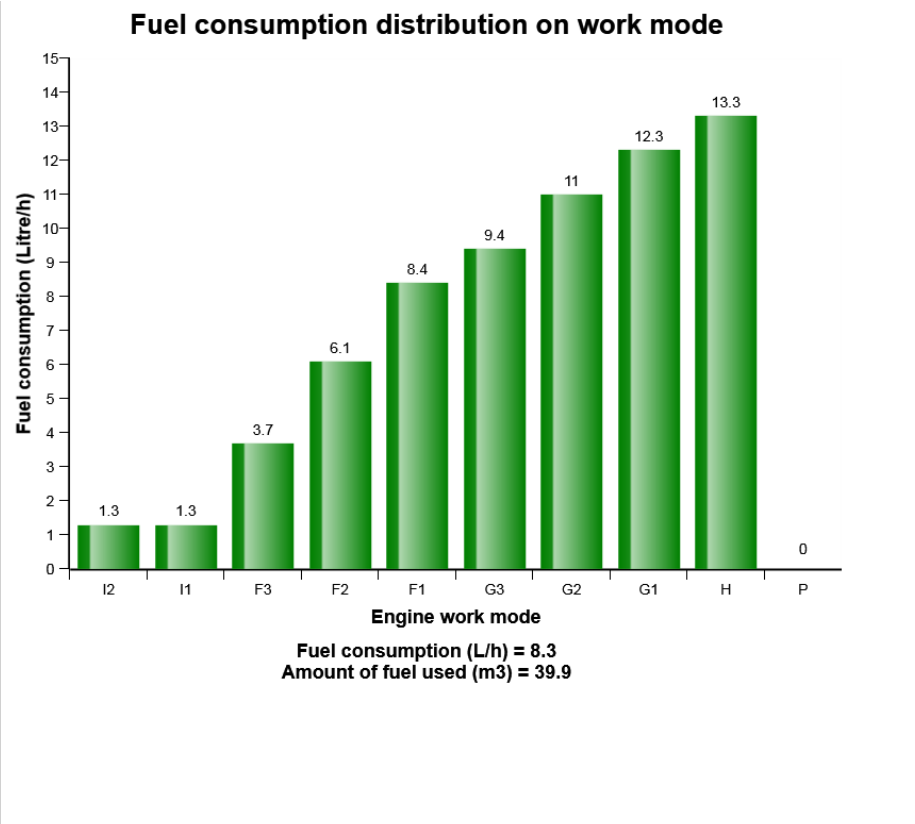

Definition:

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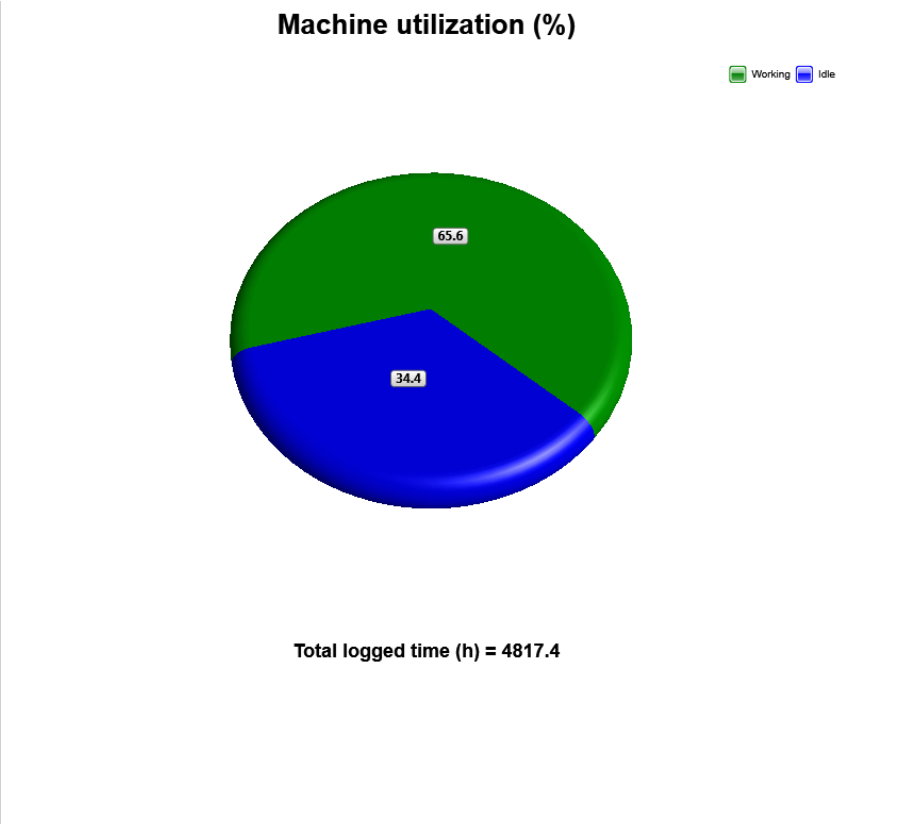
Distribution of each work mode is shown on top of its column in rate

Average fuel consumption per hour is listed below the diagram

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



Definition:

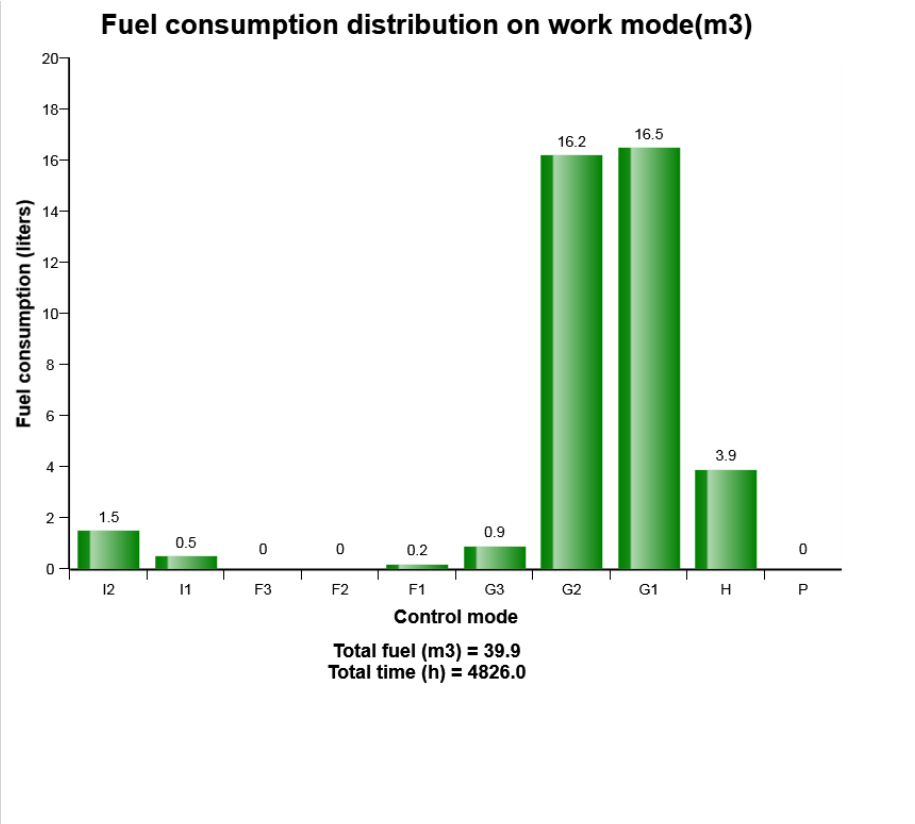
The graph shows the distribution of the operating time for the machine. The operating time is defined as the time with engine on

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

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



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.

Machine model	SerialNo	Operating Hours	Reading Date
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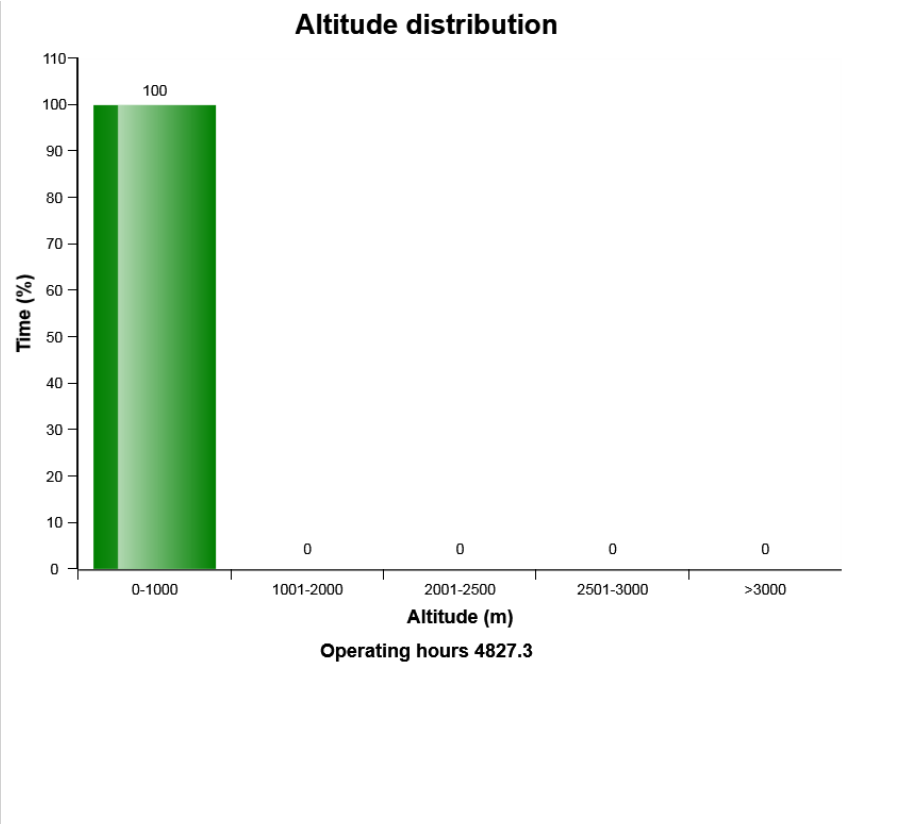

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
'WordSection1' is an unexpected token. The expected token is "" or "'. Line 1, position 18.

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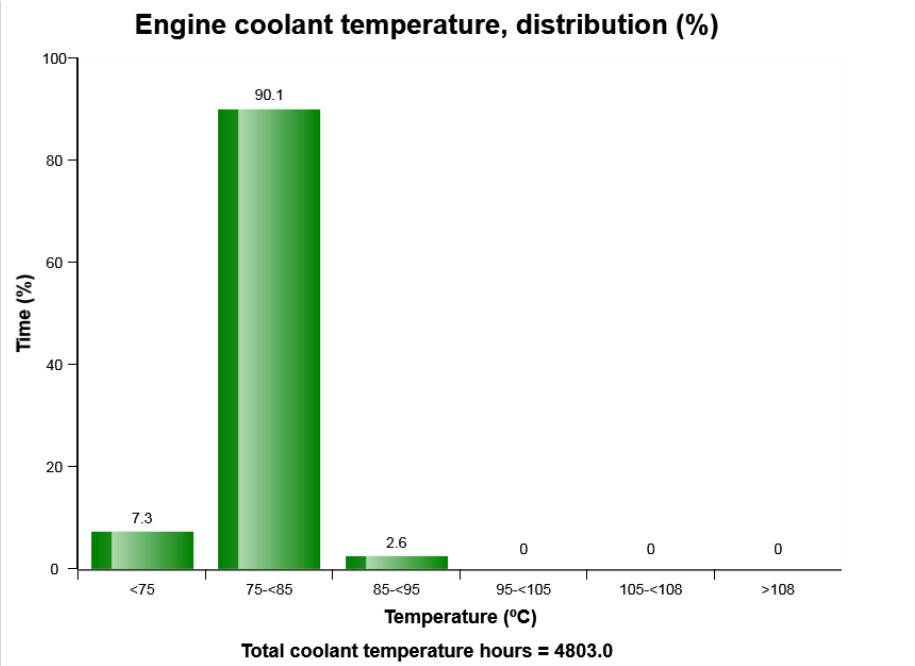

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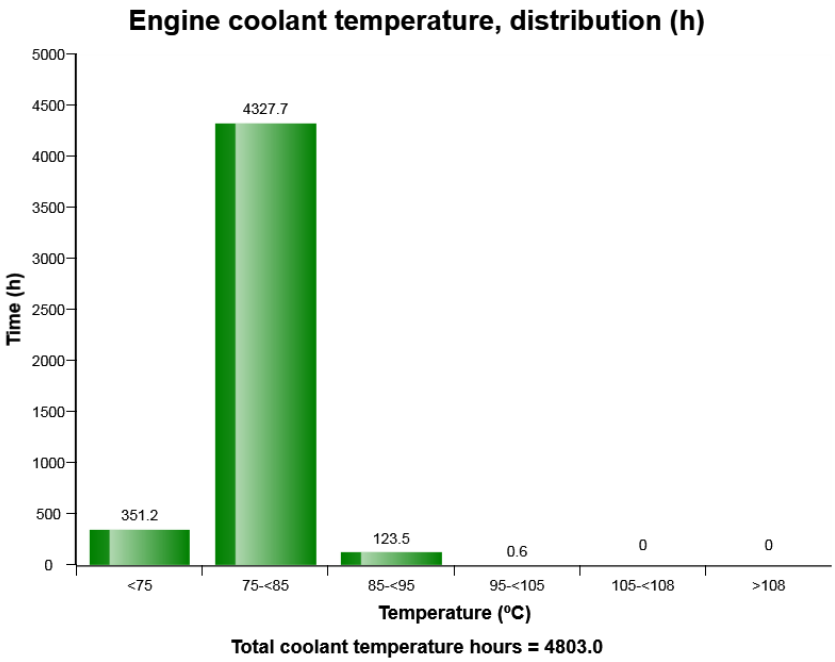

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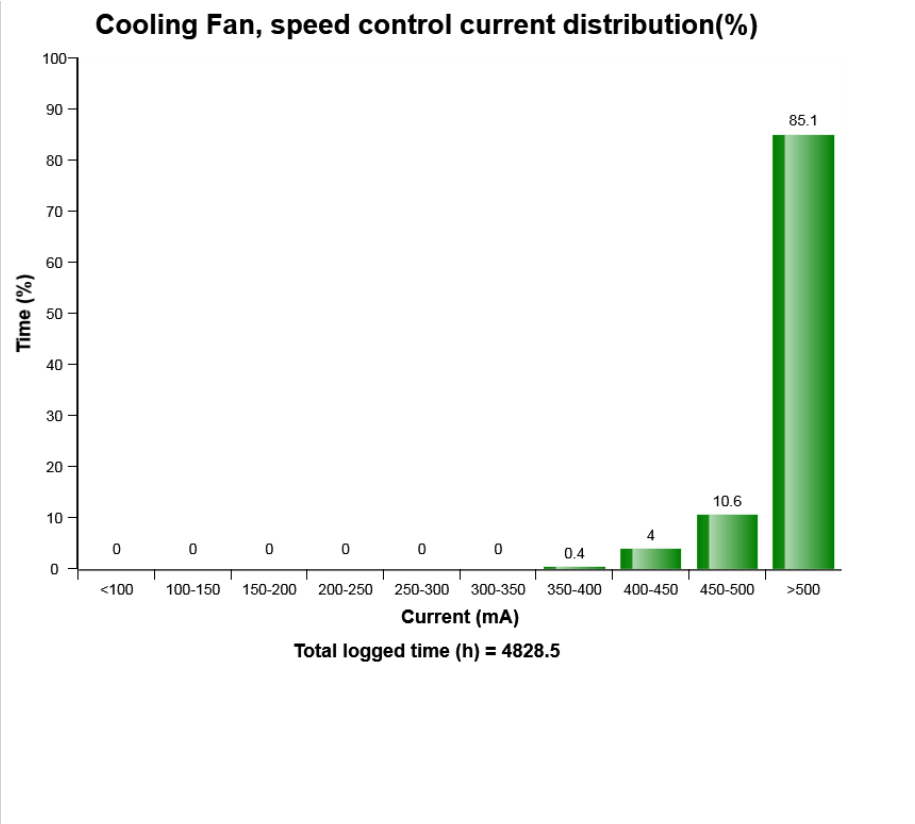

Definition:

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.

Machine model	SerialNo	Operating Hours	Reading Date
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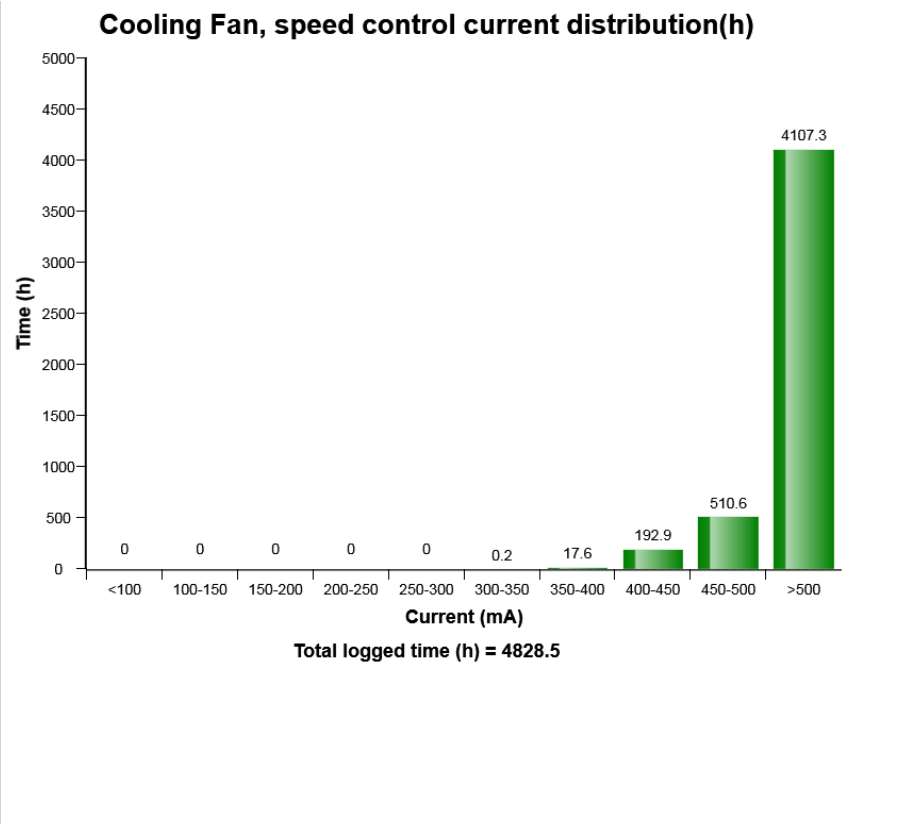

Definition:

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.

Machine model	SerialNo	Operating Hours	Reading Date
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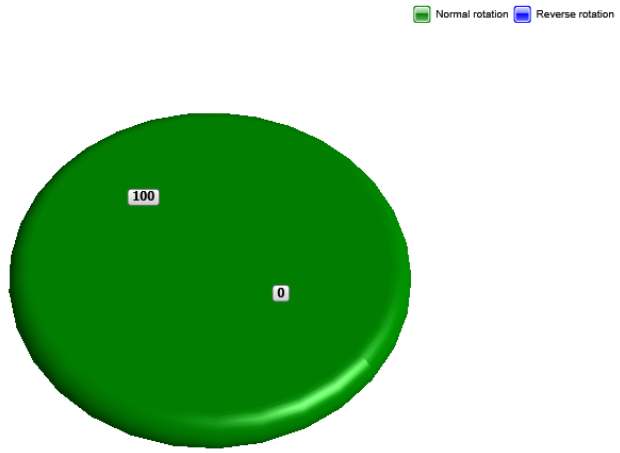
Cooling fan, Normal-Reverse rotation distribution (%)



Total operating time (h) = 4824.5

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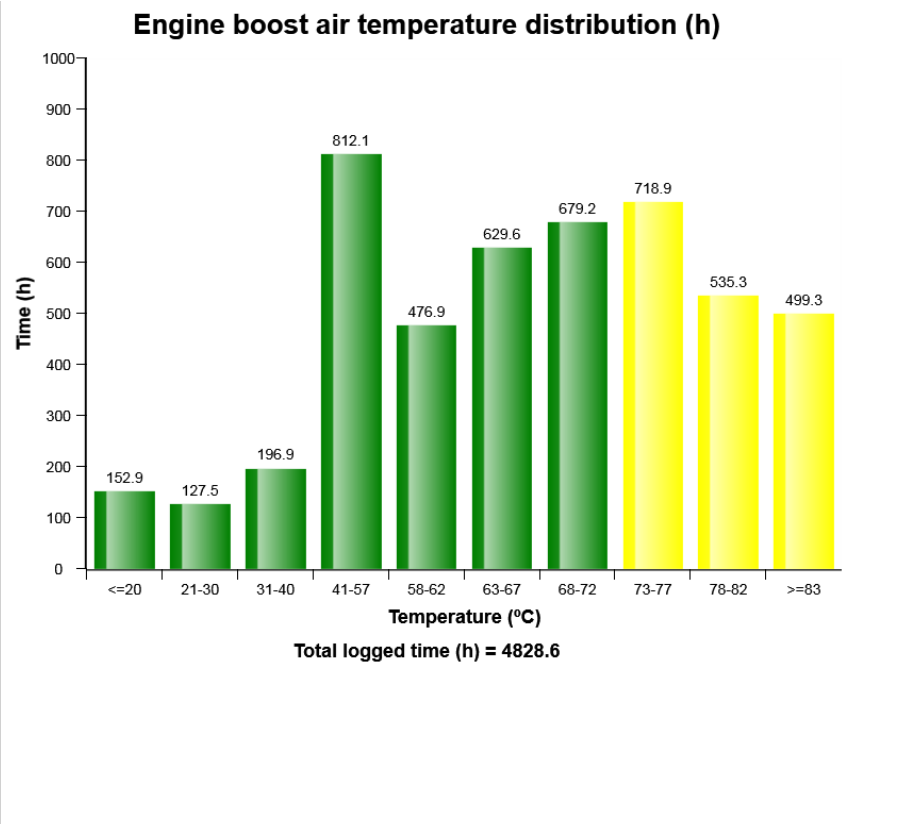
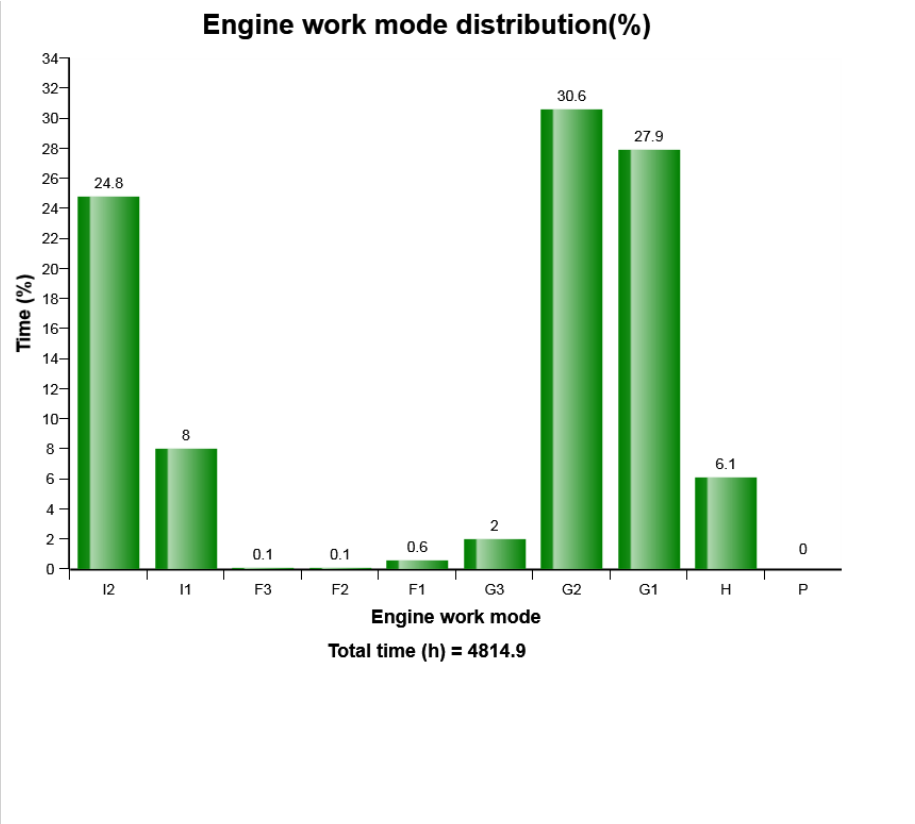


Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



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)

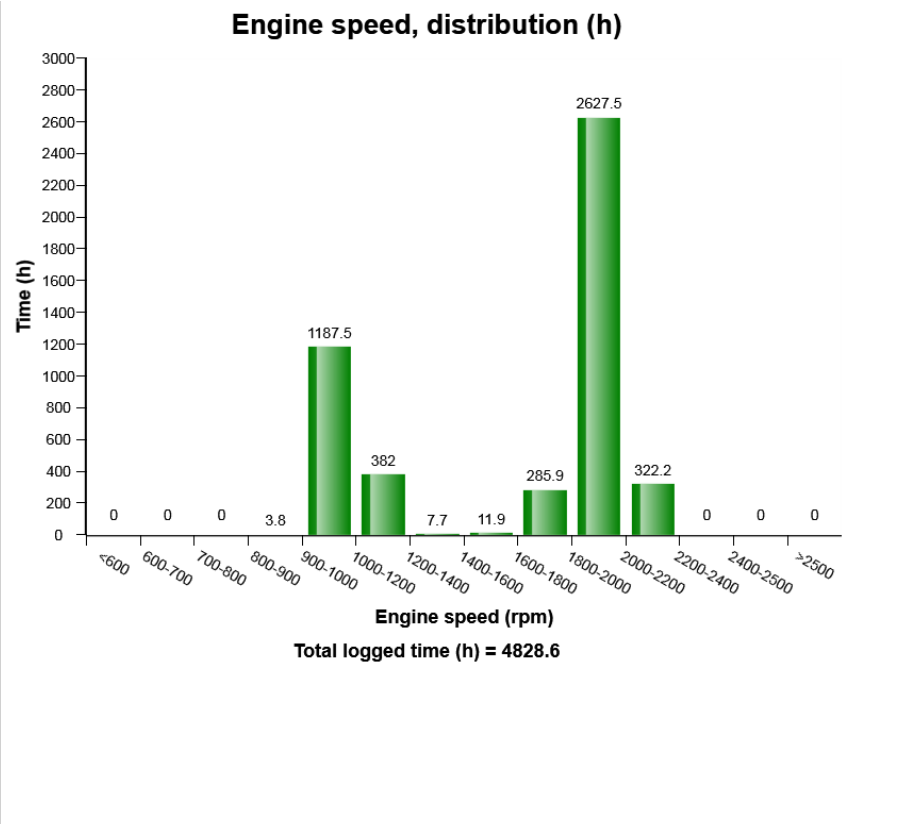
Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

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
ECR145D	210310	4821.4	14/01/2020



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.

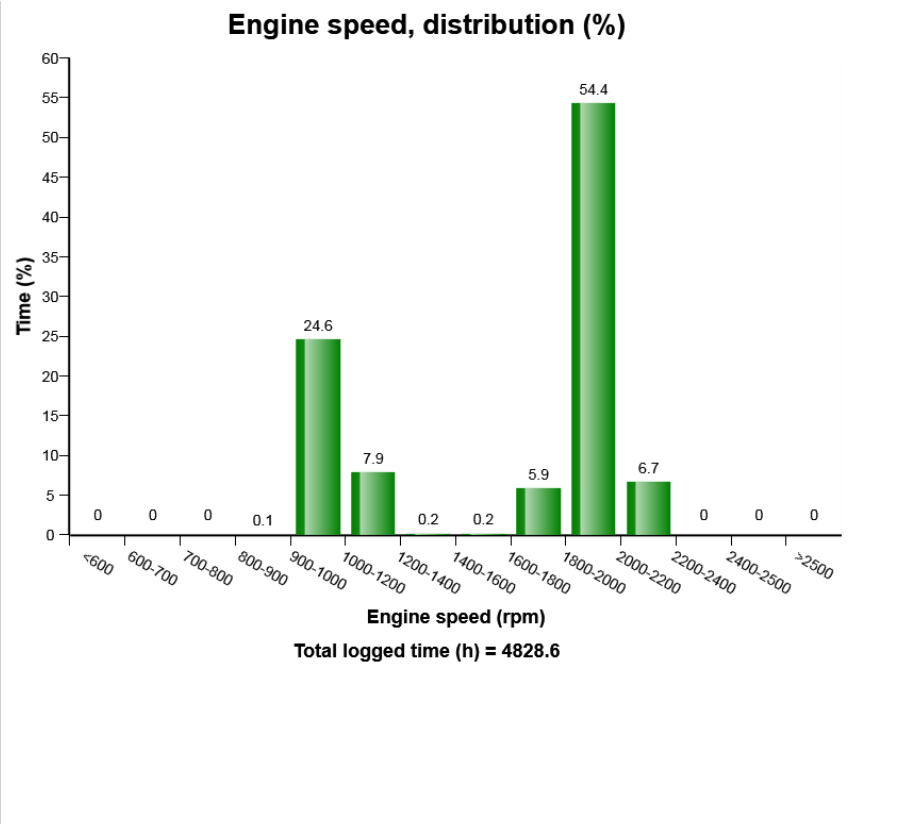
Green bars = Normal engine speed range.

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

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
ECR145D	210310	4821.4	14/01/2020



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
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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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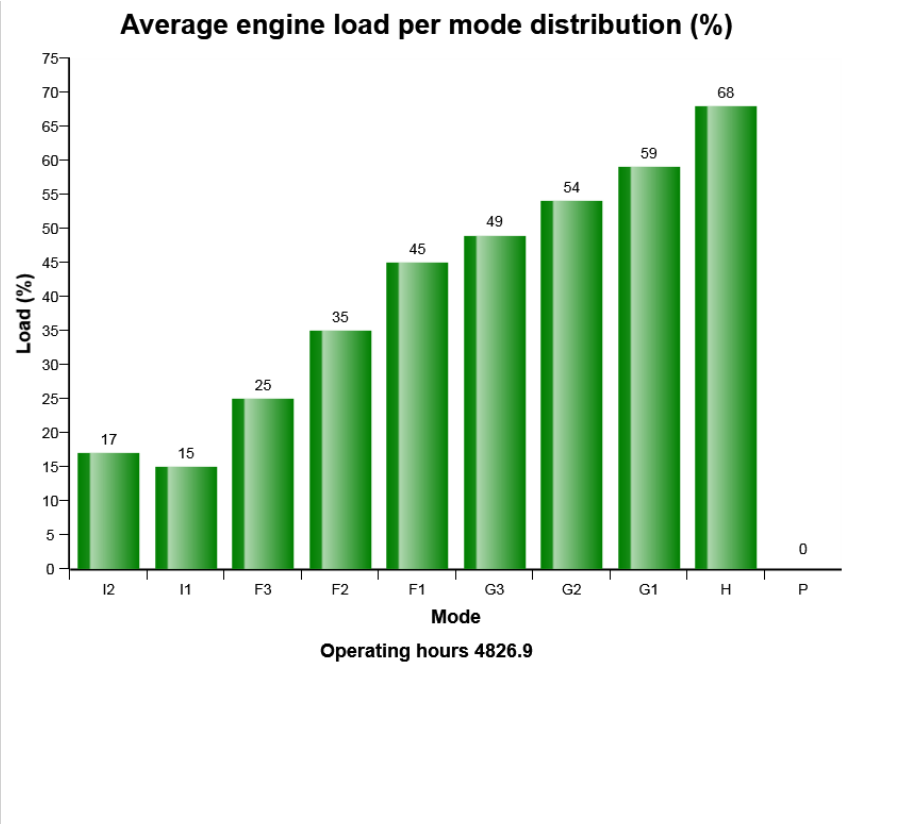

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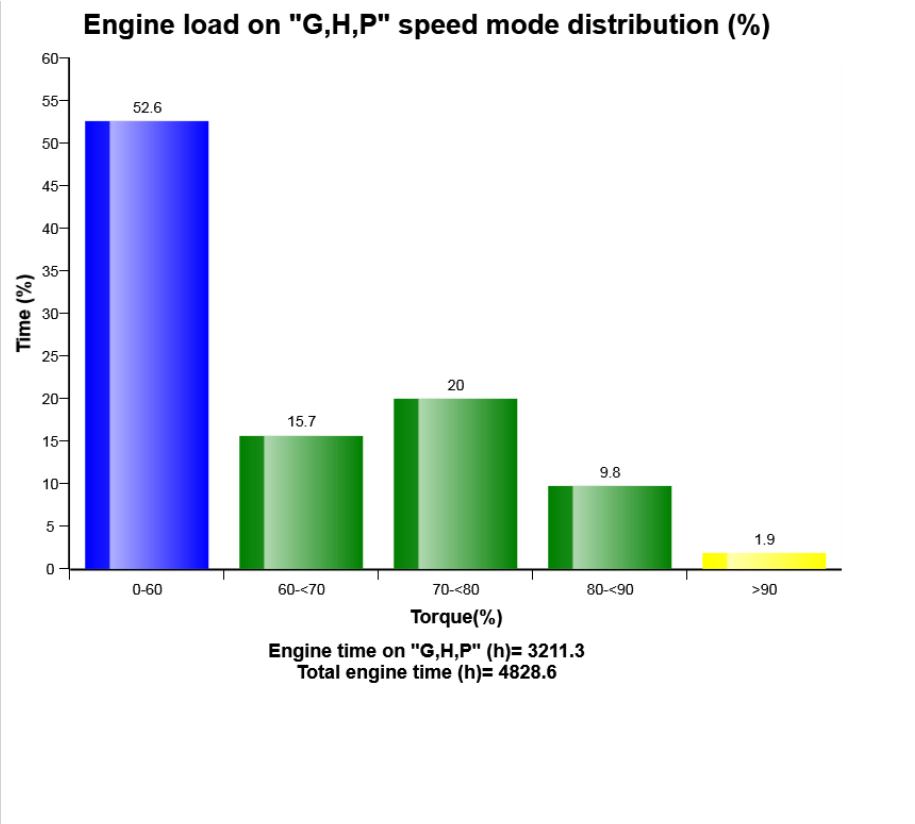

This graph shows the distribution of the engine load.

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%.

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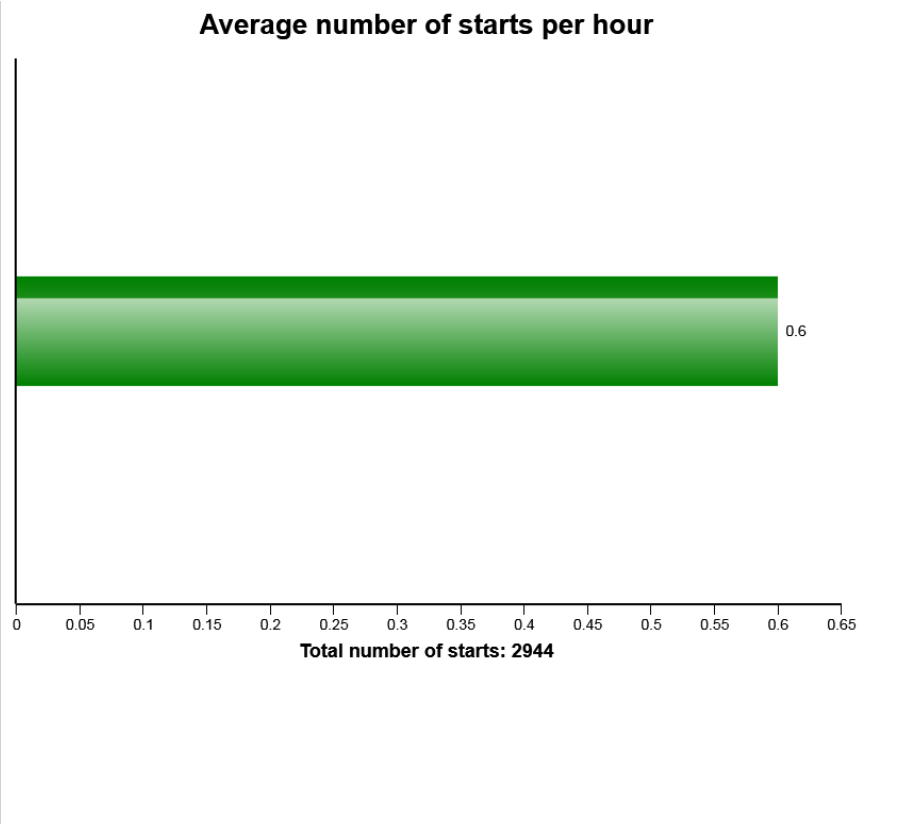
ECR145D	210310	4821.4	14/01/2020



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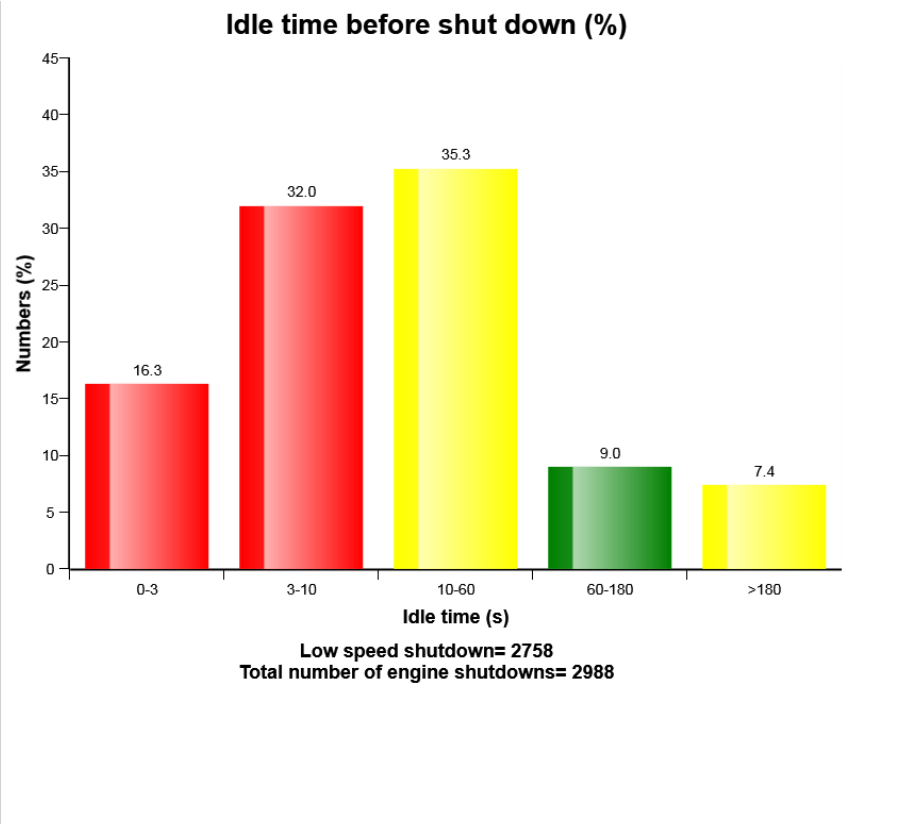
To see at which different temperatures engine is started see" Start at different engine temperatures."

Green bar = Number of average starts per hour

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



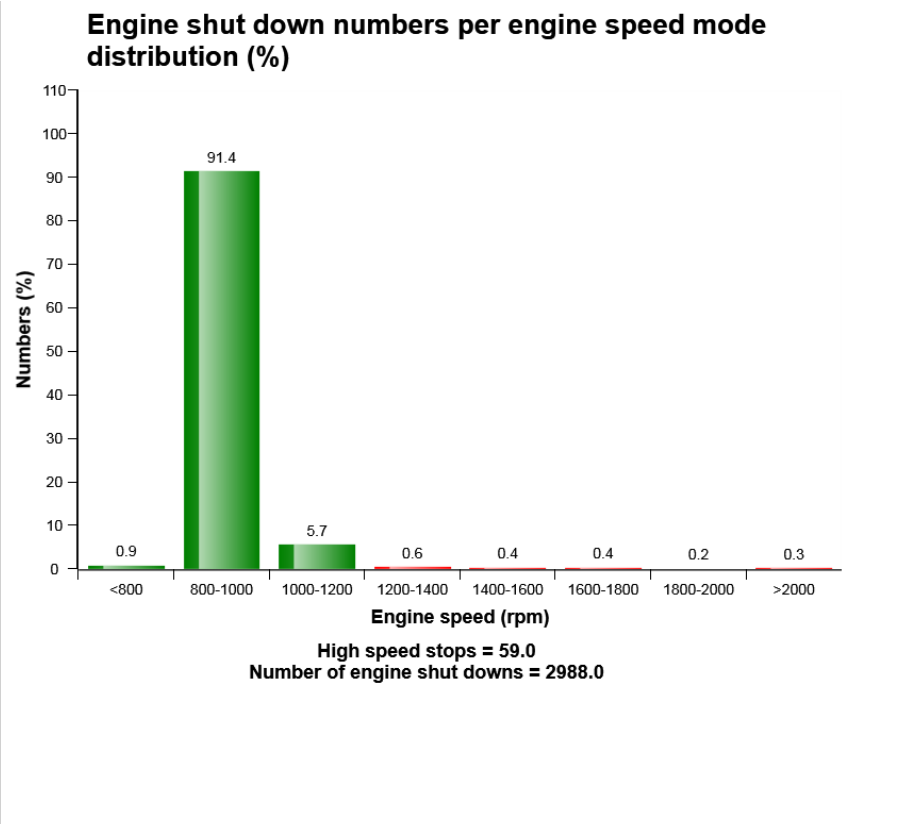
Definition:

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
ECR145D	210310	4821.4	14/01/2020



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:

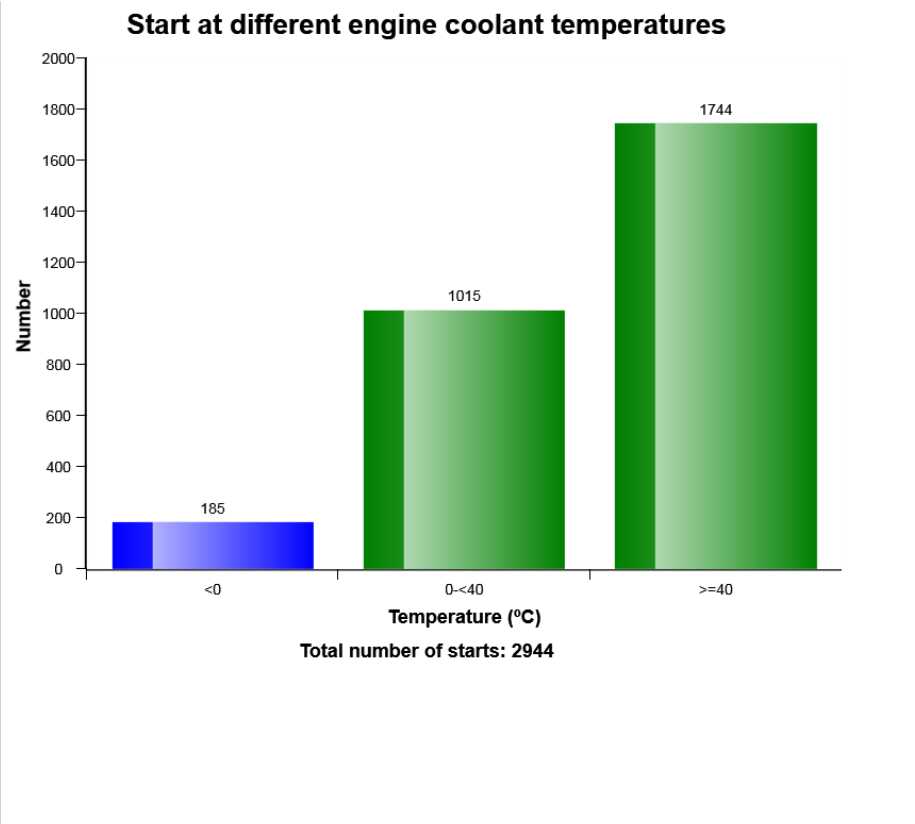
Y-axle: Number of engine stop at each work mode.

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
ECR145D	210310	4821.4	14/01/2020



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
ECR145D	210310	4821.4	14/01/2020

Low coolant level
Total number of occurences = 643

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)
*	4551	2018	5	9	8	2	436
*	4551	2018	5	9	8	10	11
*	4551	2018	5	9	8	13	57
*	4552	2018	5	9	8	17	1474
*	4560	2018	5	10	8	16	1192
*	4561	2018	5	10	8	57	52
*	4561	2018	5	10	8	38	351
*	4561	2018	5	10	8	48	306
*	4561	2018	5	10	9	0	271
*	4561	2018	5	10	9	23	6
*	4562	2018	5	10	9	33	22
*	4562	2018	5	10	9	46	26
*	4562	2018	5	10	9	51	6
*	4563	2018	5	15	8	38	2169
*	4564	2018	5	15	10	46	6
*	4564	2018	5	15	10	42	83
*	4564	2018	5	15	10	52	182
*	4564	2018	5	15	10	48	122
*	4565	2018	5	15	11	32	342
*	4565	2018	5	15	11	25	325

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
ECR145D	210310	4821.4	14/01/2020

Regeneration ignored
Total number of ignored regenerations 50

	Op hours	Year	Month	Day	Hour	Minute	Duration (min)
*	4102	2017	11	7	13	30	31
*	4102	2017	11	7	13	22	8
*	4285	2018	1	31	15	8	28
*	4285	2018	1	31	15	7	0
*	4298	2018	2	5	12	22	28
*	4298	2018	2	5	12	19	2
*	4307	2018	2	7	18	15	27
*	4307	2018	2	7	18	13	1
*	4322	2018	2	12	15	9	27
*	4322	2018	2	12	15	9	0
*	4383	2018	3	6	13	47	2
*	4383	2018	3	6	13	50	27
*	4395	2018	3	12	10	15	2
*	4396	2018	3	12	10	17	28
*	4410	2018	3	14	15	55	27
*	4410	2018	3	14	15	53	1
*	4473	2018	4	10	13	23	27
*	4473	2018	4	10	13	21	2
*	4821	2019	8	18	16	20	2
*	4821	2019	8	18	18	2	14

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
ECR145D	210310	4821.4	14/01/2020

Regeneration aborted
Total number of occurences = 75

Op hours	Year	Month	Day	Hour	Minute	Reason
3730	2017	6	30	9	46	1
3730	2017	6	30	9	12	1
3731	2017	6	30	10	13	1
3845	2017	8	7	16	0	1
3952	2017	9	14	11	58	1
3970	2017	9	20	11	27	1
3983	2017	9	25	15	16	1
4078	2017	10	30	13	32	1
4095	2017	11	3	11	28	1
4298	2018	2	5	12	21	1
4307	2018	2	7	18	13	1
4314	2018	2	8	16	23	1
4322	2018	2	12	15	9	1
4376	2018	3	5	14	26	1
4396	2018	3	12	10	17	1
4410	2018	3	14	15	54	1
4466	2018	4	9	13	13	1
4473	2018	4	10	12	56	1
4636	2018	6	6	17	27	1
4723	2018	7	20	8	48	1

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Machine model	SerialNo	Operating Hours	Reading Date
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Regeneration duration
Total number of occurences = 834

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
4713	2018	7	16	12	28	25
4718	2018	7	19	10	11	26
4723	2018	7	23	10	31	27
4723	2018	7	20	8	36	12
4729	2018	7	24	10	57	26
4734	2018	7	27	9	54	27
4740	2018	7	30	13	27	26
4746	2018	8	6	10	17	26
4751	2018	8	7	9	0	26
4757	2018	8	8	8	24	27
4762	2018	8	9	8	20	27
4768	2018	8	13	8	46	26
4773	2018	8	13	14	24	26
4779	2018	8	20	14	6	26
4785	2018	8	28	10	54	26
4790	2018	8	28	16	9	26
4796	2018	9	10	13	10	26
4802	2018	9	11	12	29	26
4808	2018	9	12	13	51	26
4818	2019	7	14	16	51	27

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Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

Water level warning in water separator
Total number of occurences = 52

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
4514	2018	5	1	10	51	0
4514	2018	5	1	10	38	9
4514	2018	5	1	10	36	0
4515	2018	5	1	11	33	5
4516	2018	5	1	12	44	31
4517	2018	5	1	13	52	1
4517	2018	5	1	13	17	27
4517	2018	5	1	13	45	2
4517	2018	5	1	13	49	2
4517	2018	5	1	13	55	0
4518	2018	5	1	14	19	85
4518	2018	5	1	14	5	11
4519	2018	5	1	15	48	12
4519	2018	5	1	15	45	0
4520	2018	5	1	16	20	0
4520	2018	5	1	16	37	2
4520	2018	5	1	16	40	0
4520	2018	5	1	16	1	15
4520	2018	5	1	16	22	2
4520	2018	5	1	16	26	0

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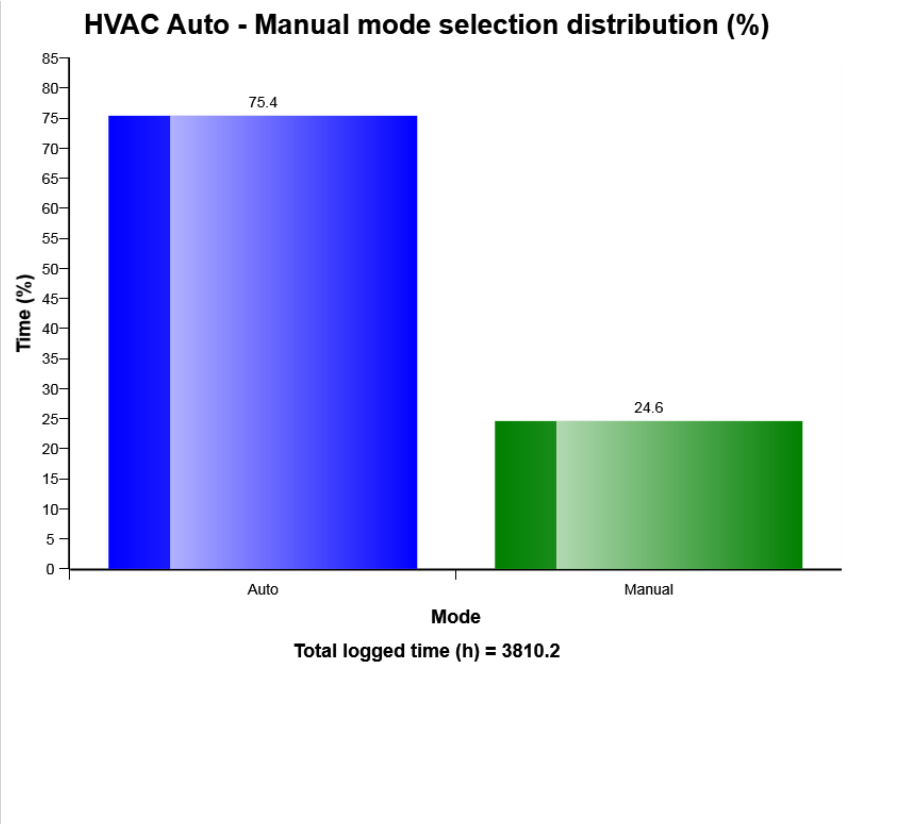

Definition:

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
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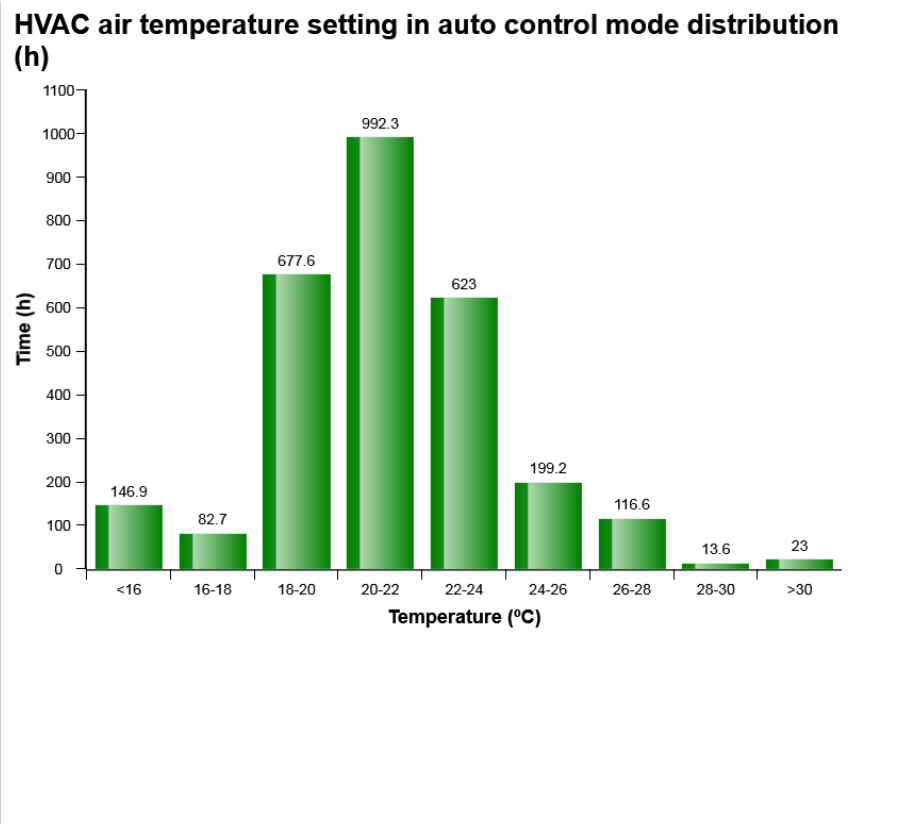

Definition:

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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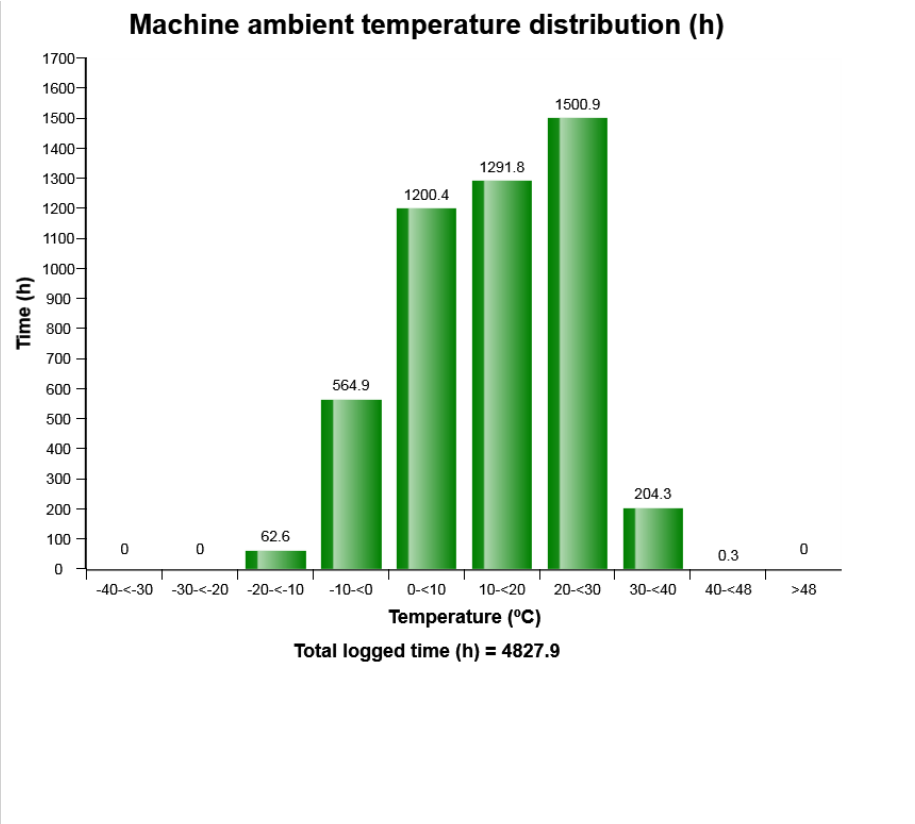
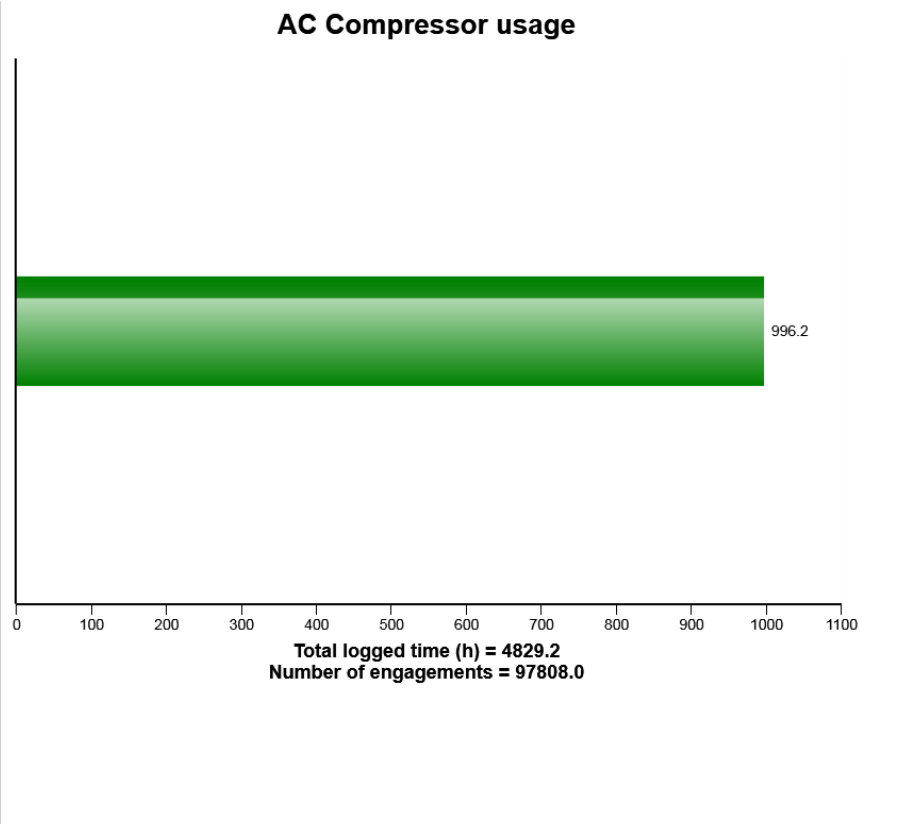


Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



Definition:

The graph shows the total time of AC compressor engagement.

Explanation:

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

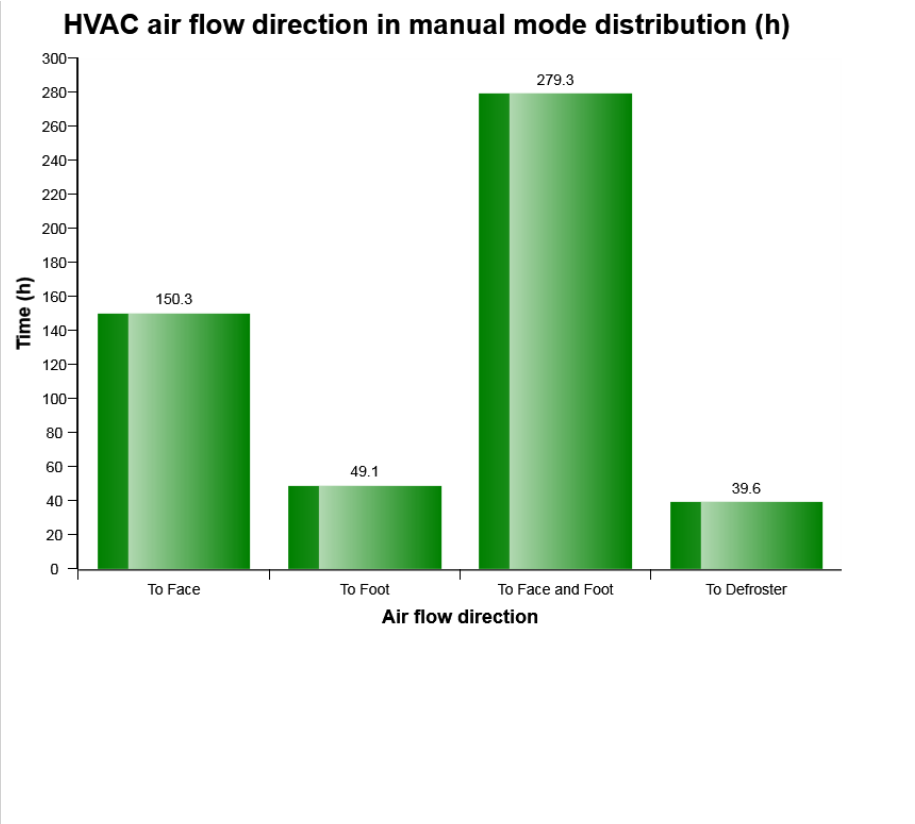
Under the graph the total engine running time (in hours) is displayed.

Total number of AC compressor activations is also displayed.

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

-

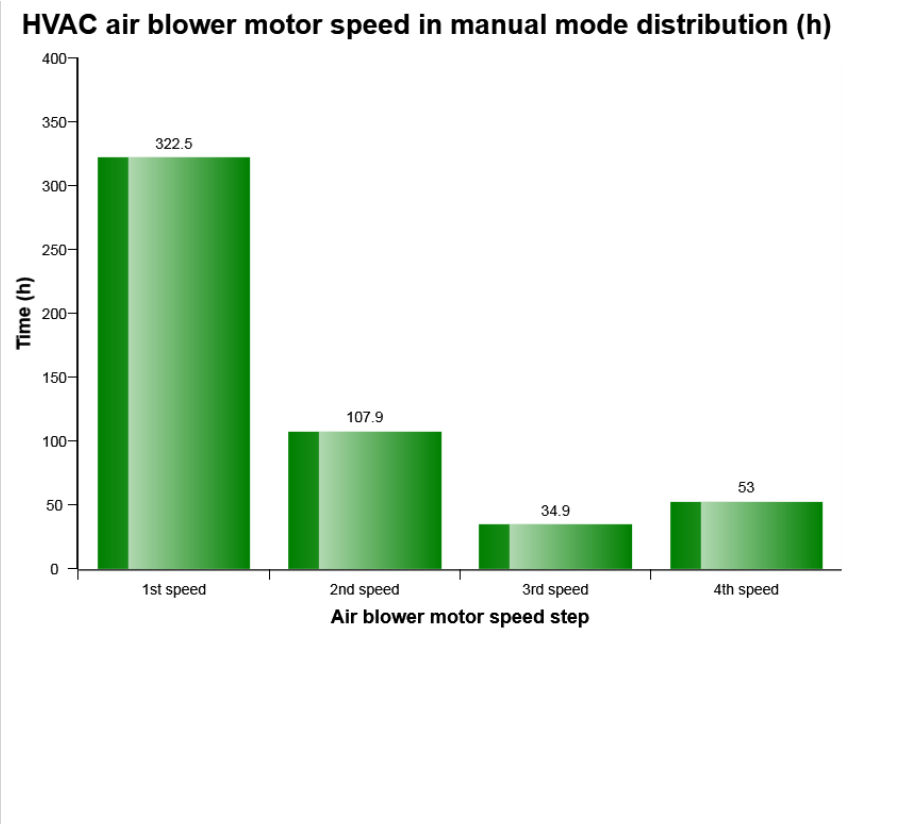
Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



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
ECR145D	210310	4821.4	14/01/2020



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
ECR145D	210310	4821.4	14/01/2020

AC System Cut Out Pressure
Total number of occurences = 28

Op hours	Year	Month	Day	Hour	Minute	Duration (sec)	Extreme (° C)
227	2014	1	15	8	15	1	-2
242	2014	1	21	8	39	0	0
246	2014	1	22	9	40	0	0
246	2014	1	21	14	24	2	-3
274	2014	1	31	7	5	0	0
298	2014	2	13	9	4	2	-9
301	2014	2	14	8	14	0	0
332	2014	2	24	9	42	0	0
357	2014	2	28	7	43	0	0
391	2014	3	26	8	15	2	-9
977	2014	11	18	15	22	0	0
1042	2014	12	30	8	12	2	-7
1086	2015	1	14	14	56	1	-6
1131	2015	1	31	12	13	0	0
1148	2015	2	5	14	24	1	-8
1166	2015	2	10	8	10	0	-2
1210	2015	2	25	8	47	0	-4
1220	2015	2	27	8	1	0	-4
2192	2016	1	20	10	37	0	-9
4294	2018	2	5	8	59	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 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.

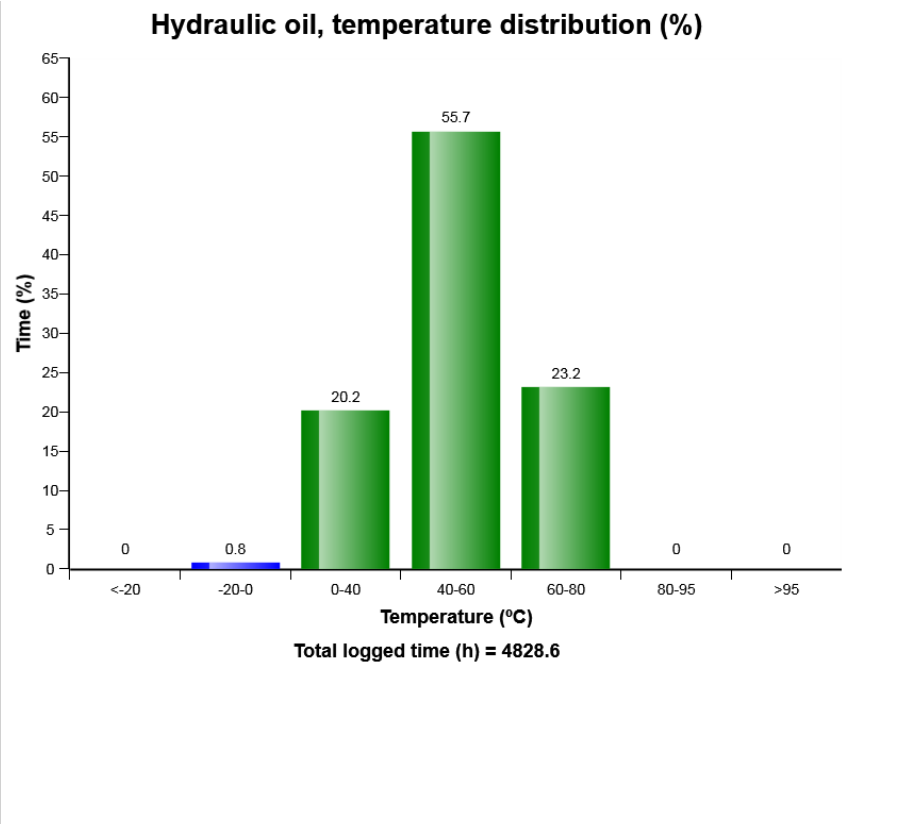
Extreme value：

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
ECR145D	210310	4821.4	14/01/2020



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.

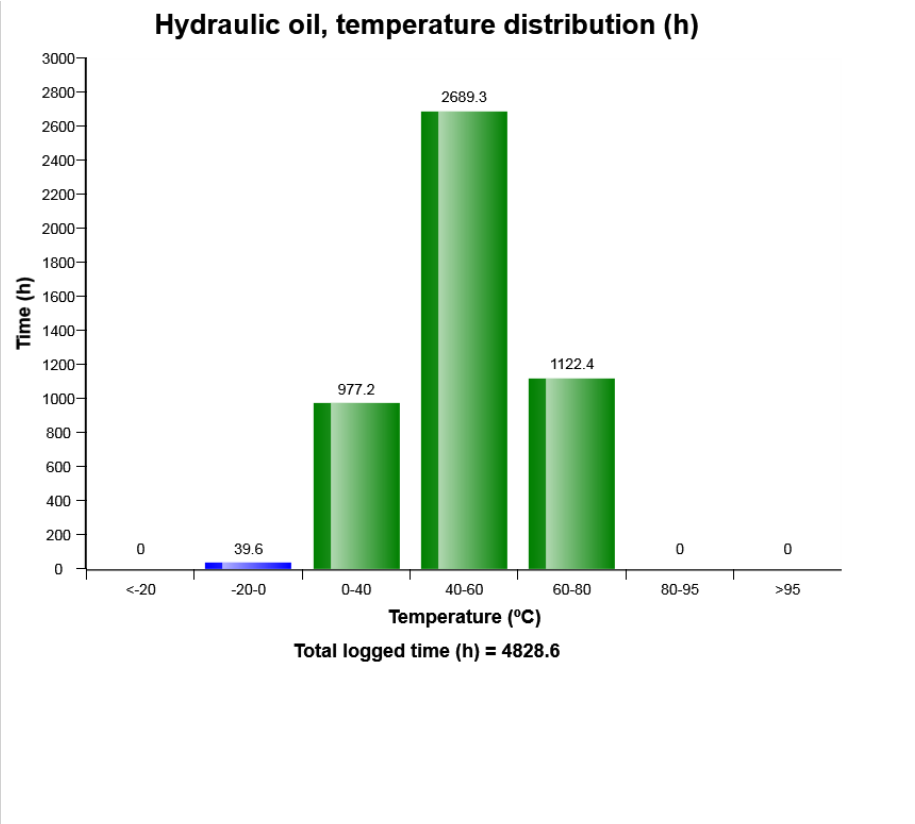
Green bar = Normal working temperature. The Major part of the registrations shall be in this region.

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
ECR145D	210310	4821.4	14/01/2020



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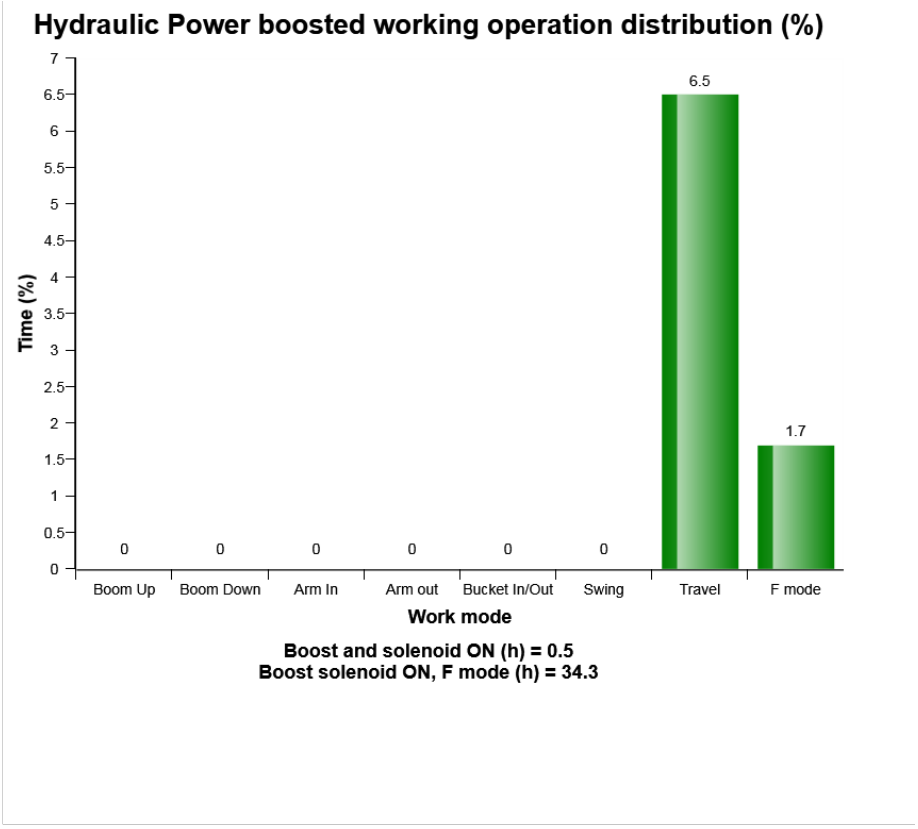
Registrations in this region is not normal, running in this region may cause severe damage.

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



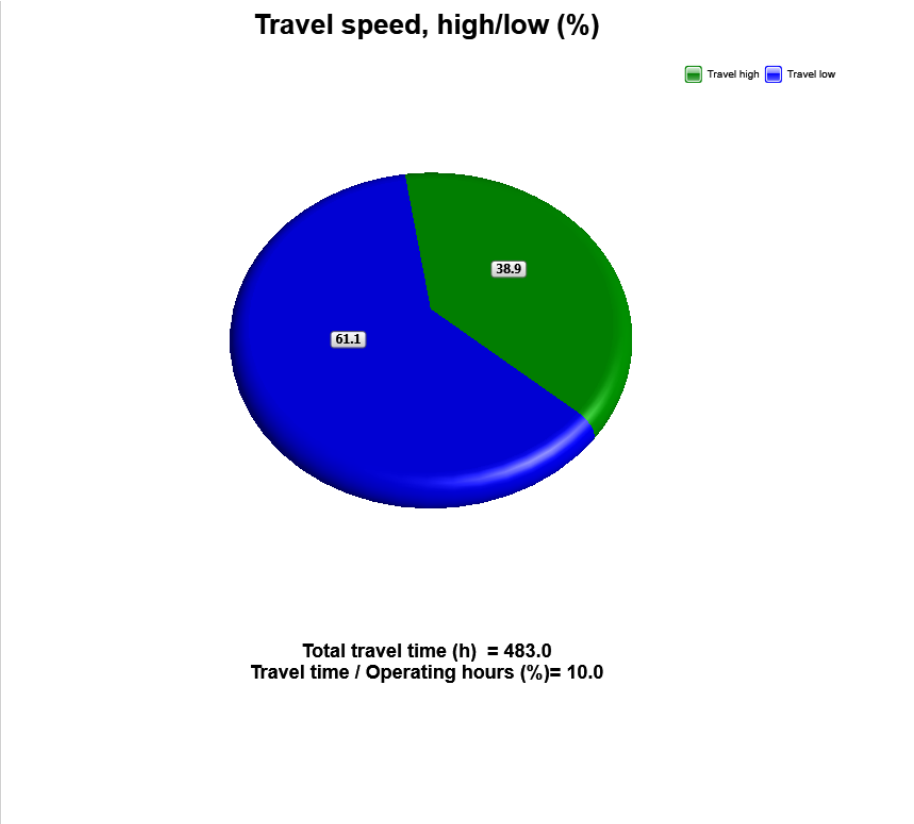
Definition:

T he 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.

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



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:

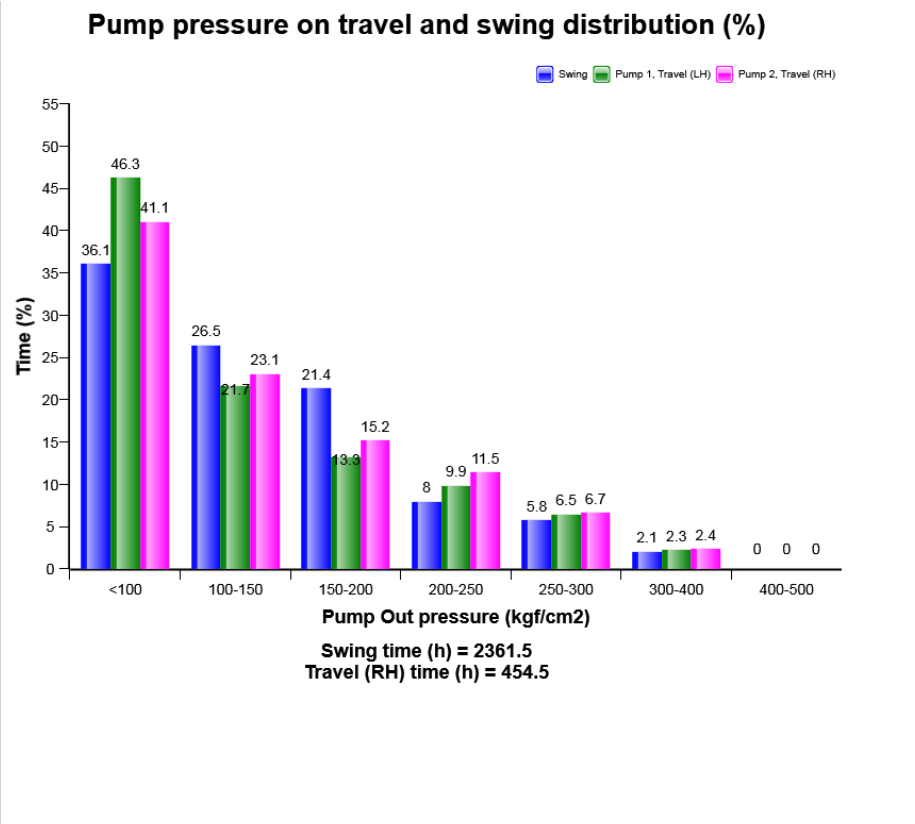
Distribution of each travel time is shown on right of its sector in percentage

The sum of travel time in percentage is 100

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020

Total travel time is listed below the diagram

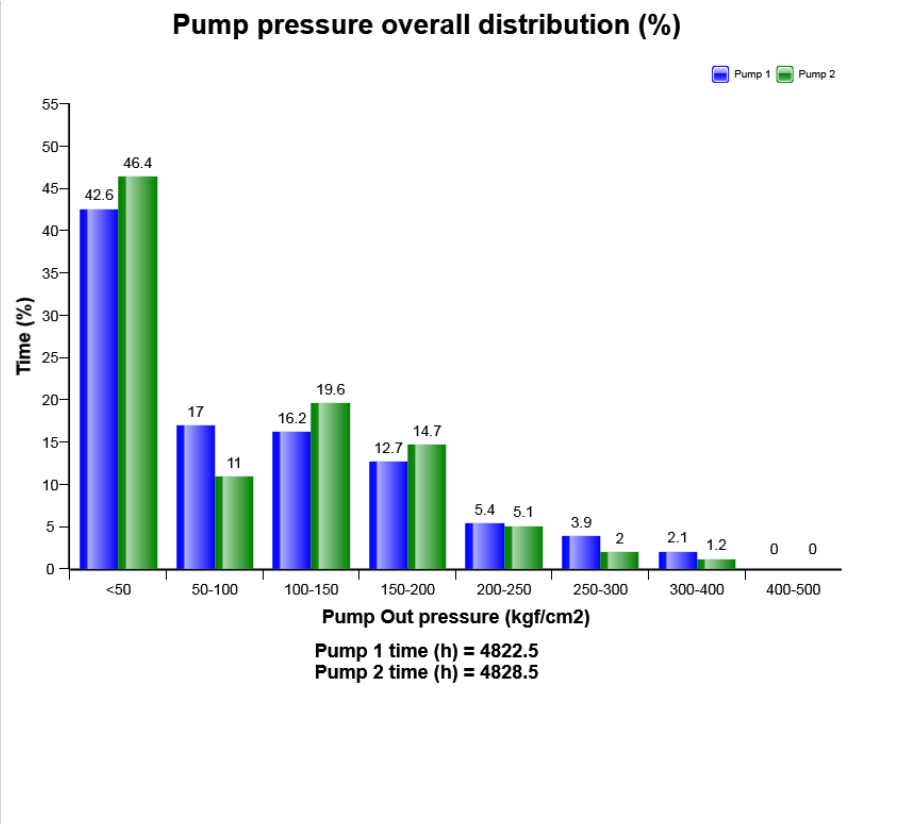
Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



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.

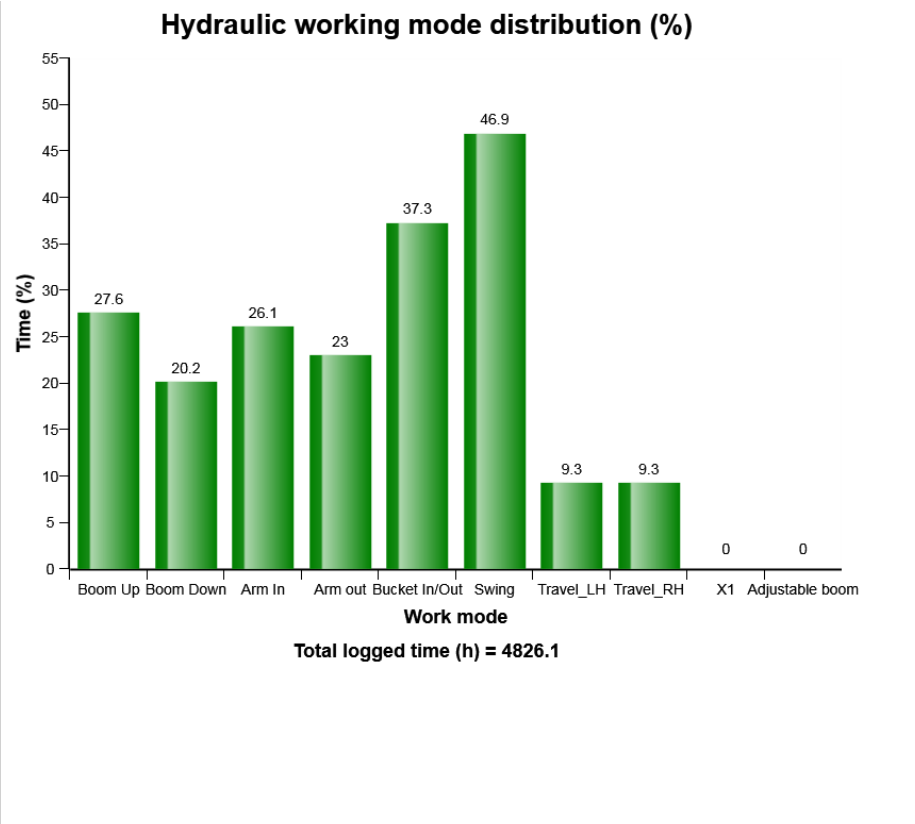
Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



Definition:

The diagram describes Pump outlet pressure of 2 Pumps distribution.

Machine model	SerialNo	Operating Hours	Reading Date
ECR145D	210310	4821.4	14/01/2020



Definition:

The diagram describes hydraulic working operation mode distribution.