VOLVO CONSTRUCTION EQUIPMENT

MATRIS REPORT

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

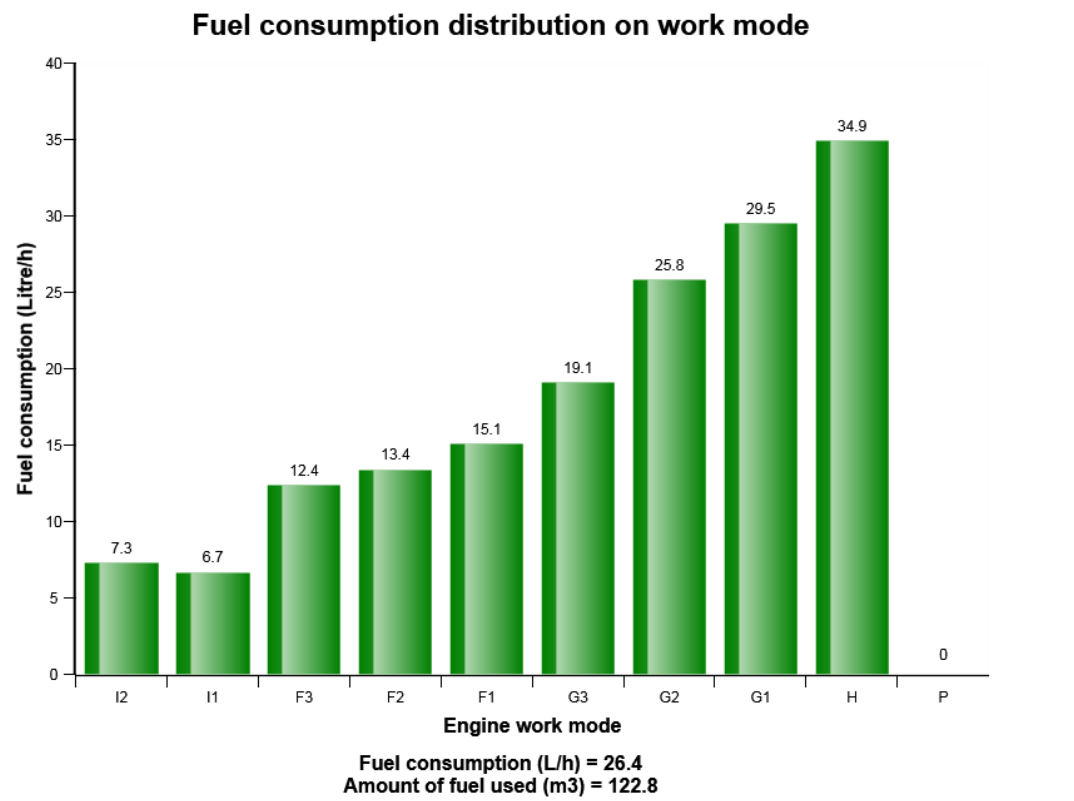
Company name	Dealer	Report Issuer
ROMCO Equipment Company		
Contact name	**Technician**	**Primary Application**
	jlinseisen	Site Preparation
Site	**Workorder**	**Ground Condition**

MATRIS Reading, Summary / Recommendation

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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:

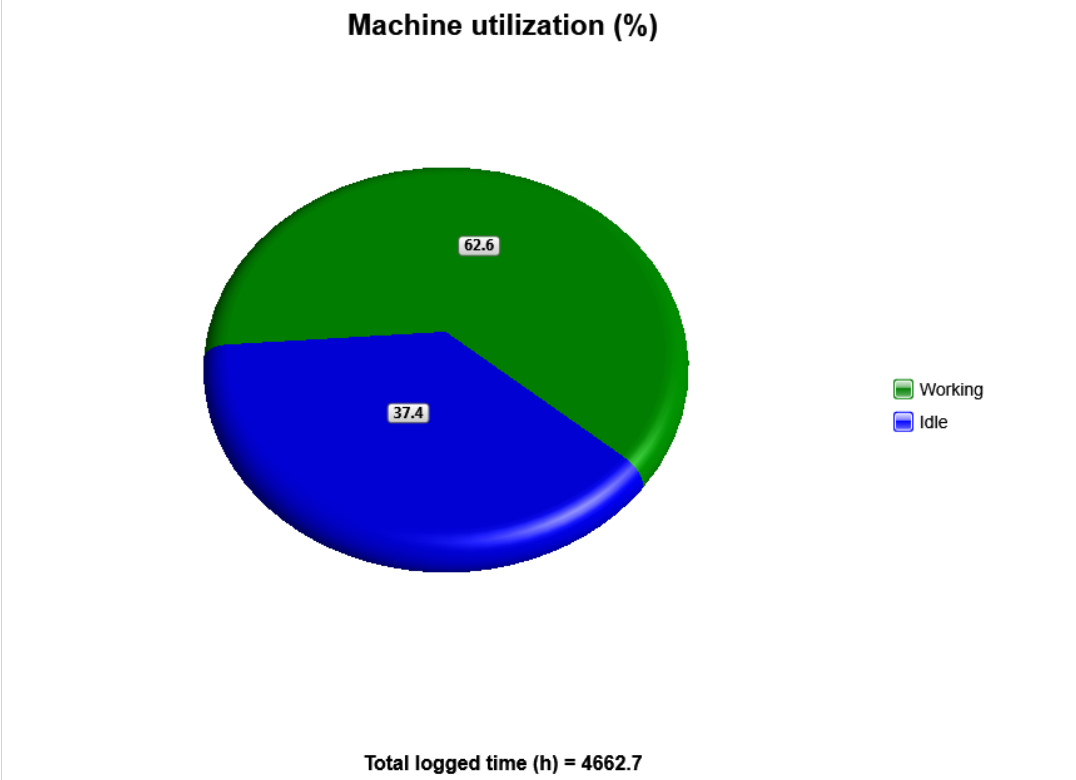
Y-axis: The rate of the fuel consumption on each work mode.

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

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

Average fuel consumption per hour is listed below the diagram

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

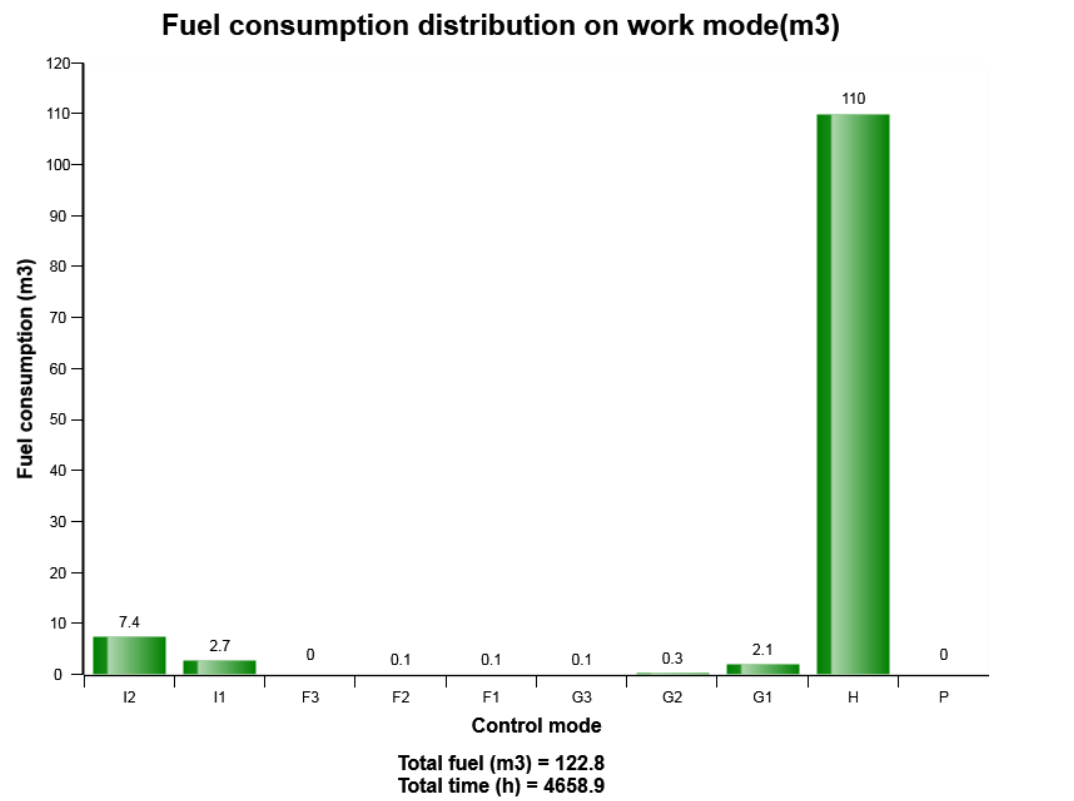
The graph shows the distribution of the operating time for the machine. The operating time is defined as the time with engine on

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
EC380D	210601	4662.7	10/25/2016

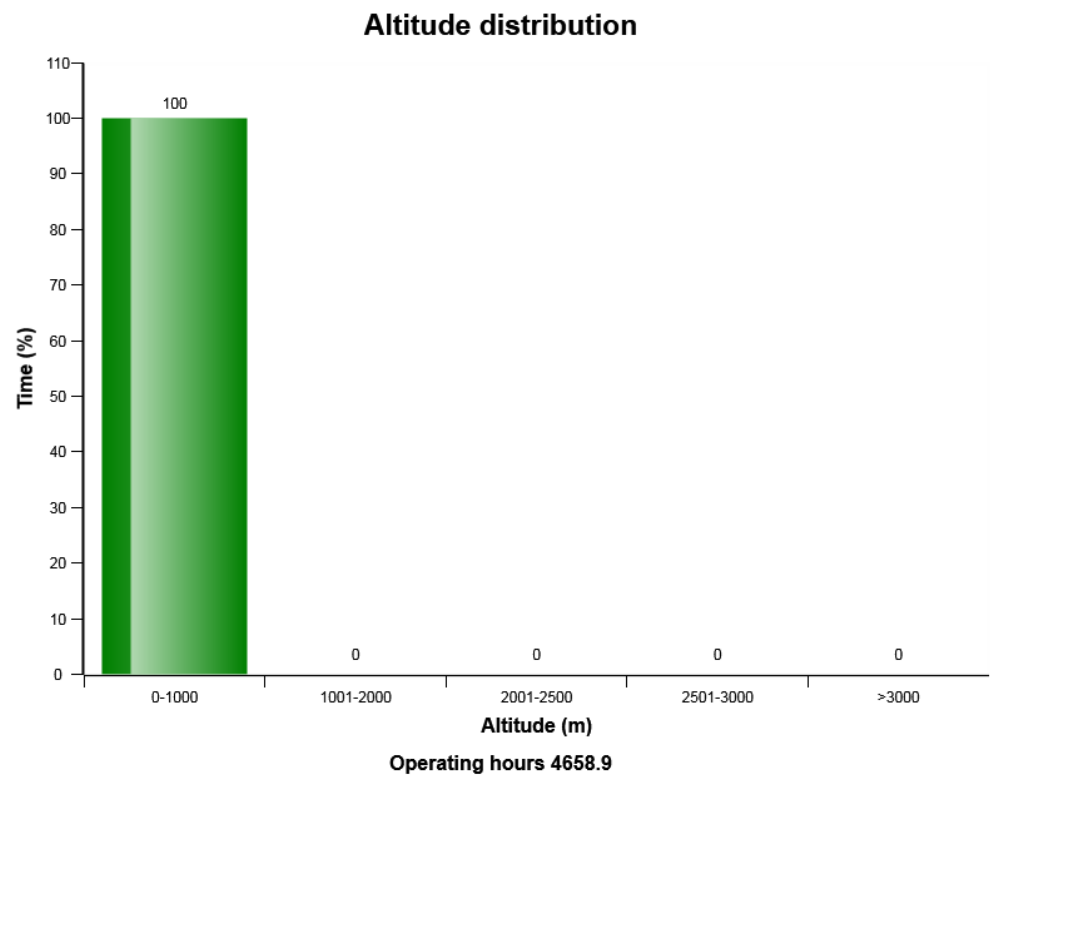


Definition:

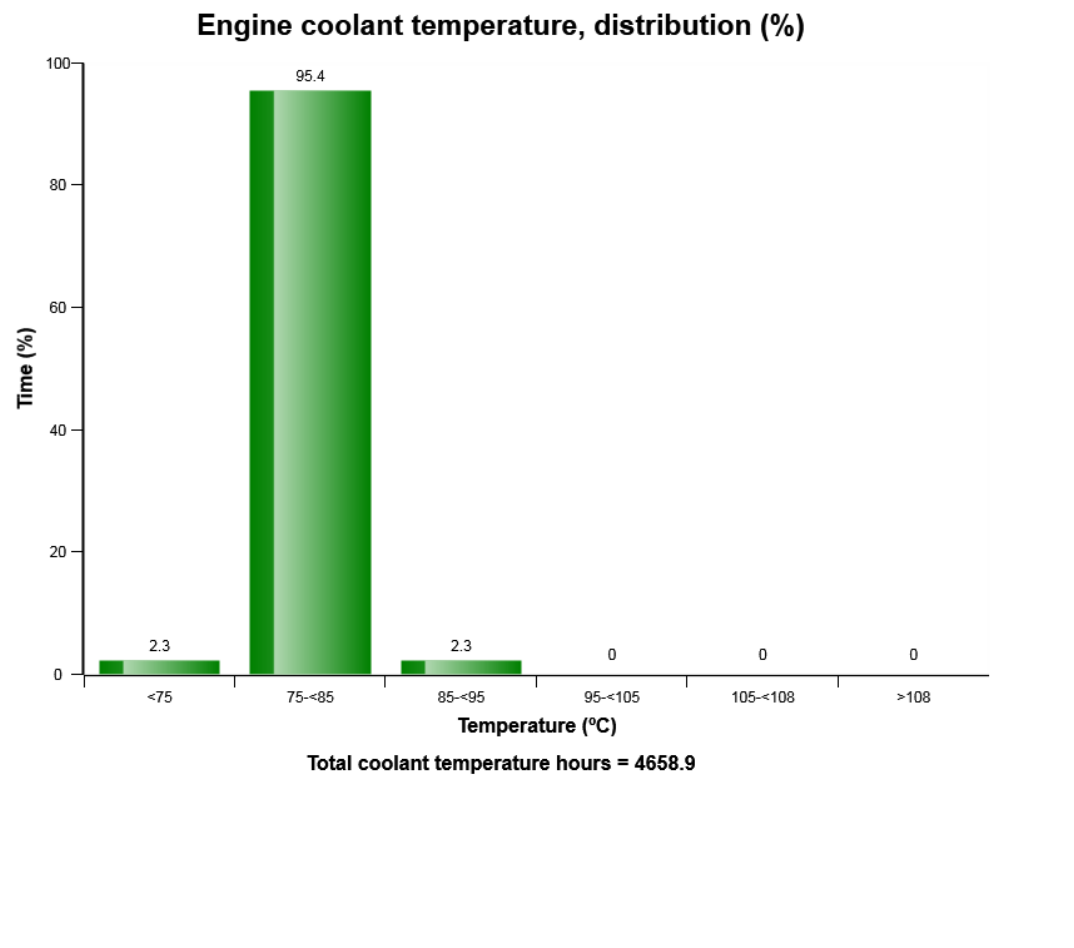
The diagram describes the amount of fuel consumed per engine speed mode distribution.

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.

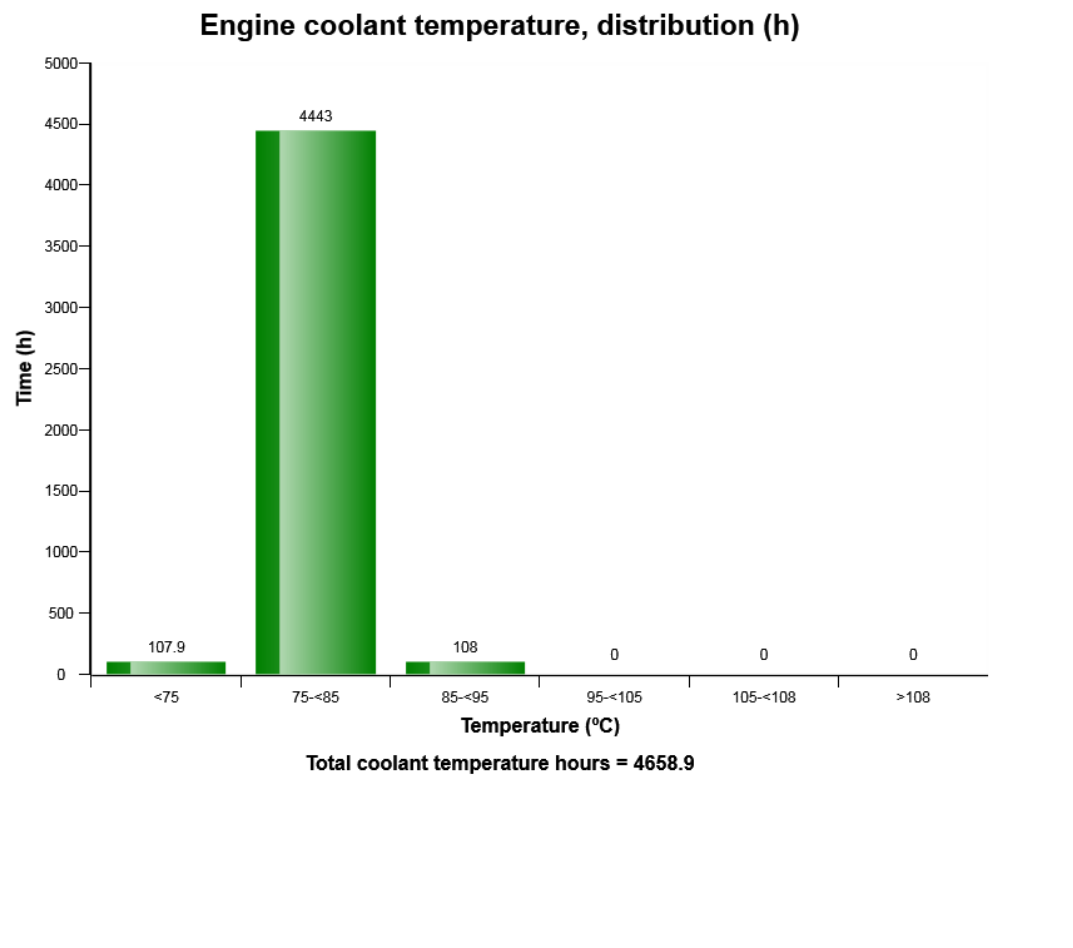
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



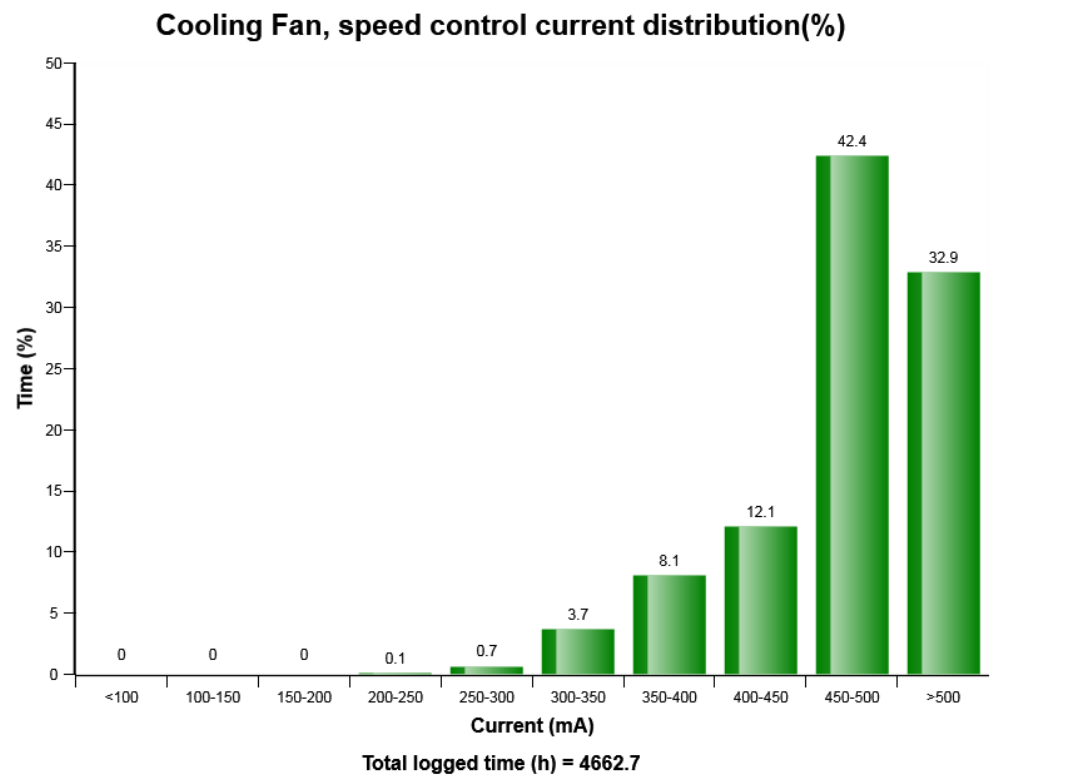
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

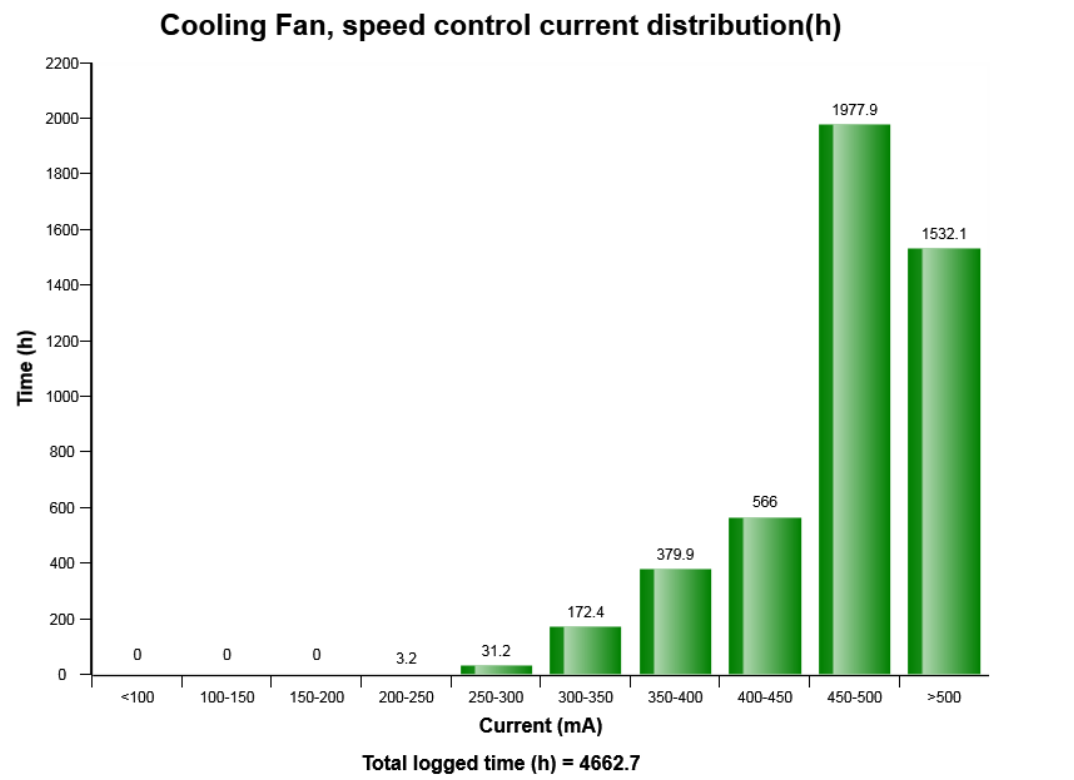


Definition:

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
EC380D	210601	4662.7	10/25/2016

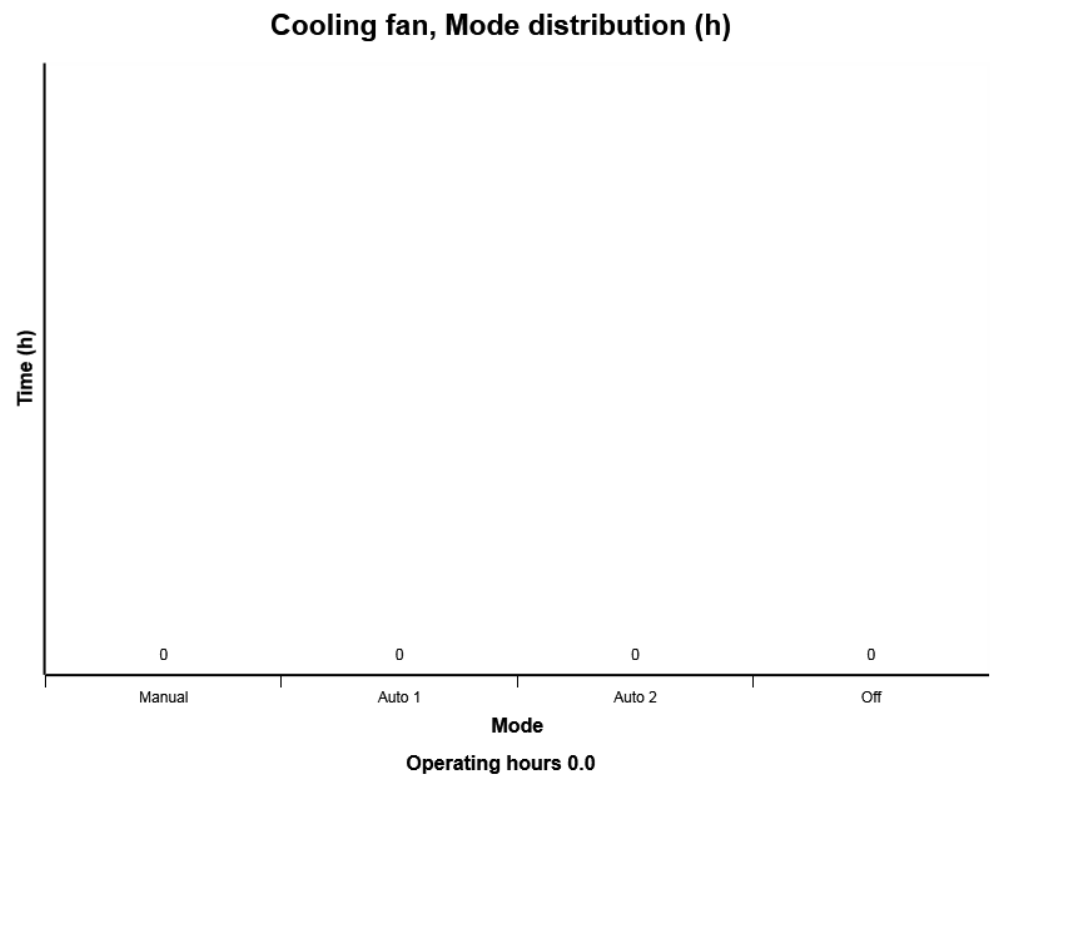


Definition:

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

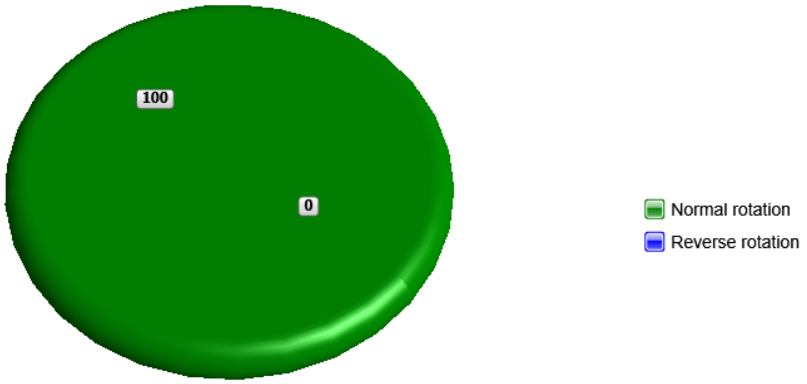
Total time (hours) in above means the sum of the time for Hydraulic Cooling fan operation.

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



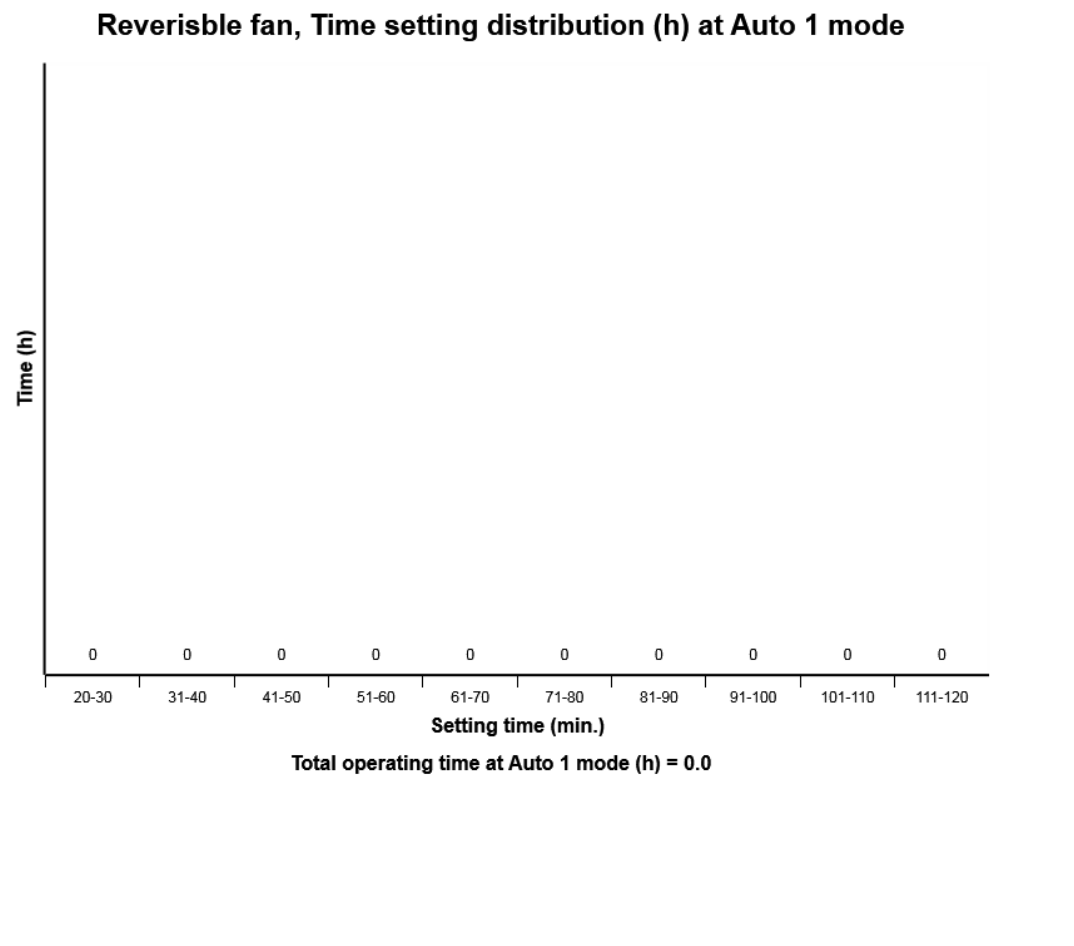
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Cooling fan, Normal-Reverse rotation distribution (%)

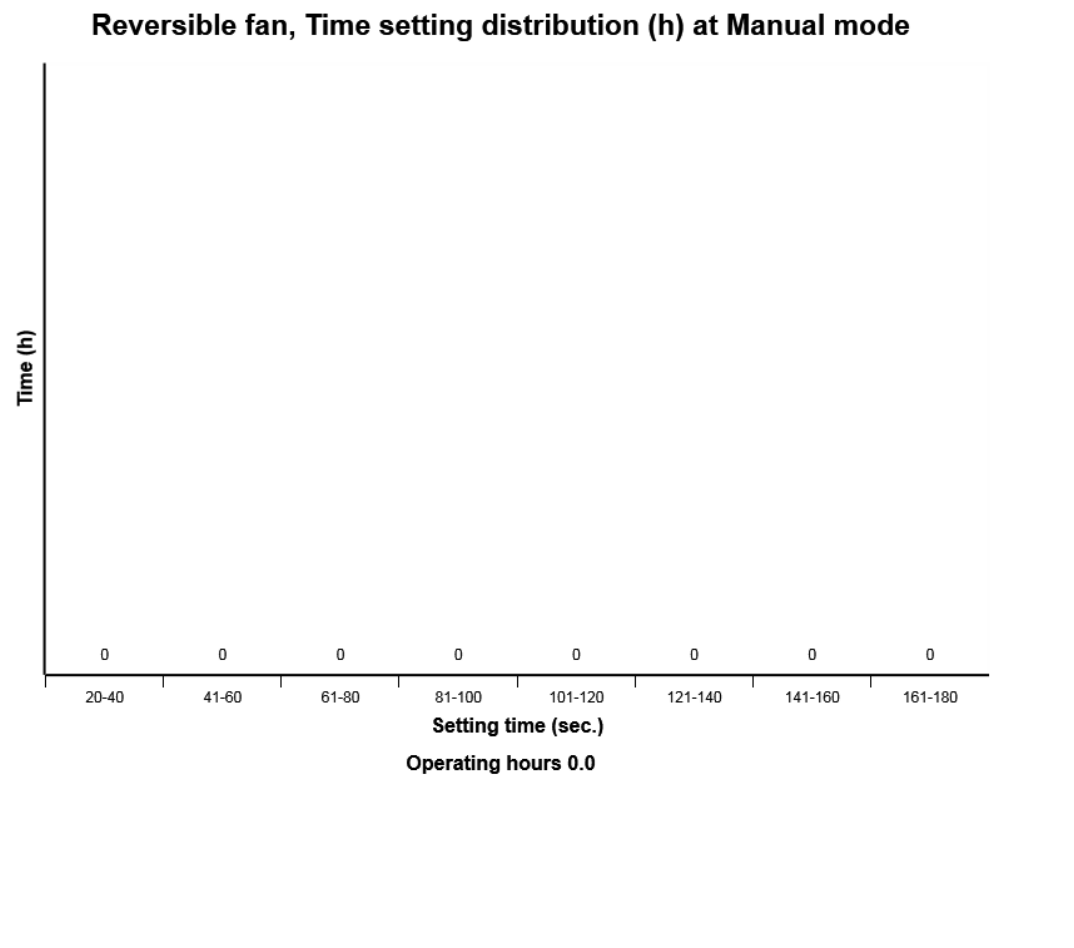


Total operating time (h) = 4662.7

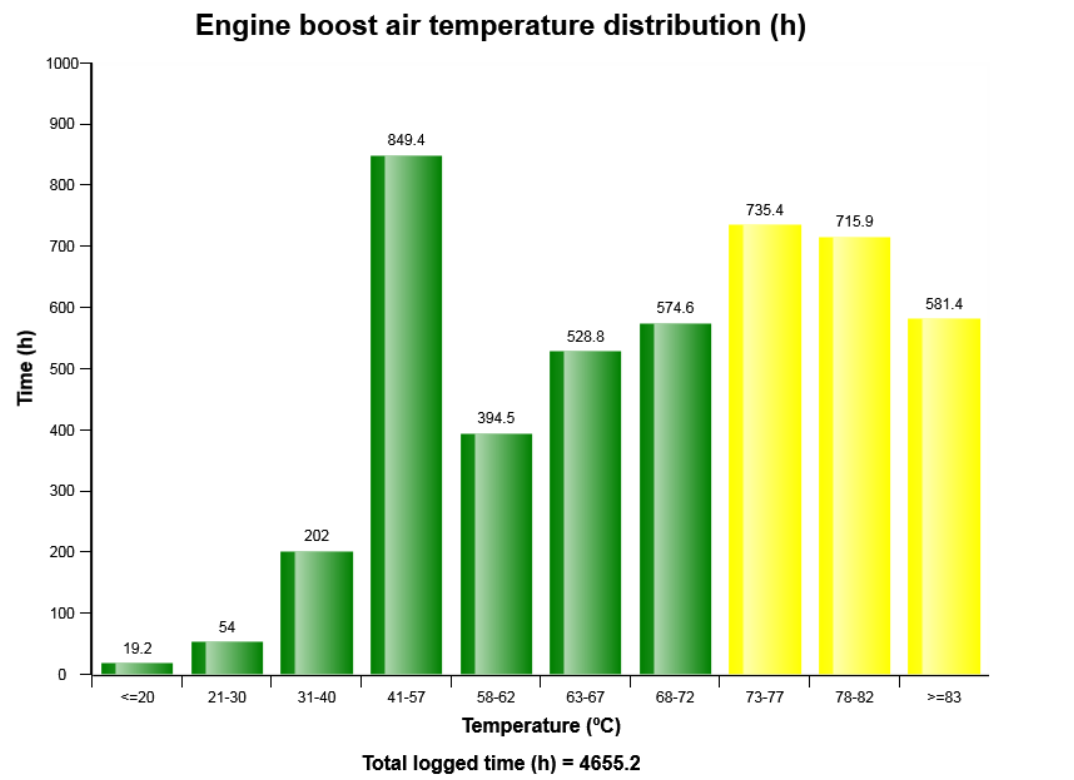
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



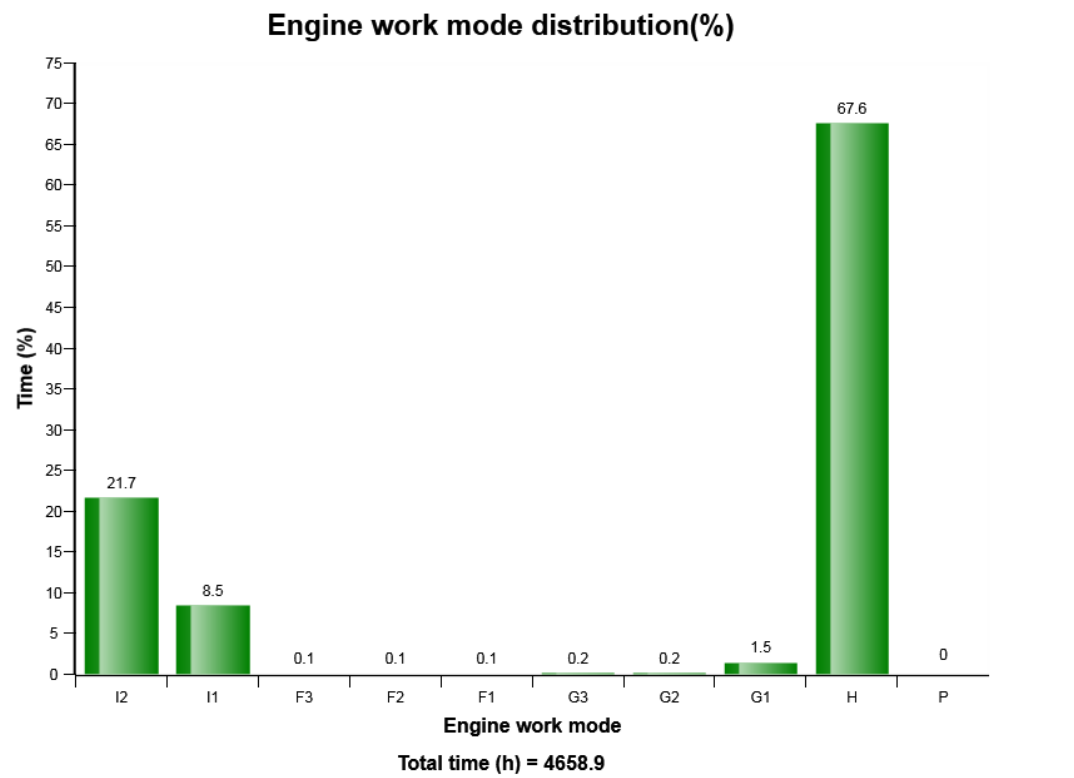
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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)

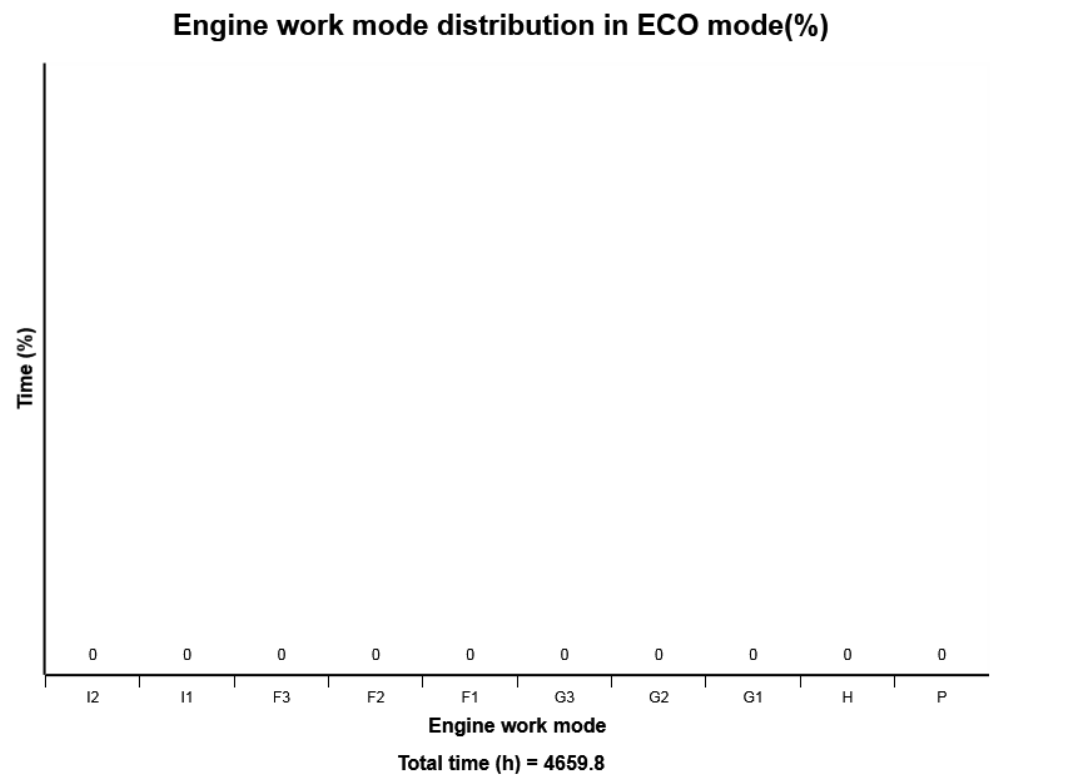
Distribution of each work mode is shown on top of the column in percentage.

The sum of time distribution in percentage is 100

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Total time (h) is listed below the diagram

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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)

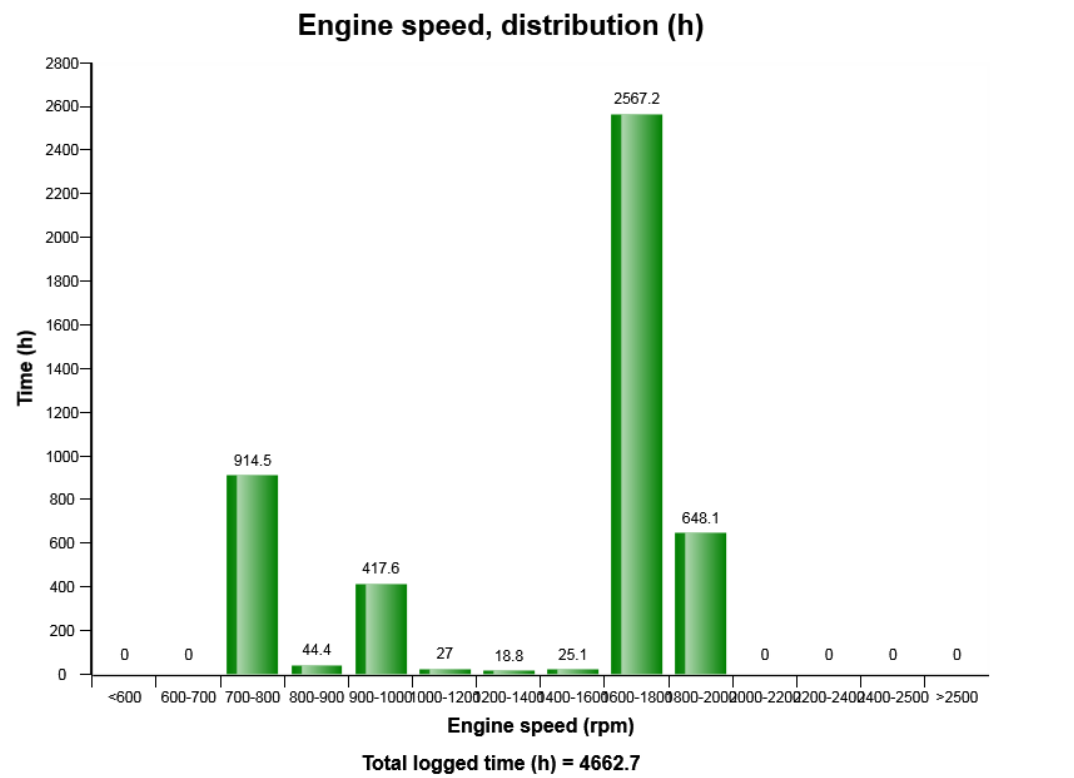
Distribution of each work mode is shown on top of the column in percentage.

The sum of time distribution in percentage is 100%

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Total time (h) is listed below the diagram.

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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.

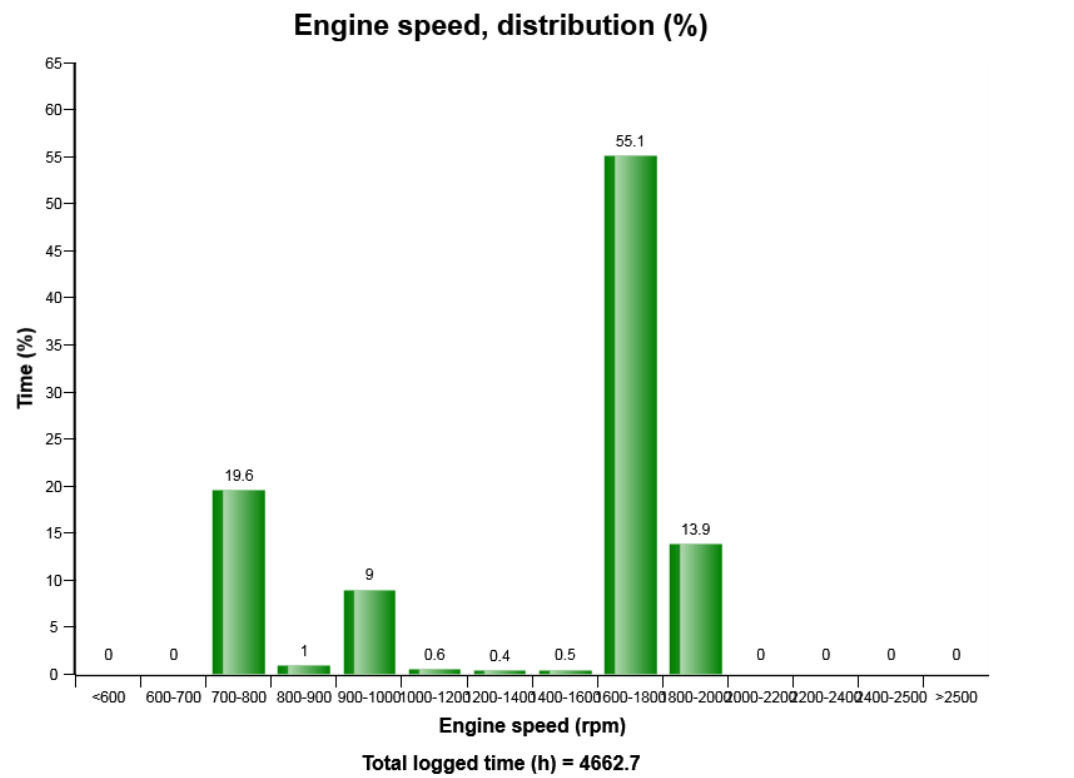
X-axis: Engine speed in rpm.

Green bars = Normal engine speed range.

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

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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

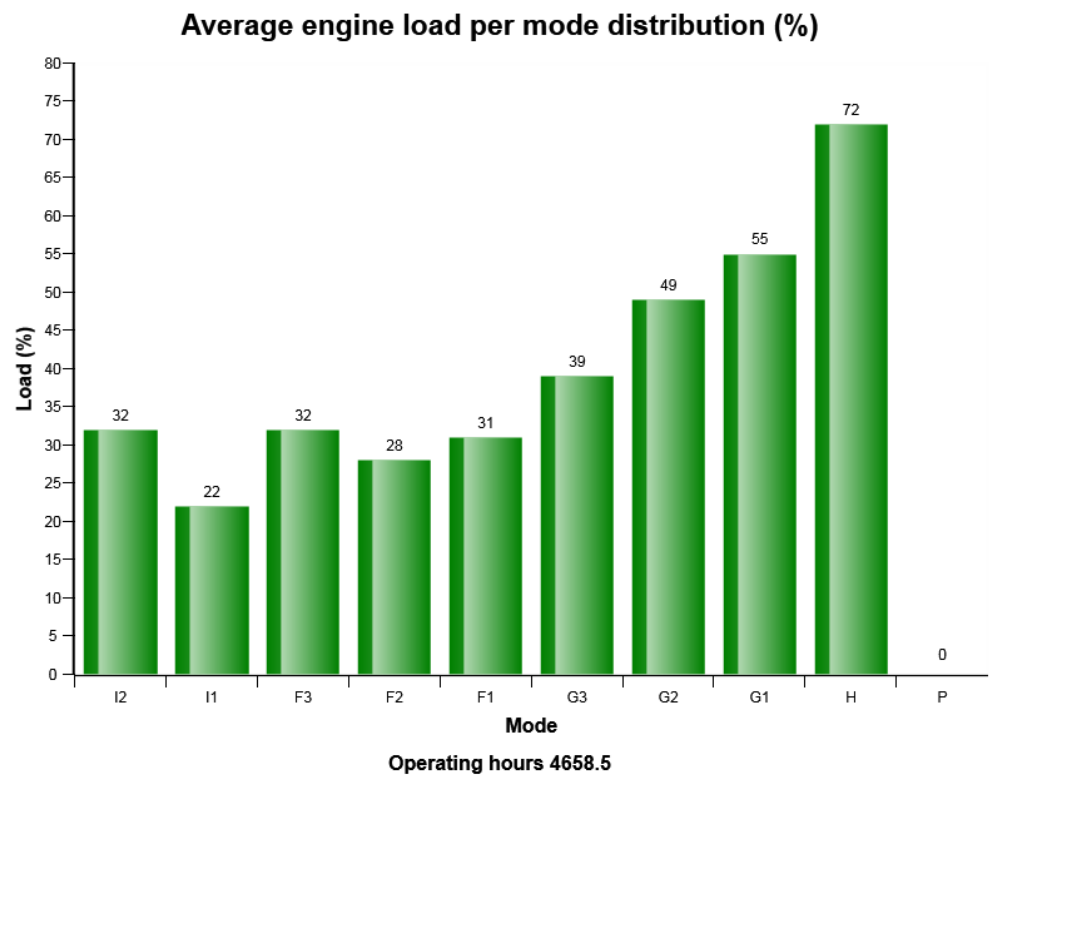
Blue bar = Idling interval.

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

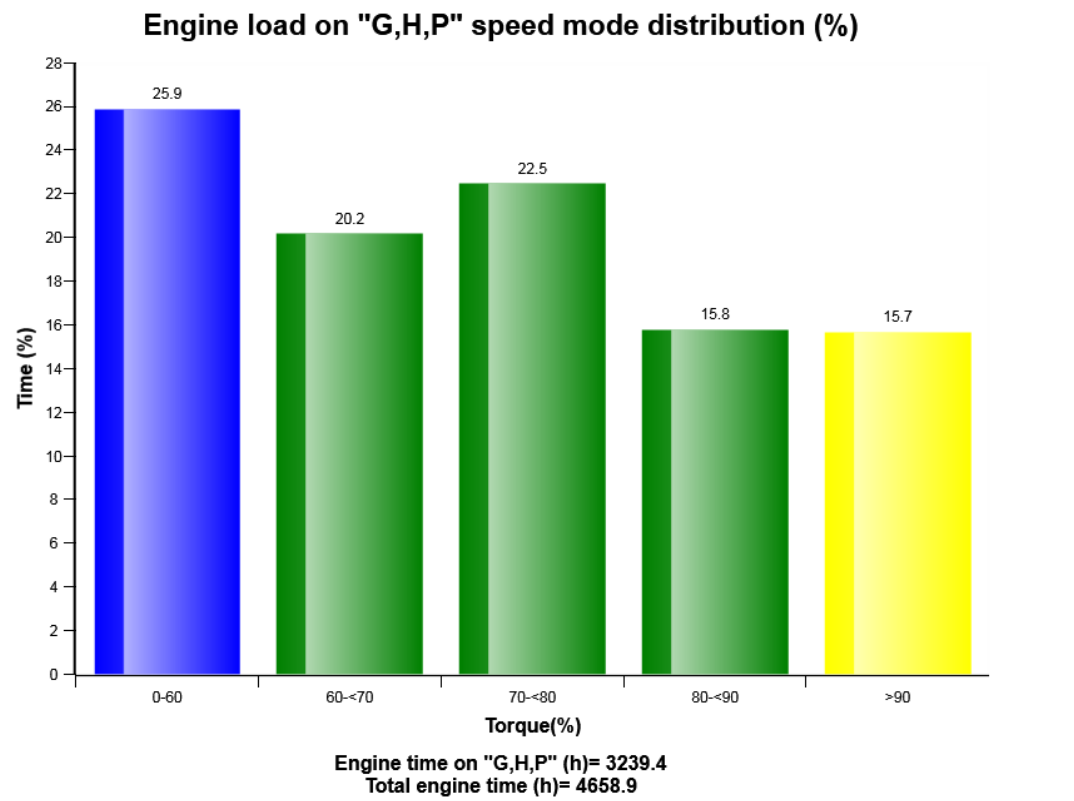
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



This graph shows the distribution of the engine load.

Blue bar: Low load

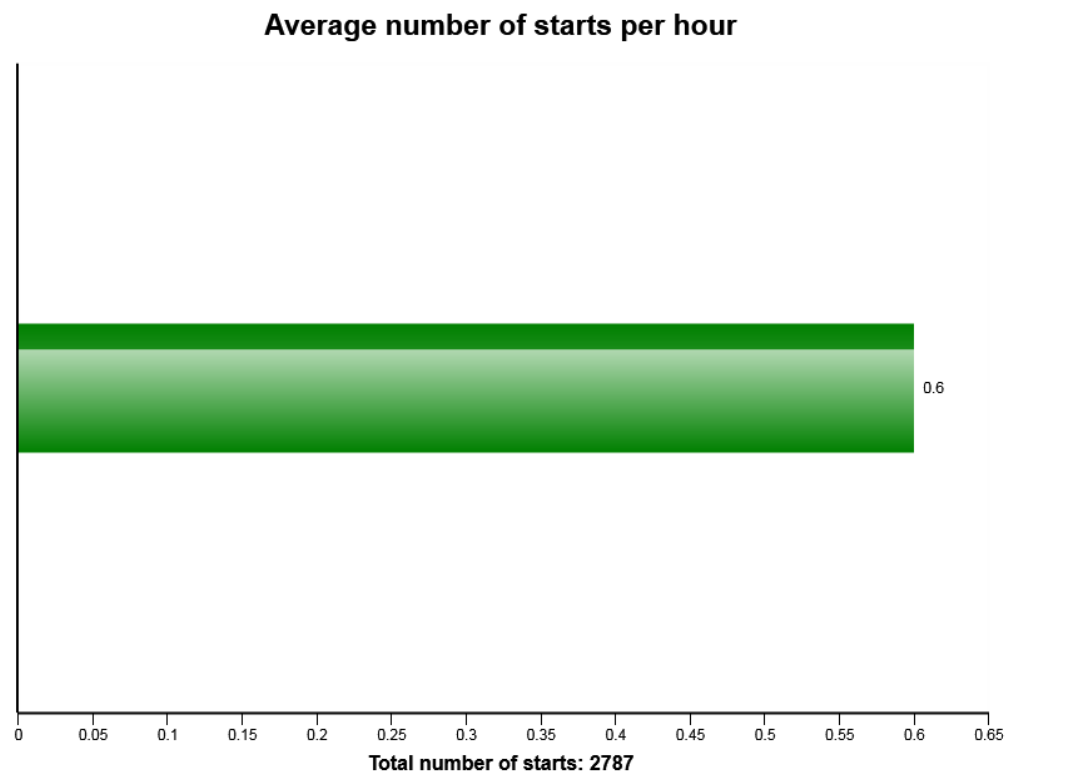
Green bar: Normal load

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
EC380D	210601	4662.7	10/25/2016



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".

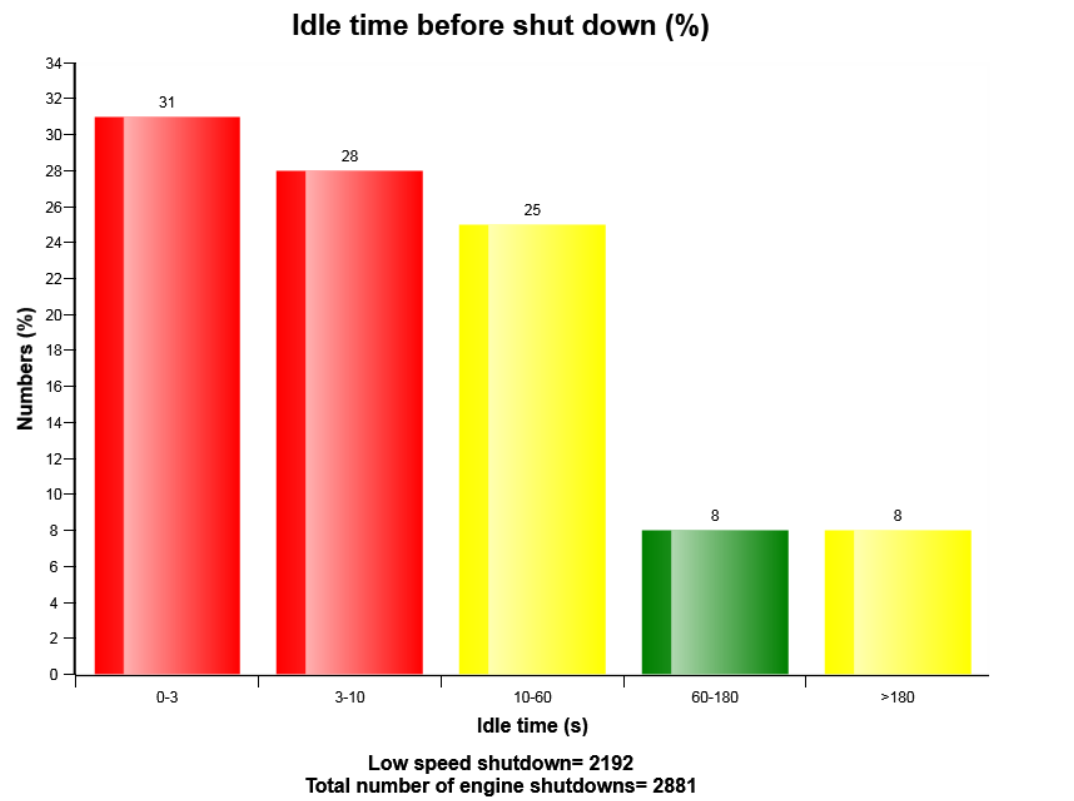
The value can vary a lot depending on in which application the machine is used.

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Green bar = Number of average starts per hour

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



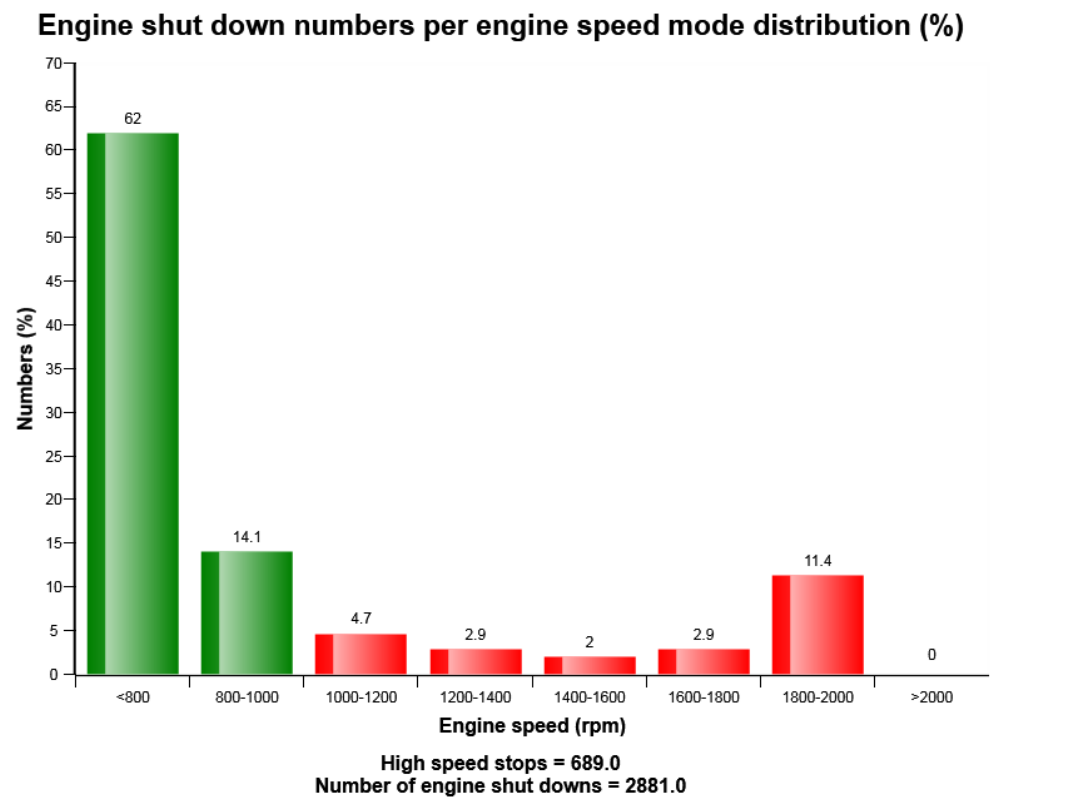
Definition:

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
EC380D	210601	4662.7	10/25/2016



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.

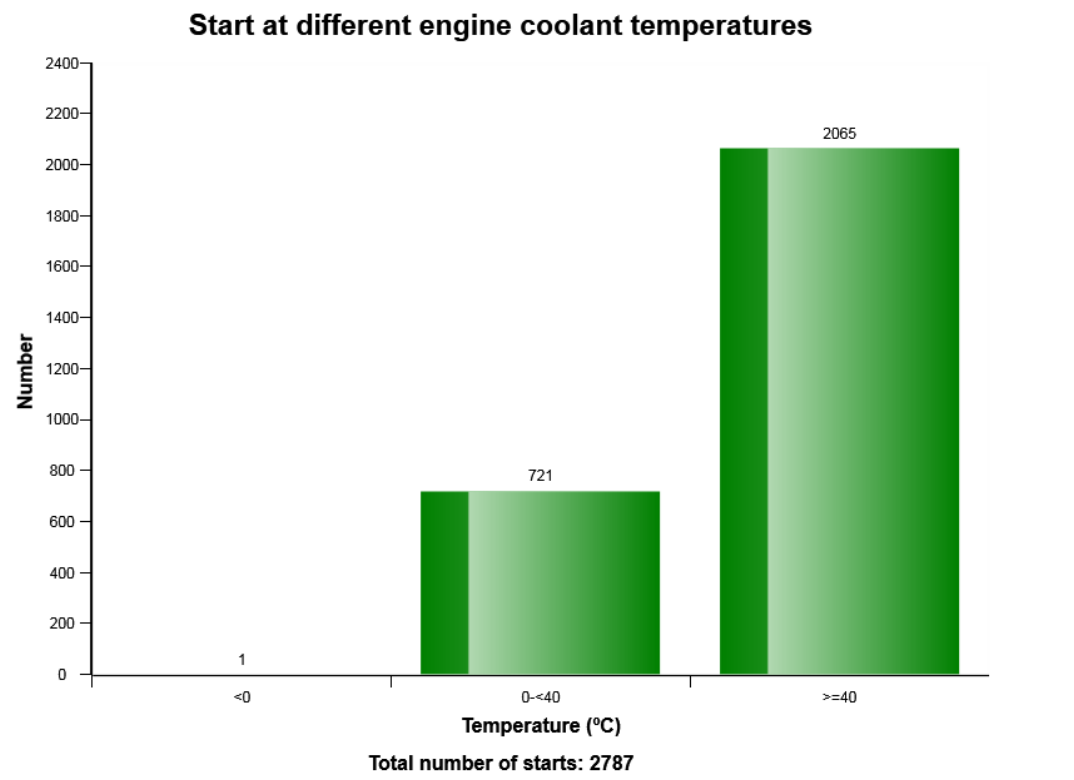
X-axle: Work mode.

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

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
EC380D	210601	4662.7	10/25/2016



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
EC380D	210601	4662.7	10/25/2016

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Low coolant level
Total number of occurences = 71

	Op hours	Year	Month	Day	Hour	Minute	Duration (sec)
*	0	2016	4	25	17	13	17
*	3551	2016	1	23	11	23	16
*	3551	2016	1	23	11	21	16
*	3551	2016	1	23	11	13	92
*	3551	2016	1	23	11	3	107
*	3551	2016	1	23	10	46	92
*	3551	2016	1	23	10	36	18
*	3552	2016	1	23	11	41	111
*	3552	2016	1	23	12	45	108
*	3761	2016	3	7	12	47	16
*	3762	2016	3	7	13	35	16
*	3769	2016	3	8	10	44	17
*	3974	2016	4	15	14	53	33
*	3997	2016	4	25	13	44	106
*	3999	2016	4	25	15	34	17
*	4013	2016	4	28	6	31	137
*	4016	2016	4	28	9	29	16
*	4424	2016	8	1	8	26	16
*	4463	2016	8	4	16	22	17
*	4475	2016	8	6	5	48	17

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
EC380D	210601	4662.7	10/25/2016

Low engine oil level at start
Total number of occurences = 0

	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
*	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

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
EC380D	210601	4662.7	10/25/2016

Low Engine Oil Pressure
Total number of occurences = 0

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Fuel Filter Clogging
Total number Fuel filter clogging = 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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Low Air filter pressure
Total number of occurences = 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

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.

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.

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

High Charge air temperature
Total number of occurences = 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 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.”

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Regeneration ignored
Total number of ignored regenerations 76

	Op hours	Year	Month	Day	Hour	Minute	Duration (min)
*	1259	2014	10	29	12	53	0
*	1259	2014	10	29	12	37	5
*	1259	2014	10	29	12	53	35
*	1260	2014	10	29	13	36	126
*	1260	2014	10	29	13	28	7
*	1262	2014	10	29	15	42	71
*	1263	2014	10	29	16	54	16
*	1263	2014	10	29	16	53	0
*	1264	2014	10	30	6	59	294
*	1264	2014	10	30	6	58	1
*	1269	2014	10	30	12	58	93
*	1270	2014	10	30	14	32	0
*	1270	2014	10	30	14	33	0
*	1270	2014	10	30	15	35	0
*	1270	2014	10	30	14	52	1
*	4597	2016	8	29	7	36	2
*	4597	2016	8	29	7	39	65
*	4598	2016	8	29	8	45	40
*	4599	2016	8	29	9	26	25
*	4599	2016	8	29	9	51	75

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Regeneration aborted
Total number of occurences = 264

Op hours	Year	Month	Day	Hour	Minute
0	2047	1	12	18	1
0	2017	10	206	17	1
0	2036	27	189	17	1
0	2041	22	230	17	1
0	2004	22	37	17	1
0	2000	18	75	17	1
0	2034	23	38	18	1
1559	2001	0	0	0	16
1818	2001	0	0	0	16
2578	2001	0	0	0	16
2817	2001	0	0	0	16
3848	2001	0	0	0	16
4119	2001	0	0	0	16
4394	2016	7	23	13	50
4499	2016	8	9	11	13
4552	2016	8	20	8	43
4582	2016	8	26	7	7
4598	2016	8	29	8	44
4620	2016	9	2	6	27
4660	2016	9	30	14	12

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Regeneration duration
Total number of occurences = 859

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
4598	2016	8	29	8	35	4
4599	2016	8	29	9	58	68
4599	2016	8	29	9	26	0
4599	2016	8	29	9	39	5
4606	2016	8	31	11	57	41
4613	2016	9	1	8	43	4
4613	2016	9	1	8	37	4
4613	2016	9	1	8	49	41
4613	2016	9	1	8	27	4
4613	2016	9	1	8	4	21
4613	2016	9	1	8	33	1
4619	2016	9	1	15	19	28
4620	2016	9	2	6	30	41
4620	2016	9	2	6	23	3
4629	2016	9	7	7	2	64
4637	2016	9	8	6	28	41
4645	2016	9	8	14	55	38
4648	2016	9	9	8	6	47
4660	2016	10	3	6	33	75
4660	2016	9	30	14	11	1

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

Regeneration intervals
Total number of occurences = 3370

Op hours	Year	Month	Day	Hour	Minute	Duration (min)
4656	2016	9	29	13	34	57
4656	2016	9	29	12	27	3
4657	2016	9	30	6	19	31
4657	2016	9	29	15	6	0
4658	2016	9	30	6	51	122
4658	2016	9	30	6	50	0
4660	2016	10	3	6	30	4
4660	2016	9	30	10	43	0
4660	2016	9	30	10	34	9
4660	2016	10	1	6	57	6
4660	2016	9	30	14	10	1
4661	2016	10	12	13	11	24
4661	2016	10	6	15	17	0
4661	2016	10	6	14	32	1
4661	2016	10	3	14	20	5
4661	2016	10	3	9	49	2
4661	2016	10	3	9	28	3
4661	2016	10	3	7	48	0
4662	2016	10	12	14	9	2
4662	2016	10	25	10	0	25

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

High engine coolant temperature
Total number of occurences = 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 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.

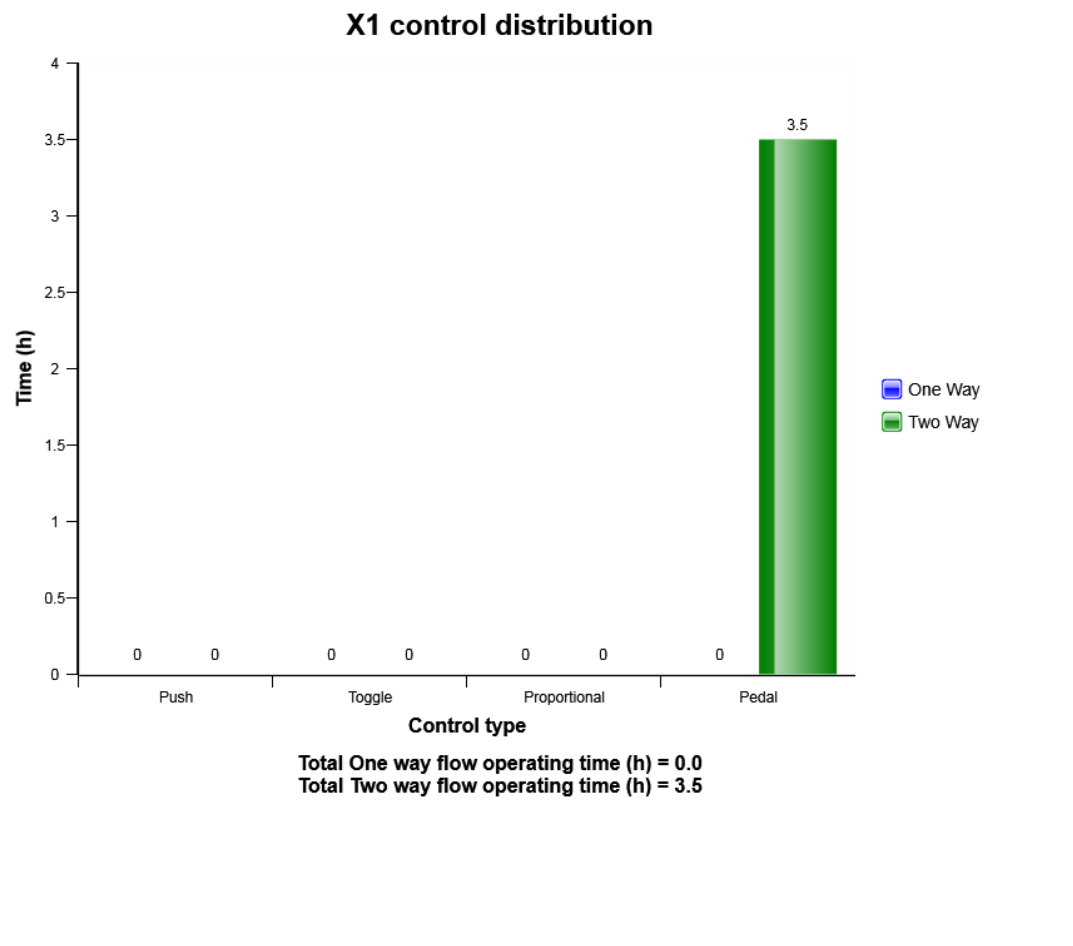
Criteria :

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.

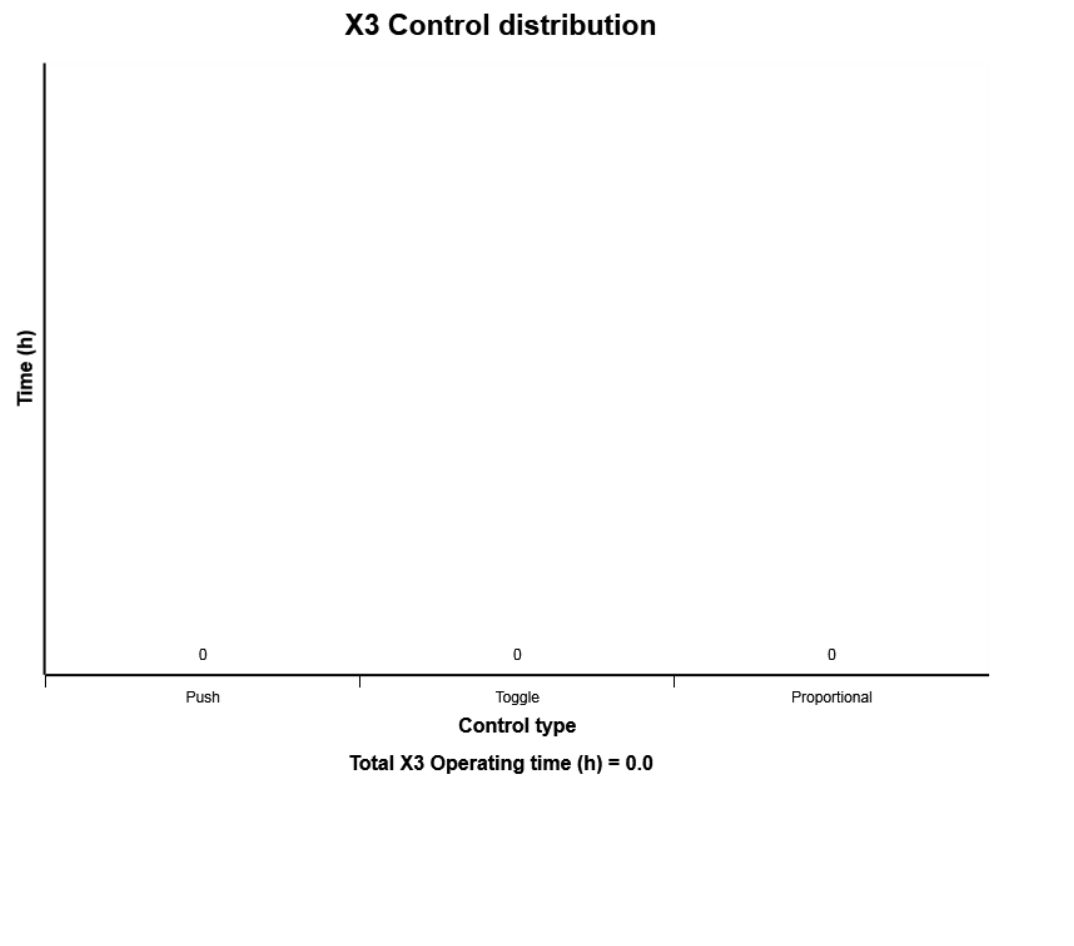
Water level warning in water separator
Total number of occurences = 0

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
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

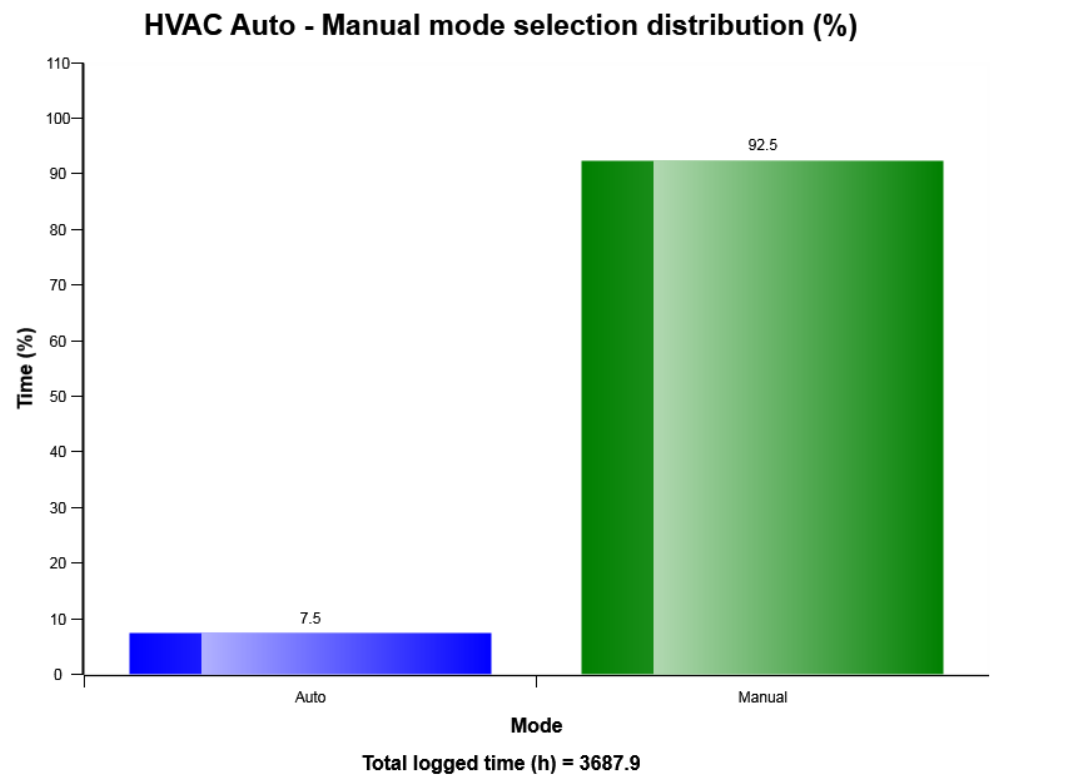
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



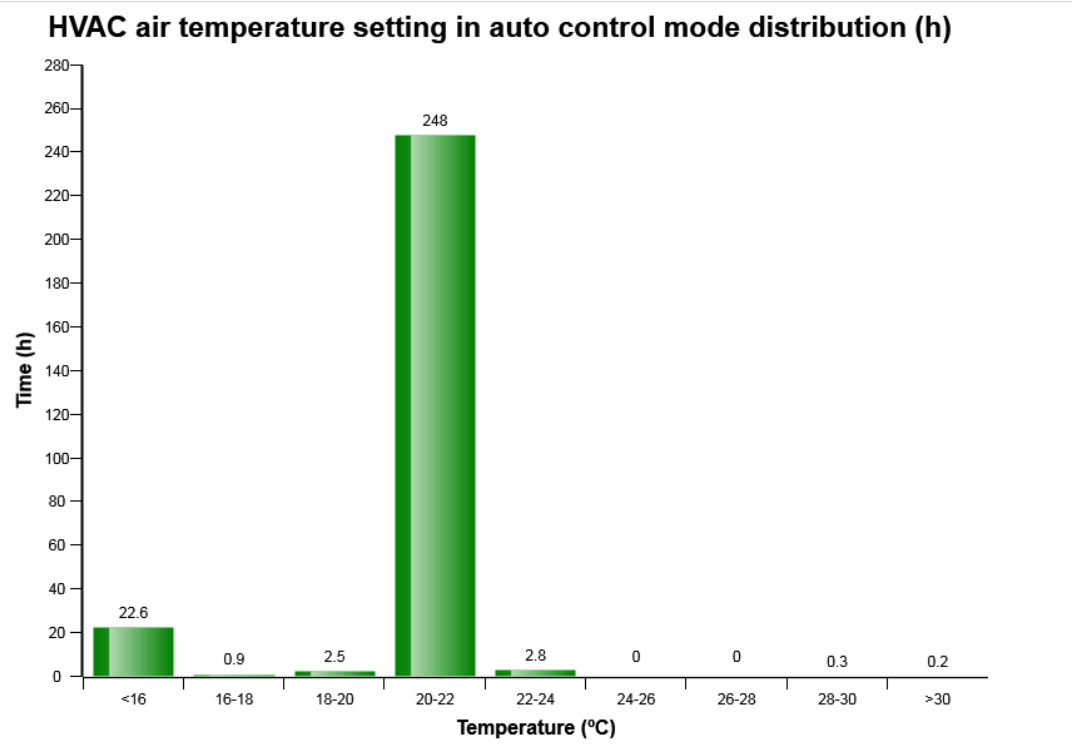
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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.

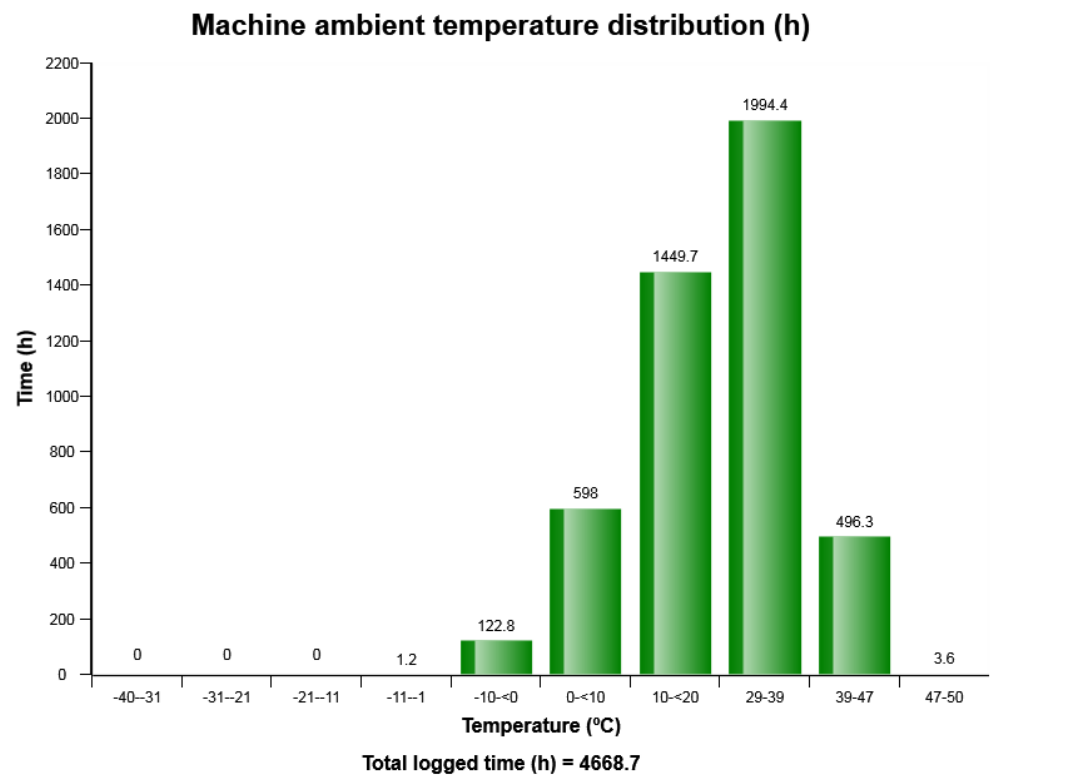
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

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

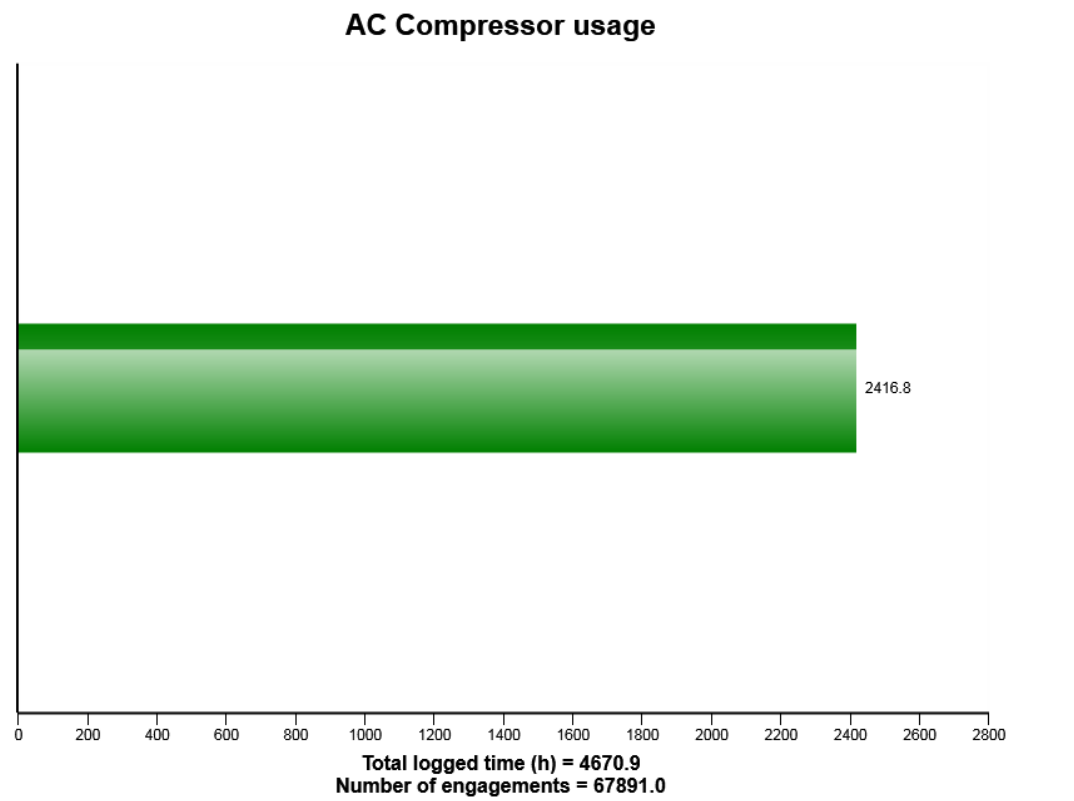
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

The graph shows the total time of AC compressor engagement.

Explanation:

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

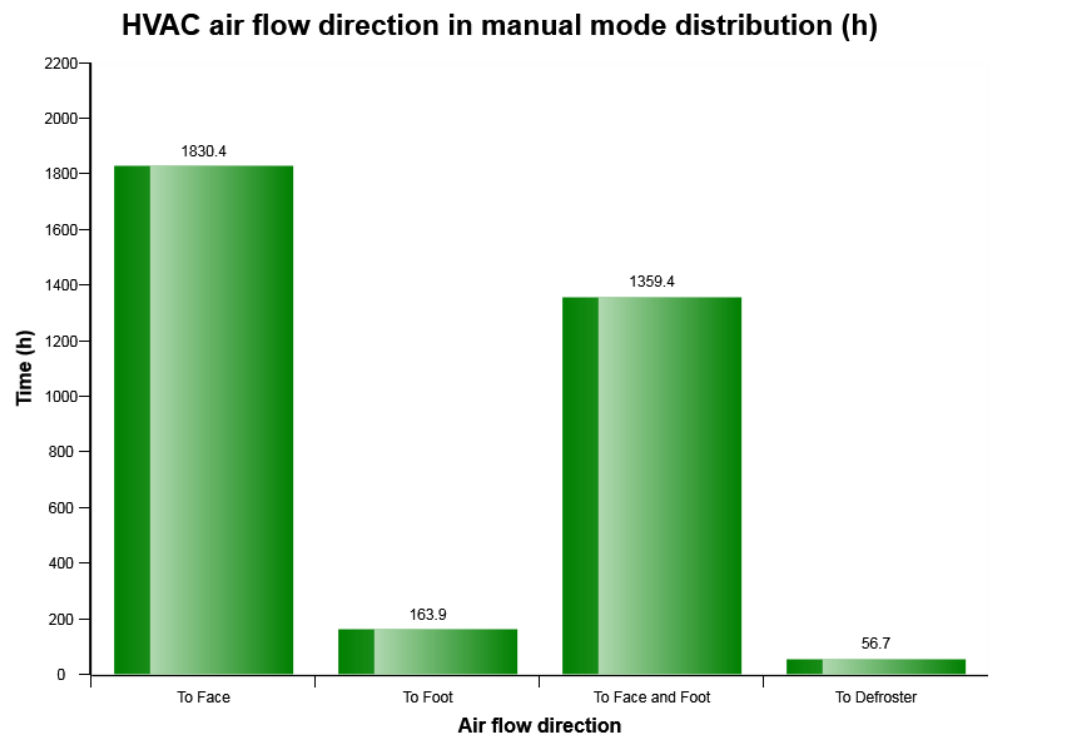
Under the graph the total engine running time (in hours) is displayed.

Total number of AC compressor activations is also displayed.

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

-

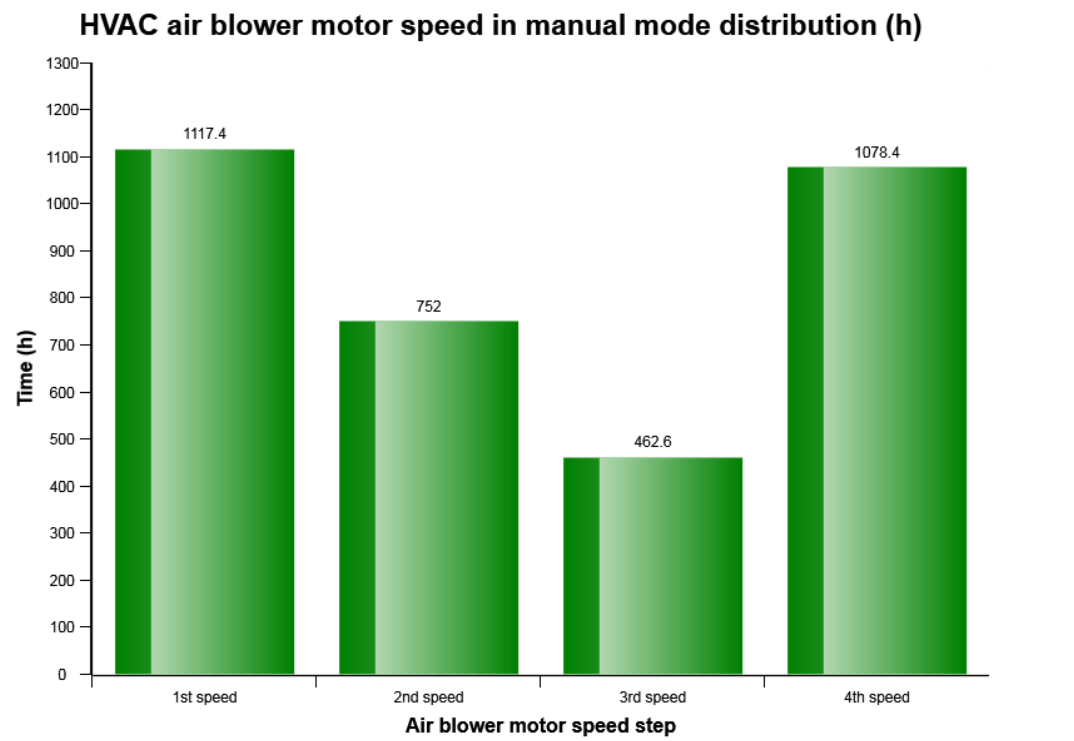
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



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
EC380D	210601	4662.7	10/25/2016



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
EC380D	210601	4662.7	10/25/2016

AC High Pressure
Total number of occurences = 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 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
EC380D	210601	4662.7	10/25/2016

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 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
EC380D	210601	4662.7	10/25/2016

AC System Cut Out Pressure
Total number of occurences = 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 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.

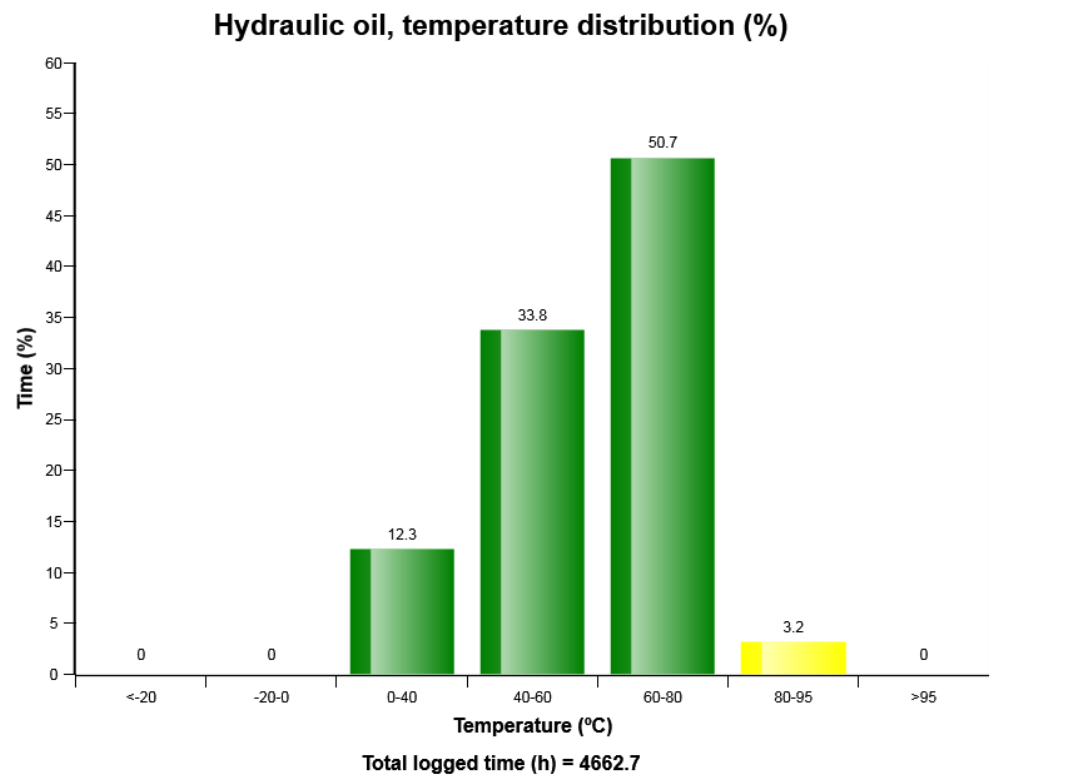
Extreme value：

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
EC380D	210601	4662.7	10/25/2016



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

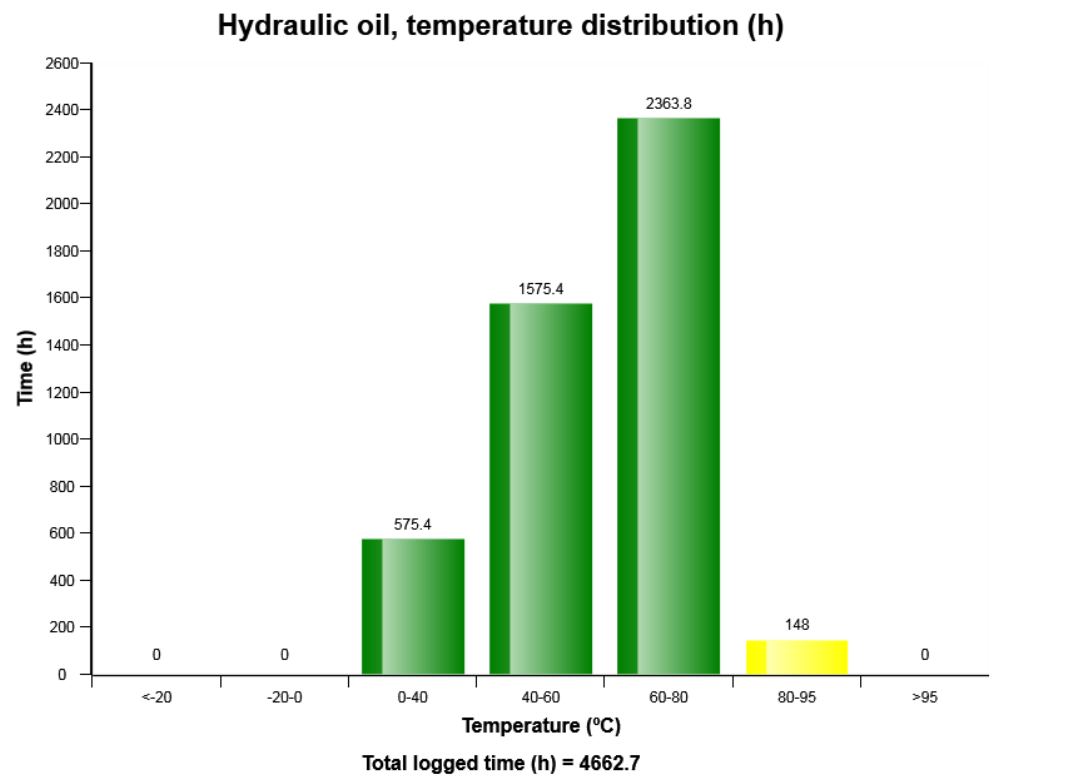
region.

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
EC380D	210601	4662.7	10/25/2016



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

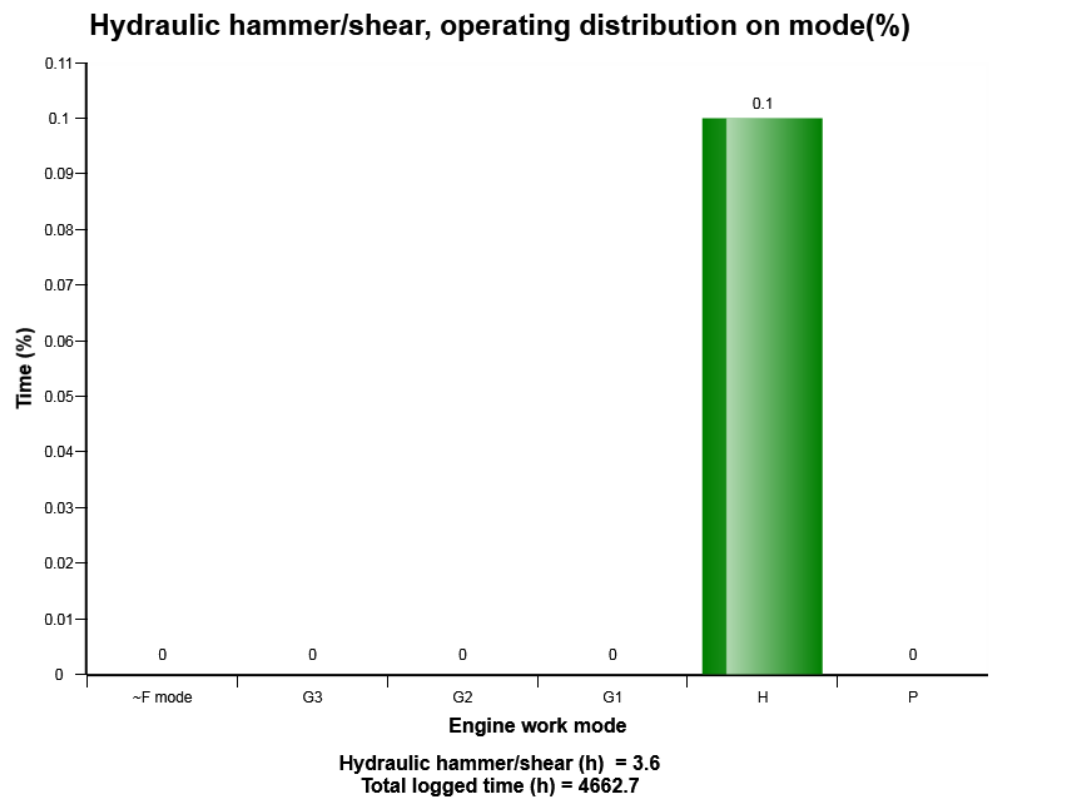
region.

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
EC380D	210601	4662.7	10/25/2016



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

F1= Fine control 1

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

G3 = General 3

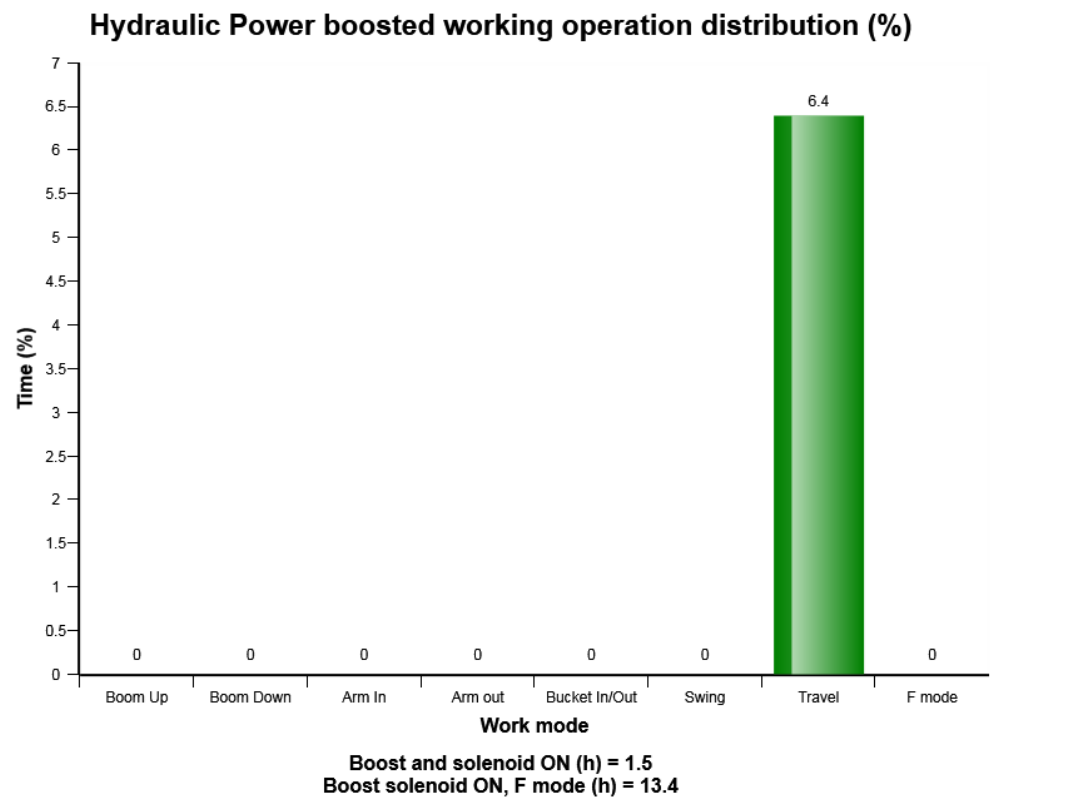
G2 = General 2

G1 = General 1

H = Heavy Duty

P = Power max

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016

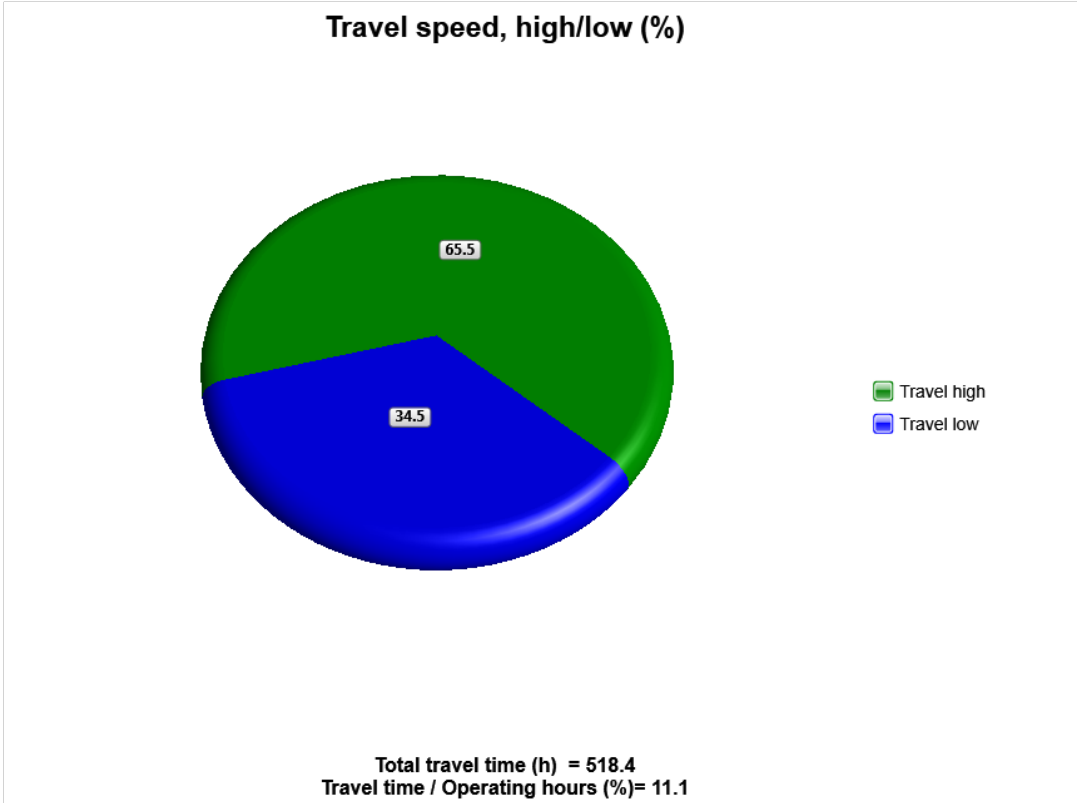


Definition:

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
EC380D	210601	4662.7	10/25/2016



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
EC380D	210601	4662.7	10/25/2016

High hydraulic oil temperature
Total number of occurences = 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 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.

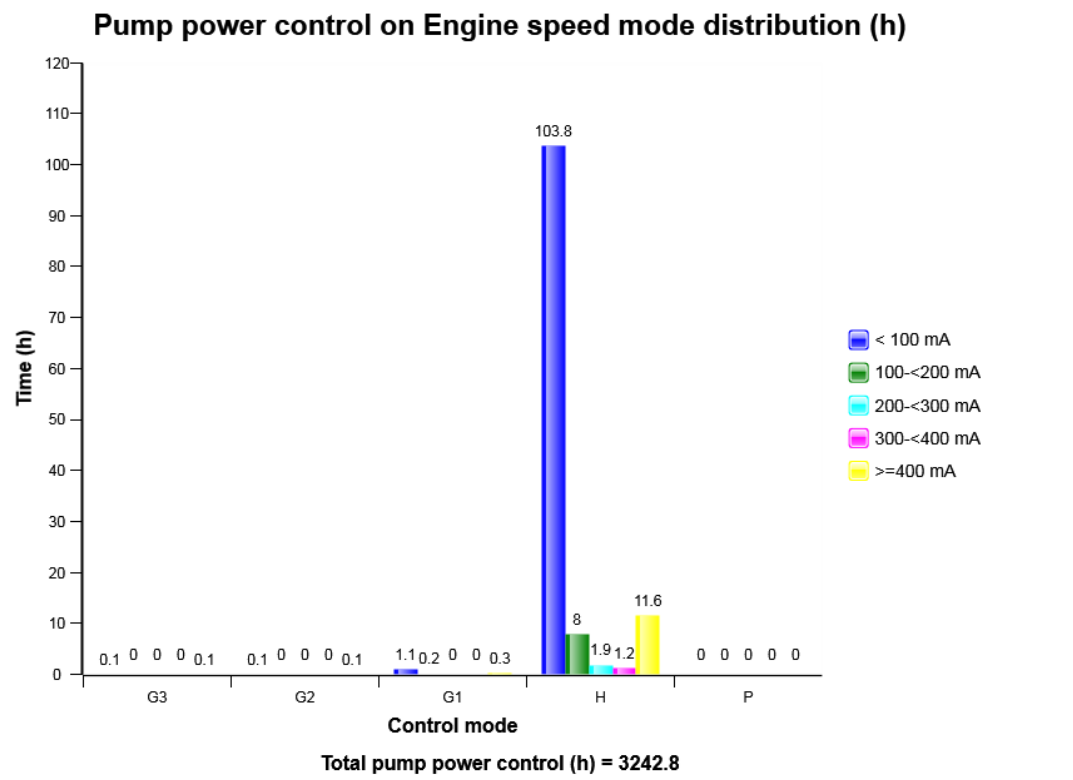
Extreme value：

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

Criteria：

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

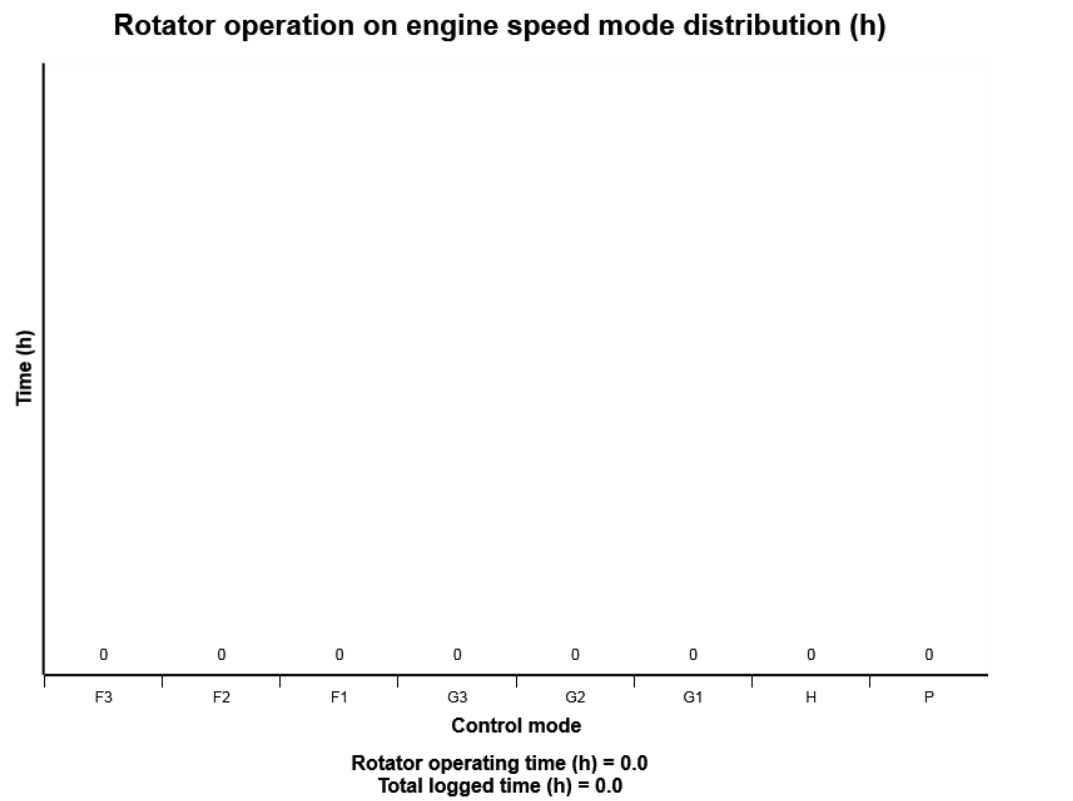
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

The diagram describes the distribution of pump power control current operation on each engine mode
.

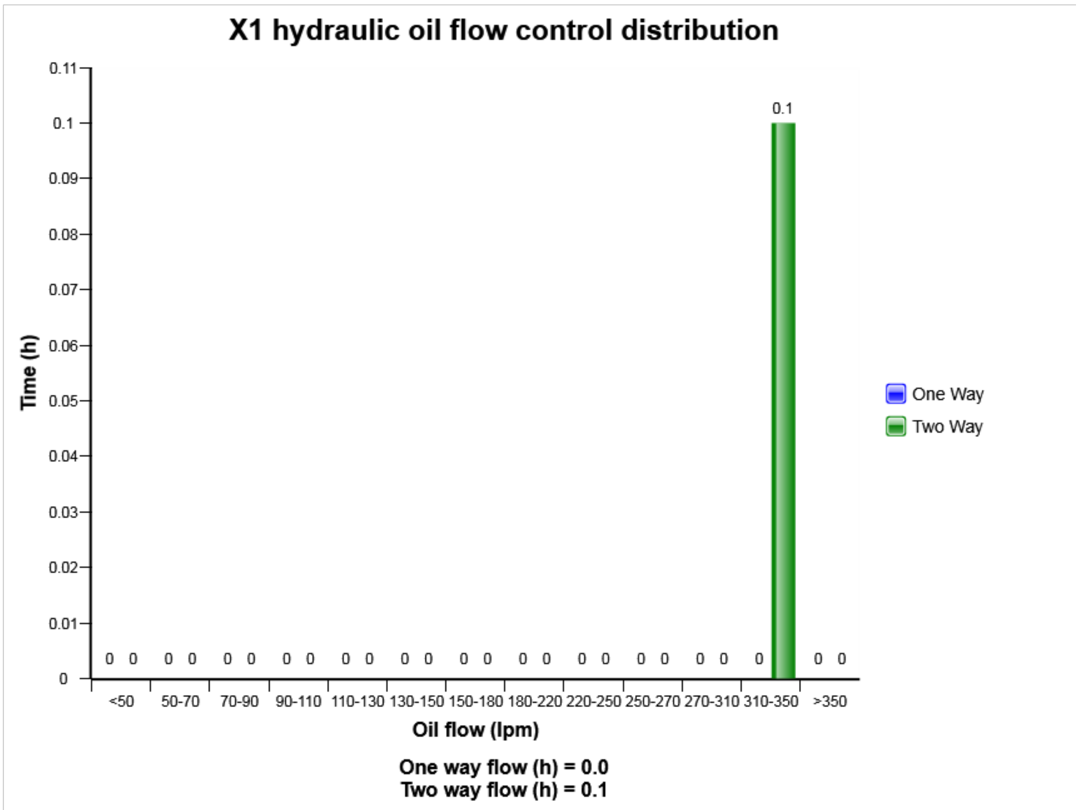
Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC380D	210601	4662.7	10/25/2016



Definition:

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