VOLVO CONSTRUCTION EQUIPMENT
MATRIS REPORT

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Company name	Dealer	Report Issuer
volvo	arnold machinery	

Contact name	Technician	Primary Application
mike seifert	CE Tech	Site Preparation

Site	Workorder	Ground Condition

MATRIS Reading, Summary / Recommendation

Machine model	SerialNo	Operating Hours	Reading Date
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Main equipment	Type	Equipment
	Track chain	
	Hydraulic Fluid	
	X3 piping	
	Main Attachment	
	Attachment Interface	
	X1 Piping	
	Hose Rupture Valve on Boom	
	Hose Rupture Valve on Arm	
	X1 return filter	

Machine model	SerialNo	Operating Hours	Reading Date
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Machine utilization (%)

Working ▢ No working ▢

79.5

20.5

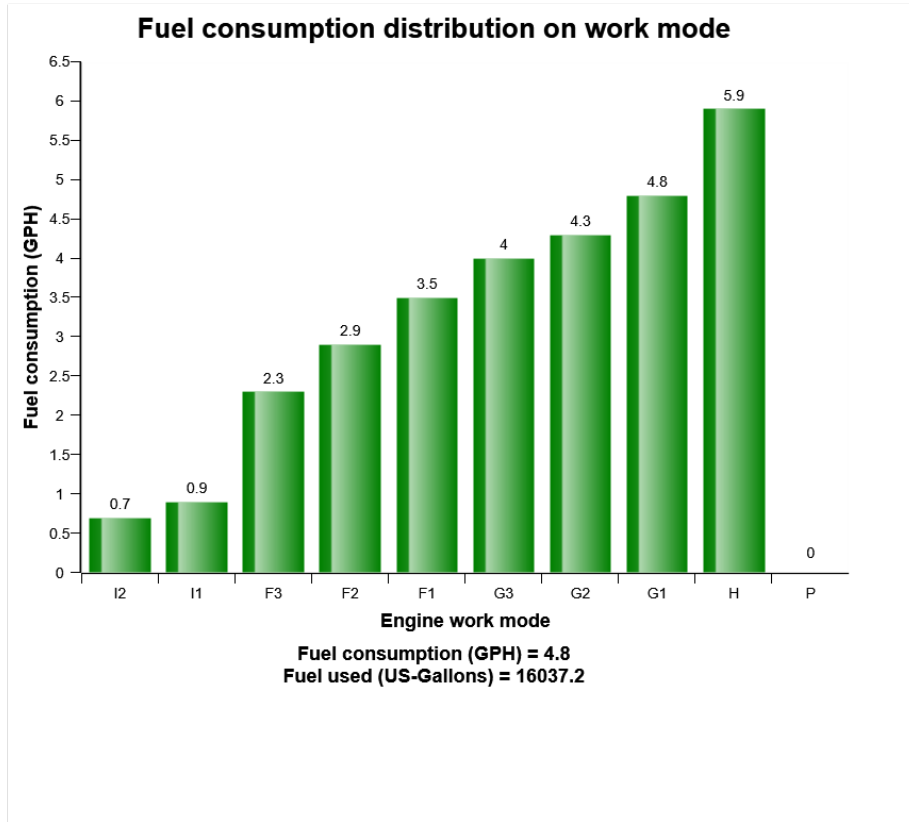**Total logged time (h) = 3350.8**
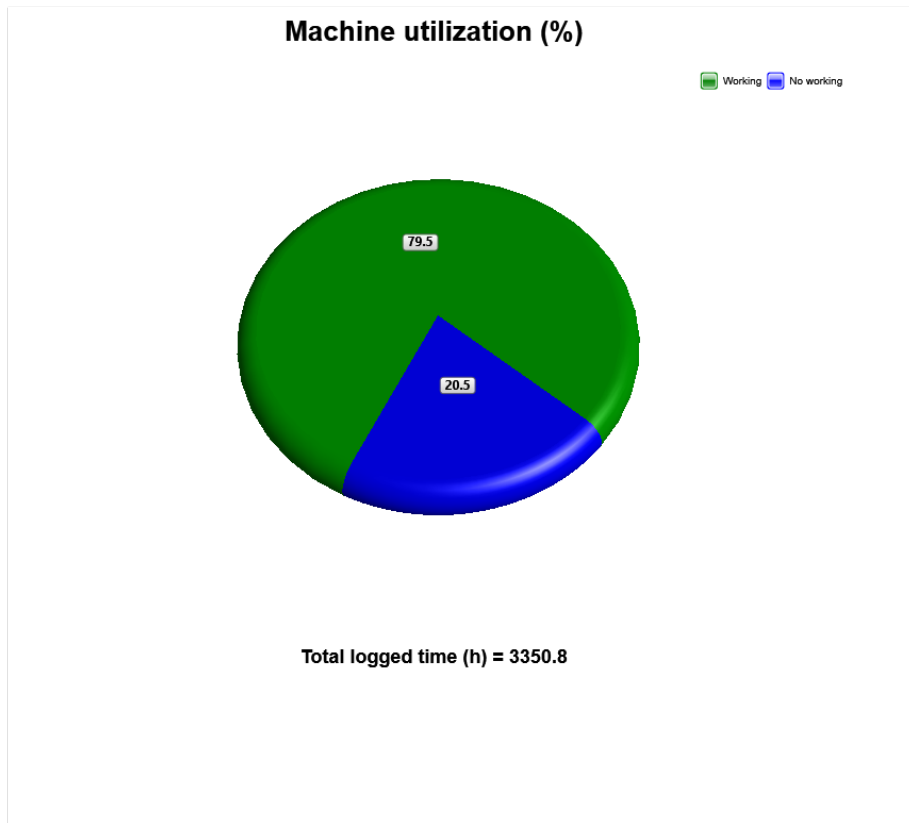
Definition:

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
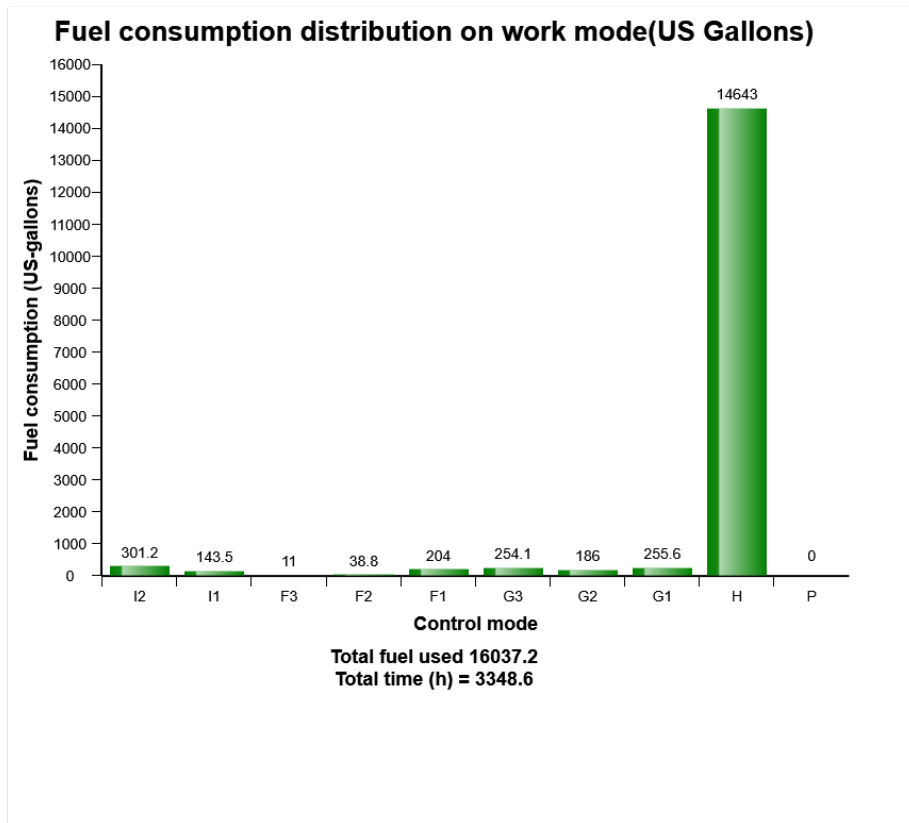
or operated .

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Fuel consumption distribution on work mode

Fuel consumption (GPH) — Y axis
Engine work mode — X axis

Mode	I2	I1	F3	F2	F1	G3	G2	G1	H	P
GPH	0.7	0.9	2.3	2.9	3.5	4	4.3	4.8	5.9	0

Fuel consumption (GPH) = 4.8
Fuel used (US-Gallons) = 16037.2

Machine model	SerialNo	Operating Hours	Reading Date
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Fuel consumption distribution on work mode(US Gallons)

Fuel consumption (US-gallons)

Control mode	I2	I1	F3	F2	F1	G3	G2	G1	H	P
	301.2	143.5	11	38.8	204	254.1	186	255.6	14643	0

Total fuel used 16037.2
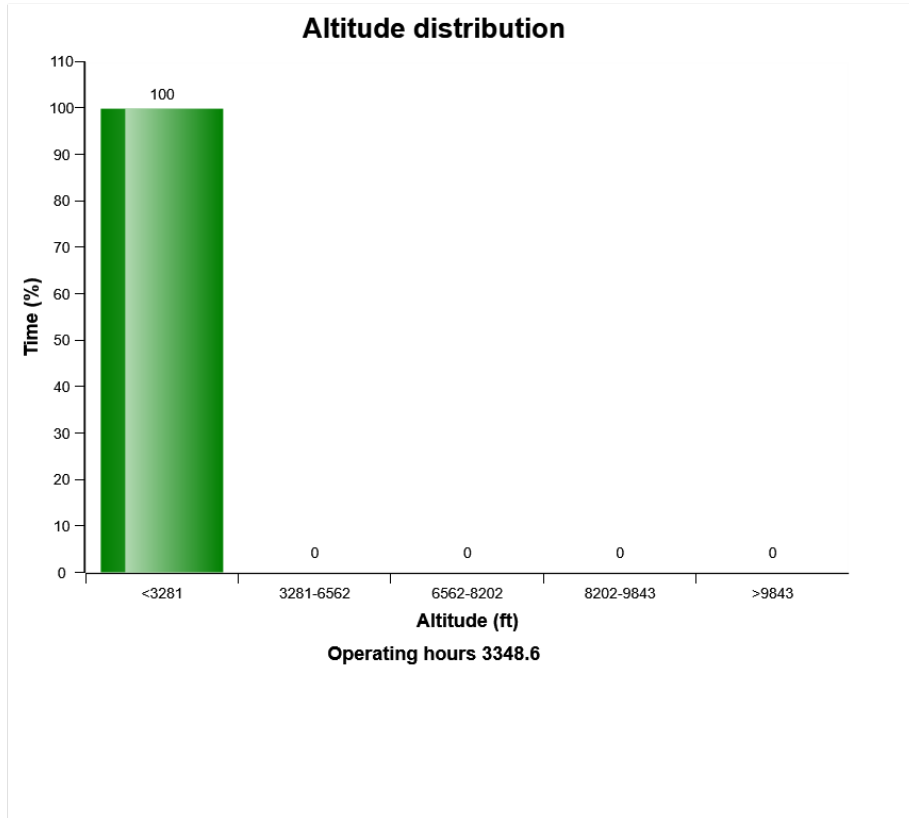Total time (h) = 3348.6

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.
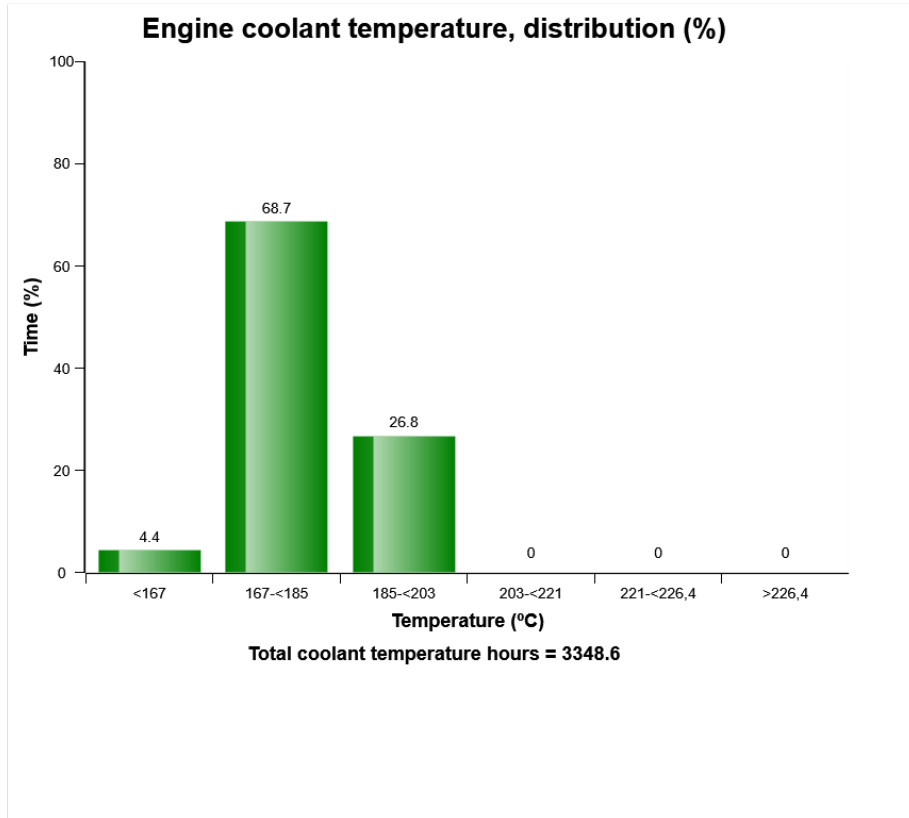
Machine model	SerialNo	Operating Hours	Reading Date
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Altitude distribution

Operating hours 3348.6

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Engine coolant temperature, distribution (%)

Time (%)

<167	4.4
167-<185	68.7
185-<203	26.8
203-<221	0
221-<226,4	0
>226,4	0

Temperature (°C)

Total coolant temperature hours = 3348.6

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
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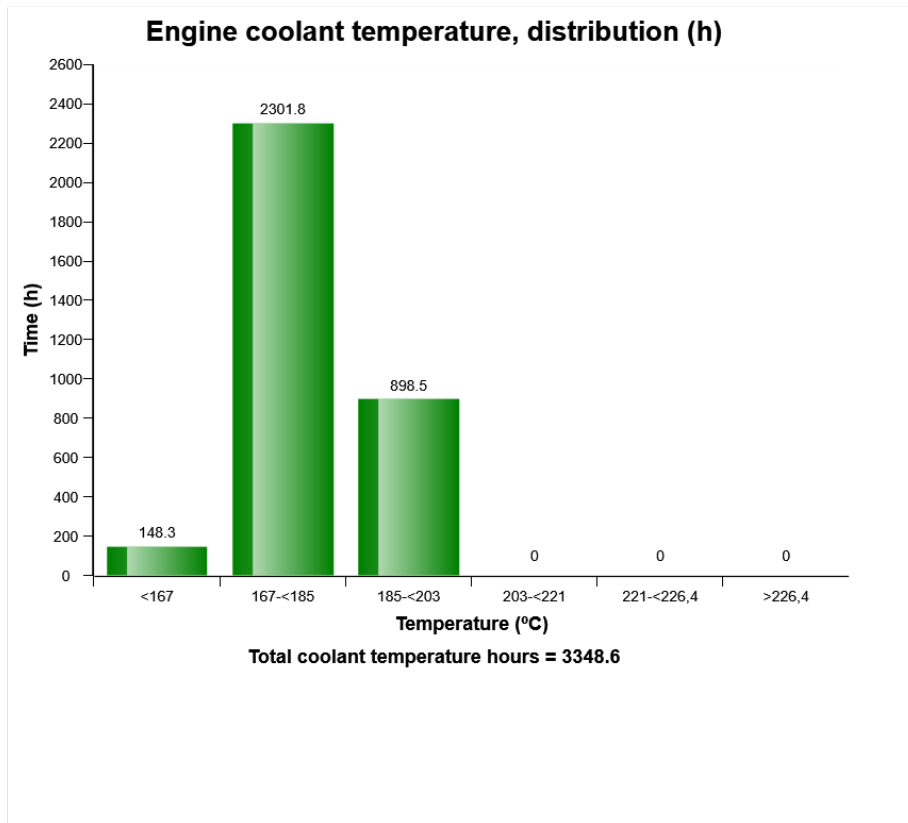
VOLVO

Machine model	SerialNo	Operating Hours	Reading Date
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Engine coolant temperature, distribution (h)

Time (h) vs Temperature (°C)

- <167: 148.3
- 167-<185: 2301.8
- 185-<203: 898.5
- 203-<221: 0
- 221-<226,4: 0
- >226,4: 0

Total coolant temperature hours = 3348.6

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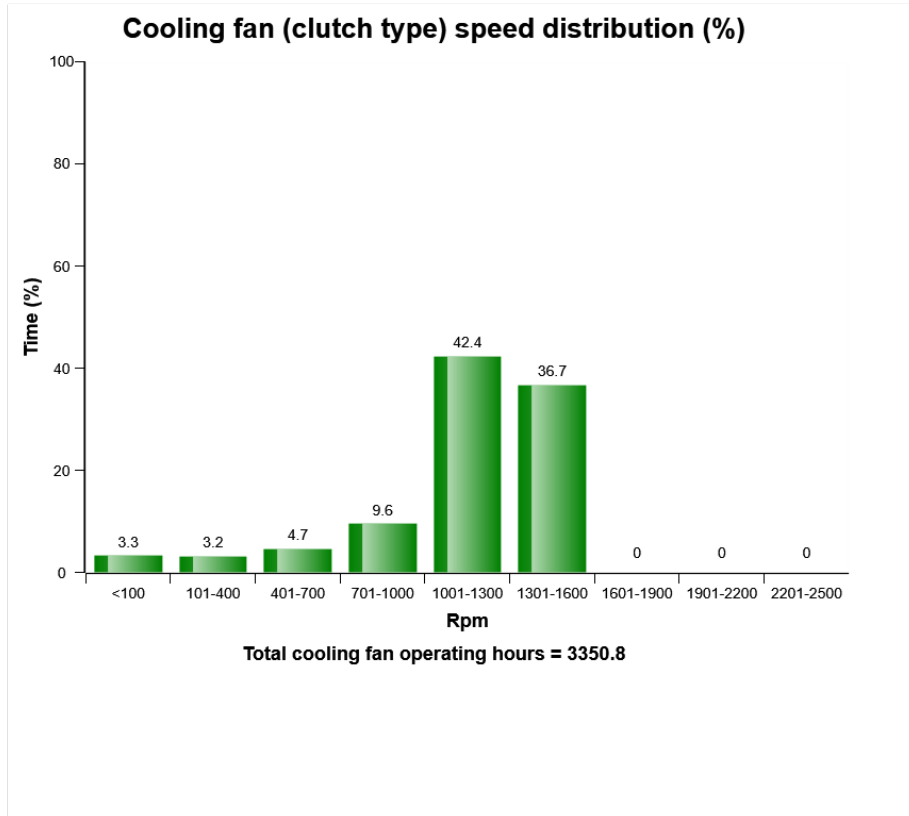
Yellow bar = High working temperature. It is normal to have some registrations in this region.

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
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Cooling fan (clutch type) speed distribution (%)

Total cooling fan operating hours = 3350.8

An error has occurred while processing HtmlTextBox 'htmlTextBox1':
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Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Cooling fan, Normal-Reverse rotation distribution (%)

Normal rotation Reverse rotation

100

0

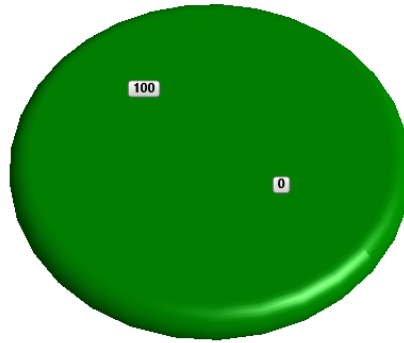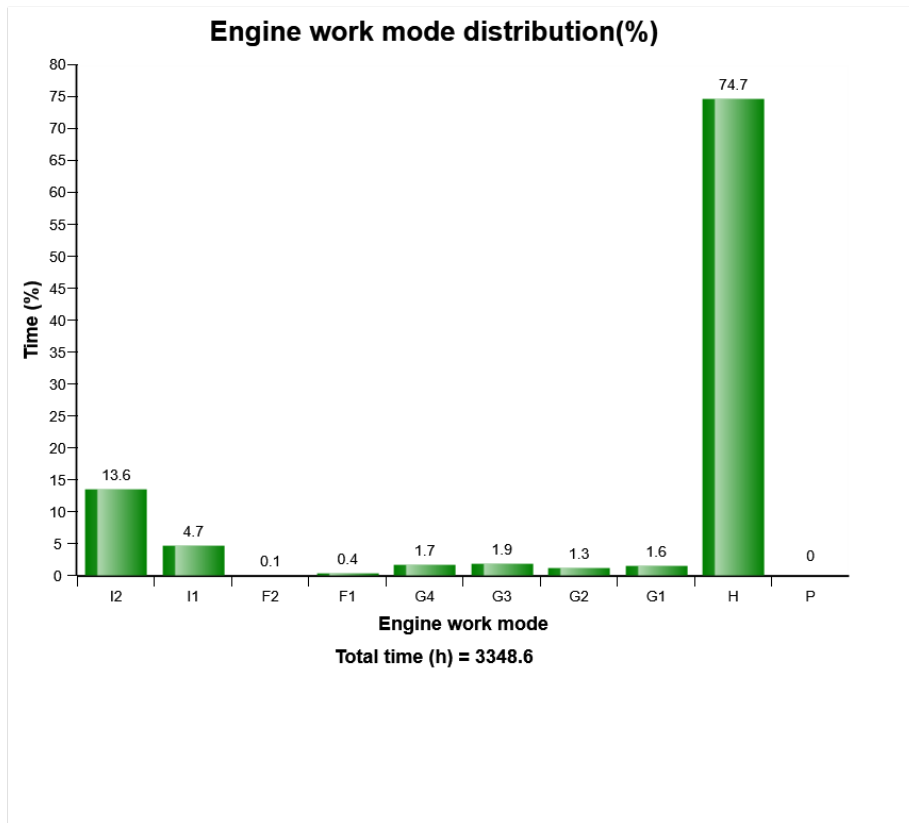**Total operating time (h) = 3350.8**

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Machine model	SerialNo	Operating Hours	Reading Date
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Engine boost air temperature distribution (h)

Total logged time (h) = 3350.8

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Engine work mode distribution(%)

Total time (h) = 3348.6
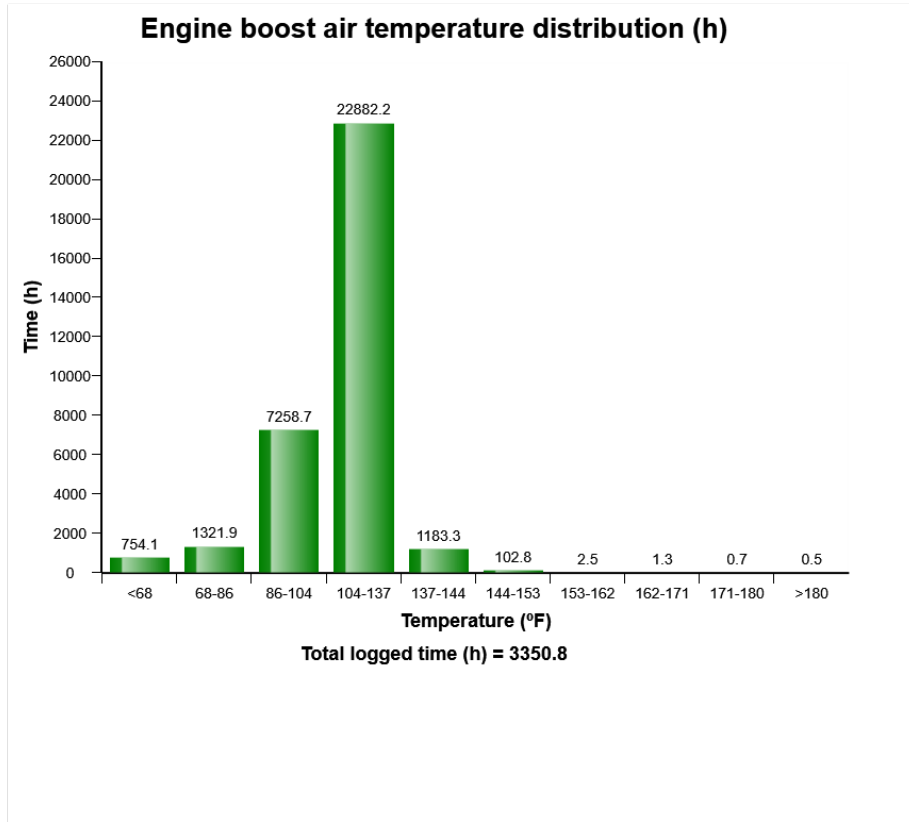
Definition:

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.

Machine model	SerialNo	Operating Hours	Reading Date
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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
EC250E	310308	3350.7	22/10/2019

Engine speed, distribution (h)

Total logged time (h) = 3348.6
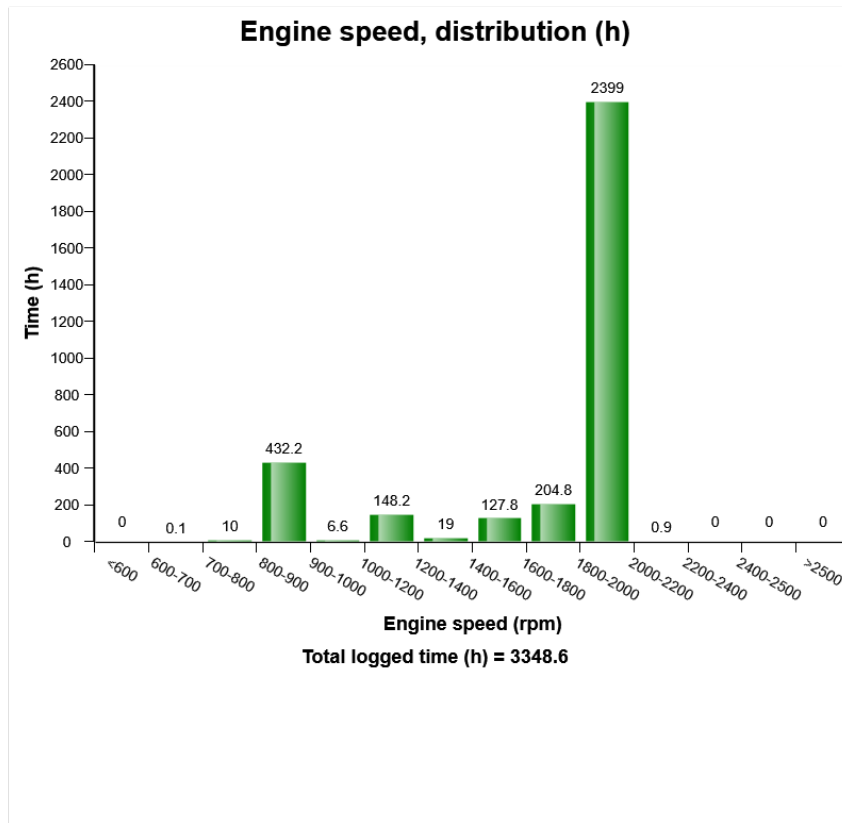
Definition:

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
EC250E	310308	3350.7	22/10/2019

Engine speed, distribution (%)

Engine speed (rpm)

Total logged time (h) = 3348.6
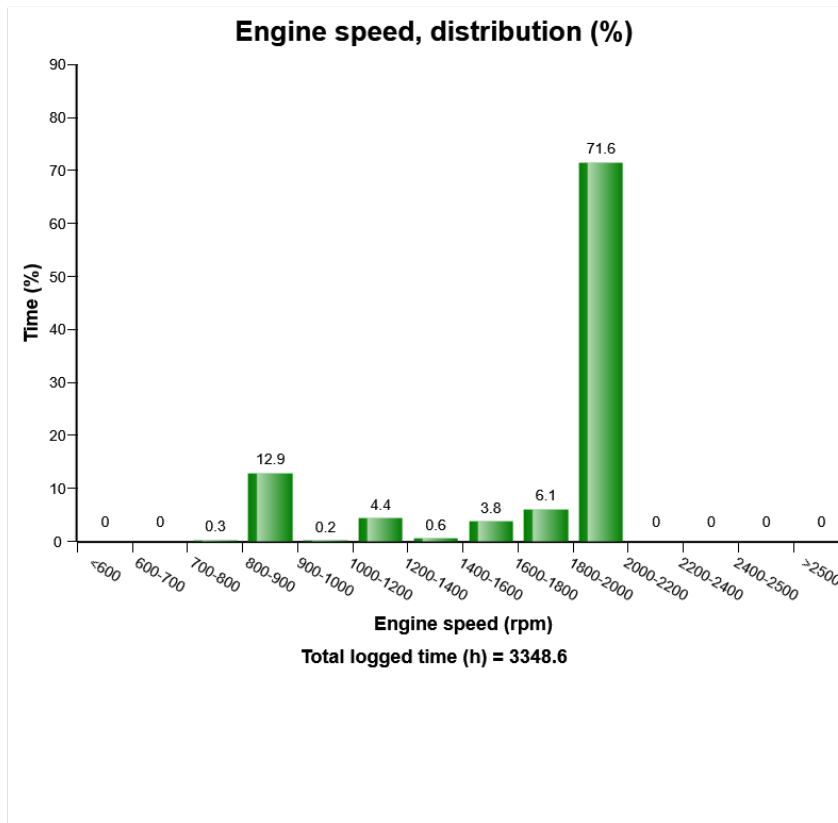
Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Average engine load per mode distribution (%)

Load (%)

65										
60										59
55										
50									50	
45							44	46		
40						39				
35					34					
30				30						
25										
20										
15	17	18								
10										
5										
0	I2	I1	F2	F1	G4	G3	G2	G1	H	P

Mode

Operating hours 3348.6

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Machine model	SerialNo	Operating Hours	Reading Date
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Engine load on "G,H,P" speed mode distribution (%)

Engine time on "G,H,P" (h)= 2717.7
Total engine time (h)= 3348.6
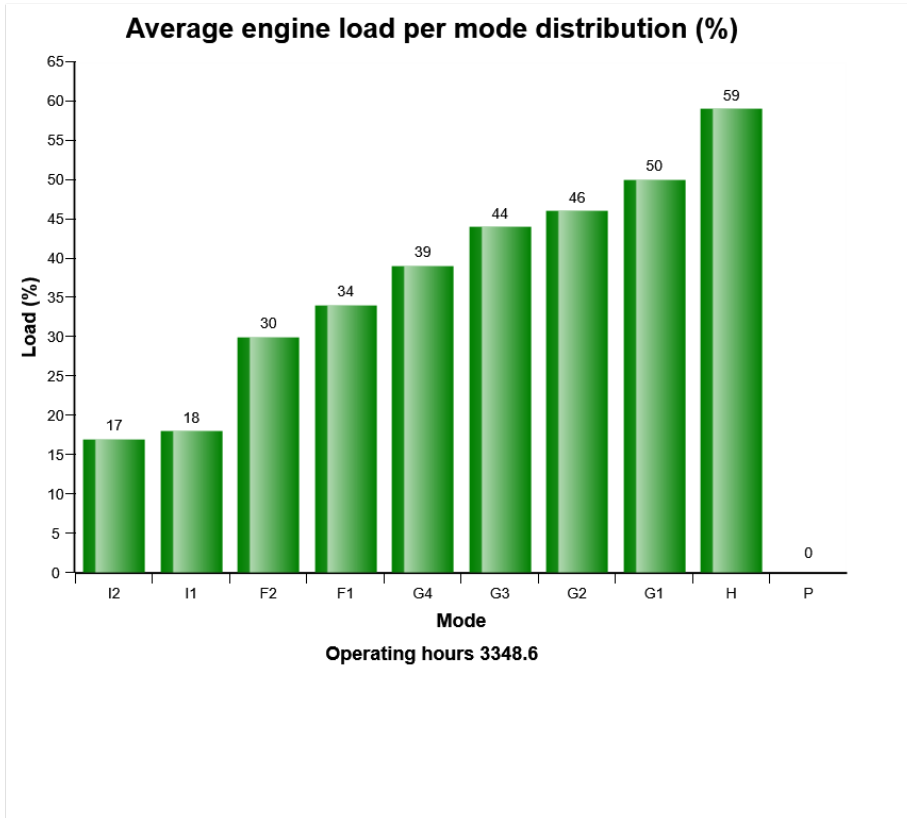
This graph shows the distribution of the engine load.

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
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Average number of starts per hour

0.3

0   0.02   0.04   0.06   0.08   0.1   0.12   0.14   0.16   0.18   0.2   0.22   0.24   0.26   0.28   0.3   0.32

Total number of starts: 1030

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
EC250E	310308	3350.7	22/10/2019

Green bar = Number of average starts per hour

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Idle time before shut down (%)

Low speed shutdown= 998
Total number of engine shutdowns= 1018
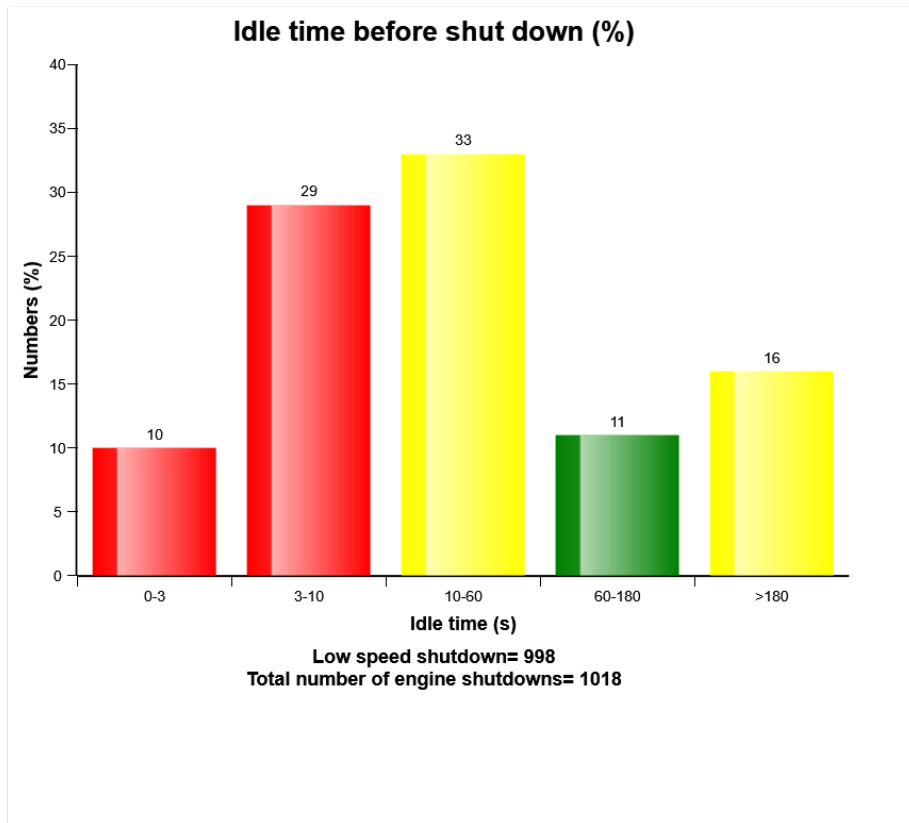
Definition:

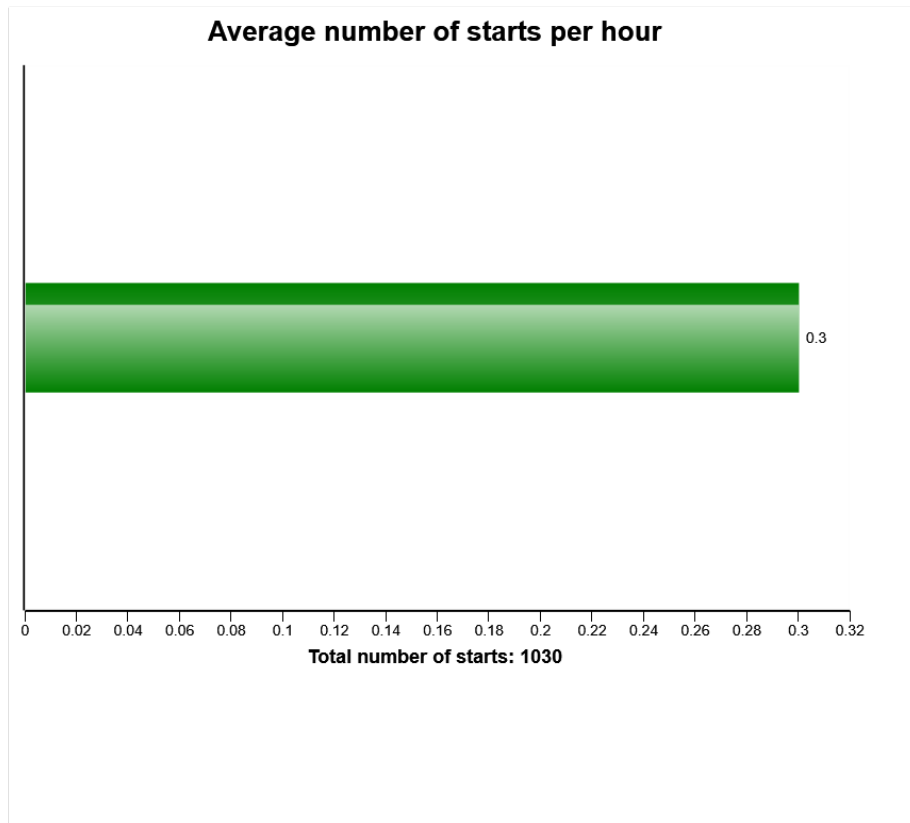This graph shows the distribution of delayed time at low idle speed until the engine is turned off.

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
EC250E	310308	3350.7	22/10/2019

Engine shut down numbers per engine speed mode distribution (%)

High speed stops = 20.0
Number of engine shut downs = 1018.0
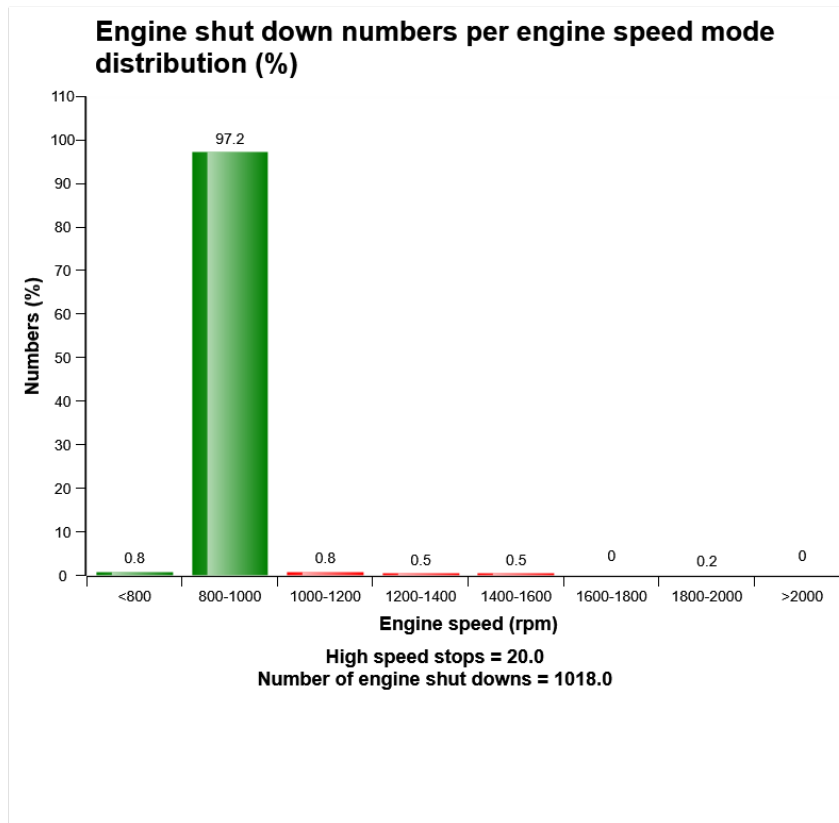
Definition:

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
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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.

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Start at different engine coolant temperatures (%)

Time (%)

0.0	0.0	0.3	56.0	43.7

Temperature (°F)

<-4   -4-14   14-32   32-104   >104

Total number of starts: 1030

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.

Machine model	SerialNo	Operating Hours	Reading Date
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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.

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

ECO mode distribution (%)

■ ECO mode OFF ■ ECO mode ON (h)

98.7

1.3

Total engine time (h)= 3350.8

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Low coolant level
Total number of occurences = 5

	Op hours	Year	Month	Day	Hour	Minute
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	0	2000	0	0	0	0
*	661	2001	10	11	7	7
*	2082	2001	8	16	6	54
*	2093	2001	8	17	6	56
*	2176	2001	9	7	15	25
*	3343	2002	8	28	13	49

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 (minutes)
0
0
0
0
0
0

| 0 |

| 0 |

| 0 |

| 0 |

| 0 |

| 0 |

| 0 |

| 0 |

| 0 |

| 2 |

| 4 |

| 6 |

| 1 |

| 0 |

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

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

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
EC250E	310308	3350.7	22/10/2019

High Charge air temperature
Total number of occurences = 0

Op hours	Year	Month	Day	Hour	Minute	Duration (seconds)	Extreme (° F)
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	321
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32

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
EC250E	310308	3350.7	22/10/2019

Start at different engine coolant temperatures

Total number of starts: 1030

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.

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

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
EC250E	310308	3350.7	22/10/2019

Regeneration aborted
Total number of occurences = 14

	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
*	89	2001	6	14	8	12
*	90	2001	6	14	9	51
*	90	2001	6	14	9	1
*	189	2001	6	29	8	27
*	189	2001	6	29	8	7
*	189	2001	6	29	8	3
*	189	2001	6	29	8	34
*	190	2001	6	29	8	40
*	190	2001	6	29	8	41
*	380	2001	8	19	15	0
*	2027	2001	8	4	11	8
*	2729	2001	12	28	16	57
*	2729	2001	12	28	17	28
*	2735	2001	12	29	12	33

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

Reason
0
0
0
0
0
0
2
1
2
2
2
2
2
2
2
2
2
2
2
2

Machine model	SerialNo	Operating Hours	Reading Date
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Regeneration ignored
Total number of occurences = 26

	Op hours	Year	Month	Day	Hour	Minute
*	90	2001	6	14	9	27
*	90	2001	6	14	9	51
*	188	2001	6	29	7	17
*	189	2001	6	29	8	33
*	380	2001	8	19	14	57
*	380	2001	8	19	15	35
*	743	2001	10	21	15	13
*	1096	2001	1	7	11	7
*	1296	2001	3	8	11	28
*	1838	2001	7	4	11	51
*	1839	2001	7	4	12	40
*	1848	2001	7	5	12	52
*	2025	2001	8	4	9	14
*	2028	2001	8	4	11	43
*	2113	2001	8	19	8	39
*	2176	2001	9	7	15	16
*	2728	2001	12	28	16	11
*	2729	2001	12	29	6	56
*	2739	2002	1	11	7	9
*	3296	2002	5	25	7	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.

Duration (min)
5
0
75
8
36
5
114
35
74
46
270
49
138
337
46
45
77
598
337
63

Regeneration duration
Total number of occurences = 30

	Op hours	Year	Month	Day	Hour	Minute
*	189	2001	6	29	8	34
*	189	2001	6	29	8	21
*	189	2001	6	29	8	13
*	189	2001	6	29	8	6
*	380	2001	8	19	15	35
*	380	2001	8	19	14	58
*	744	2001	10	21	16	23
*	1096	2001	1	7	11	7
*	1297	2001	3	8	11	57
*	1838	2001	7	4	11	59
*	1839	2001	7	4	12	40
*	1849	2001	7	5	12	56
*	2027	2001	8	4	11	5
*	2028	2001	8	4	12	2
*	2113	2001	8	19	8	39
*	2176	2001	9	7	15	16
*	2729	2001	12	28	16	56
*	2734	2001	12	29	12	0
*	2744	2002	1	11	12	0
*	3296	2002	5	25	7	31

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.

Duration (min)
8
12
5
6
4
36
45
35
45
38
23
45
3
35
46
45
32
35
45
45

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

High engine coolant temperature
Total number of occurences = 0

Op hours	Year	Month	Day	Hour	Minute	Duration (seconds)	Extreme (° F)
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32

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.

HVAC Auto - Manual mode selection distribution (%)

Total logged time (h) = 3350.3
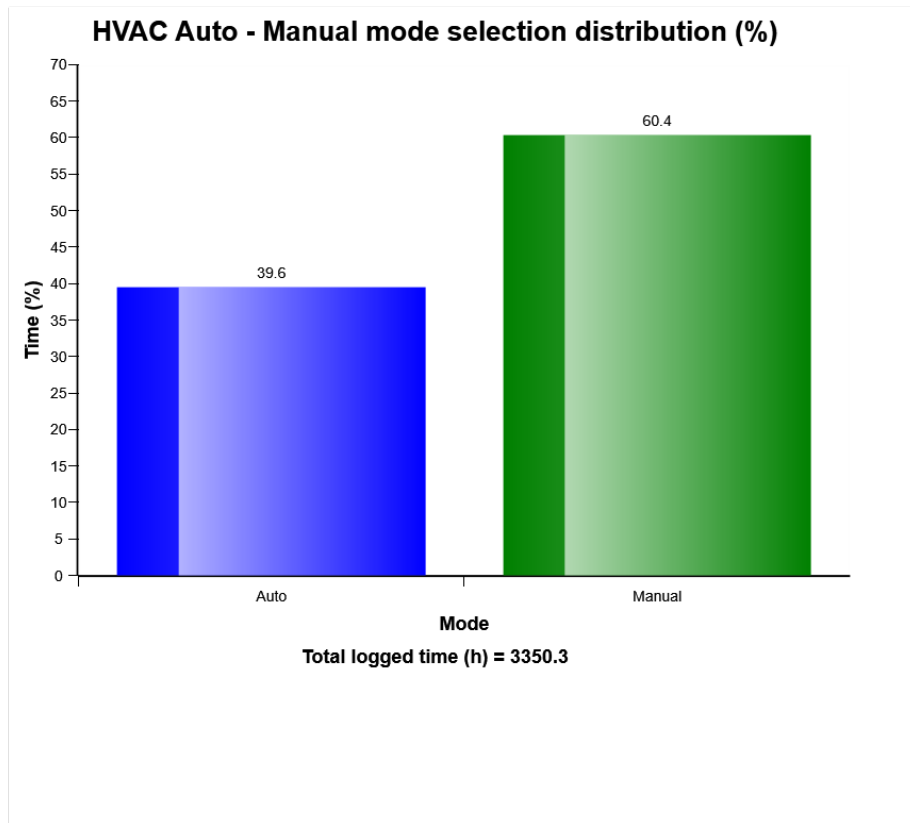
Definition:

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
EC250E	310308	3350.7	22/10/2019

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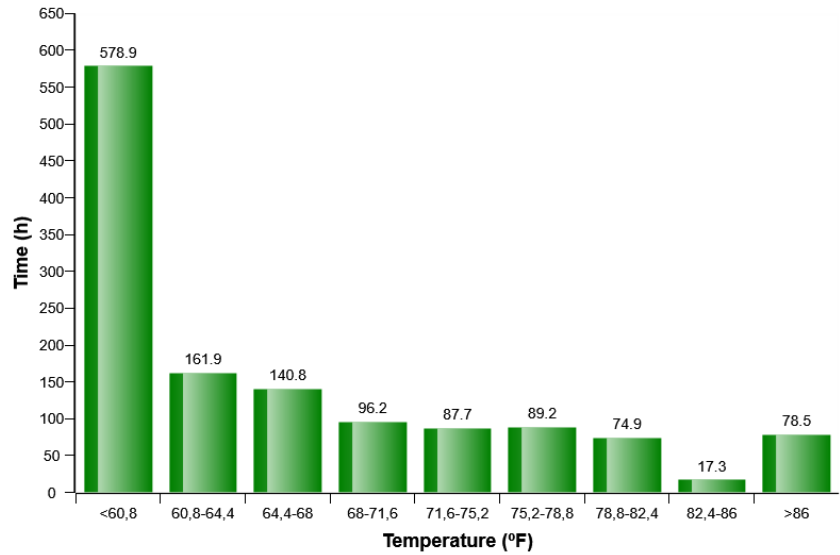
Definition:

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

Machine ambient temperature distribution (h)

Temperature (°F)

Total logged time (h) = 3350.4

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

AC Compressor usage

Total logged time (h) = 3350.3
Number of engagements = 75271.0
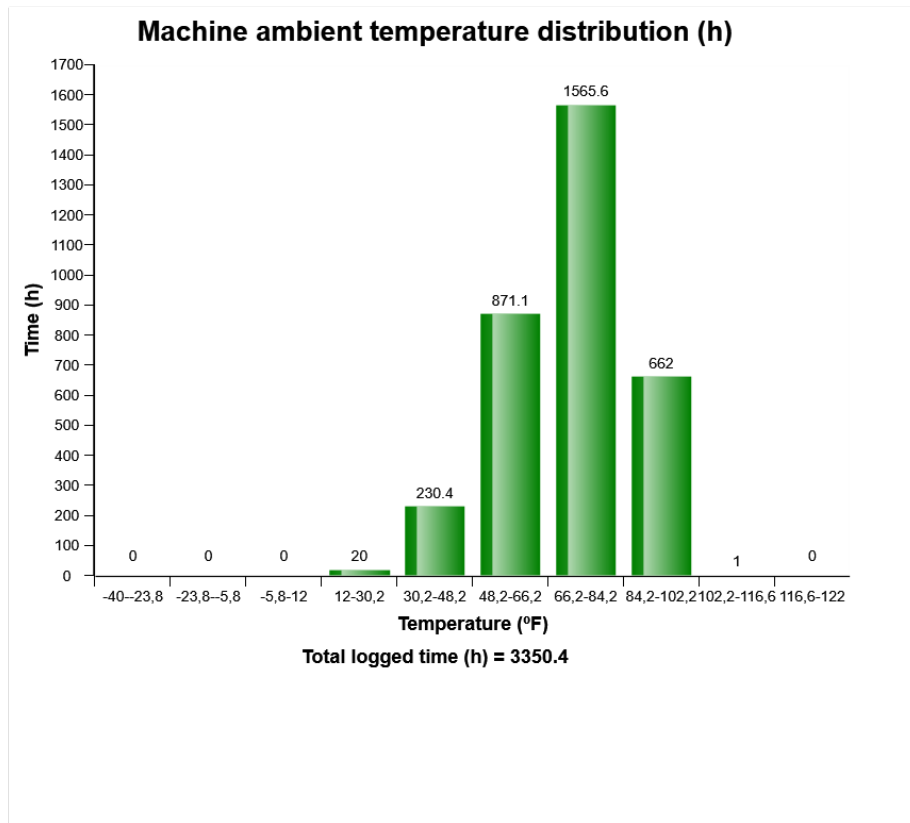
Definition:

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
EC250E	310308	3350.7	22/10/2019

-

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

AC High Pressure
Total number of occurences = 0

Op hours	Year	Month	Day	Hour	Minute	Duration (seconds)	Ambient temperature (°F)
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32

Definition   :

This type of table shows the latest occasions when a specific event has occurred. When a specified criteria is fulfilled a registration is made. Each table row corresponds to one occasion. Operating

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

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
EC250E	310308	3350.7	22/10/2019

AC System Cut Out Pressure
Total number of occurences = 0

Op hours	Year	Month	Day	0	Minute	Duration (sec)	Extreme (° F)
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32

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
EC250E	310308	3350.7	22/10/2019

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.

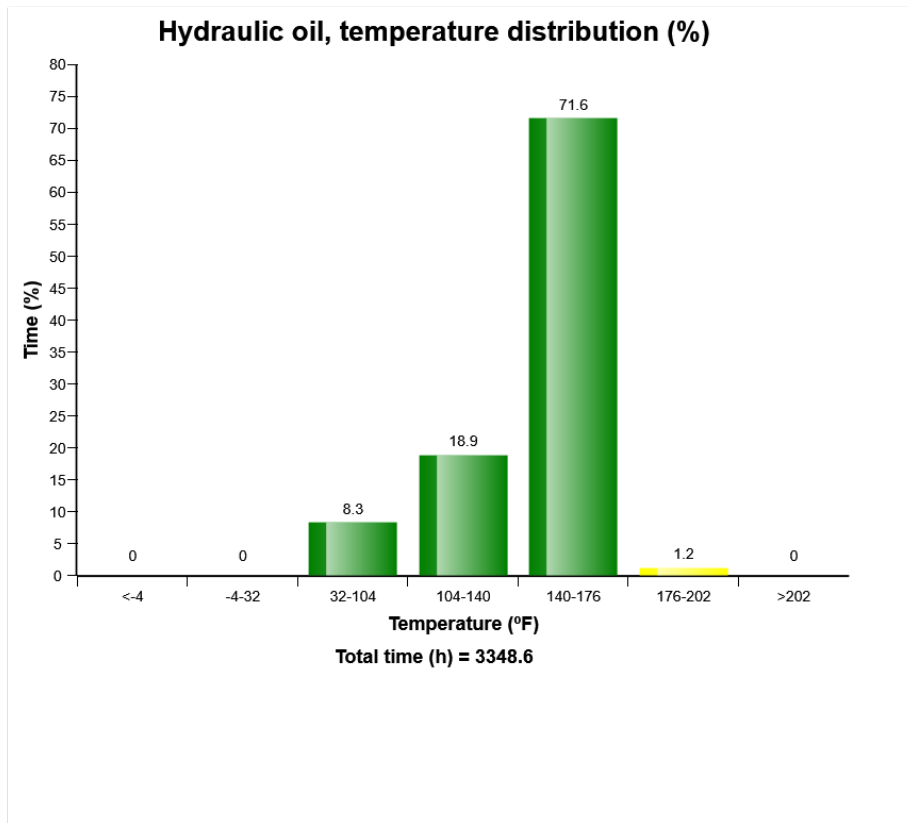The duration is counted as long as the criteria is fulfilled.

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
EC250E	310308	3350.7	22/10/2019

Hydraulic oil, temperature distribution (%)

Time (%) — Y-axis

Temperature (°F)	Value
<-4	0
-4-32	0
32-104	8.3
104-140	18.9
140-176	71.6
176-202	1.2
>202	0

Temperature (°F)

Total time (h) = 3348.6

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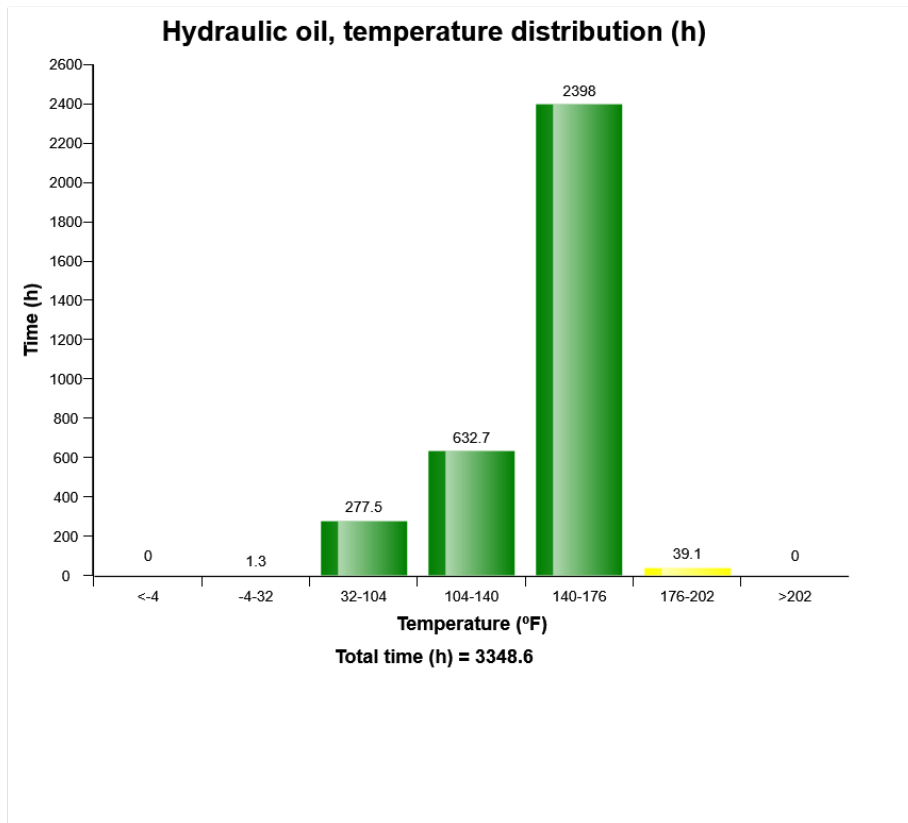
Yellow bar = High working temperature. It is normal to have some registrations in this region.

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
EC250E	310308	3350.7	22/10/2019

Hydraulic oil, temperature distribution (h)

Y-axis: Time (h)
X-axis: Temperature (°F)

Temperature (°F)	Time (h)
<-4	0
-4-32	1.3
32-104	277.5
104-140	632.7
140-176	2398
176-202	39.1
>202	0

Total time (h) = 3348.6

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
EC250E	310308	3350.7	22/10/2019

Green bar = Normal working temperature. The Major part of the registrations shall be in this region.
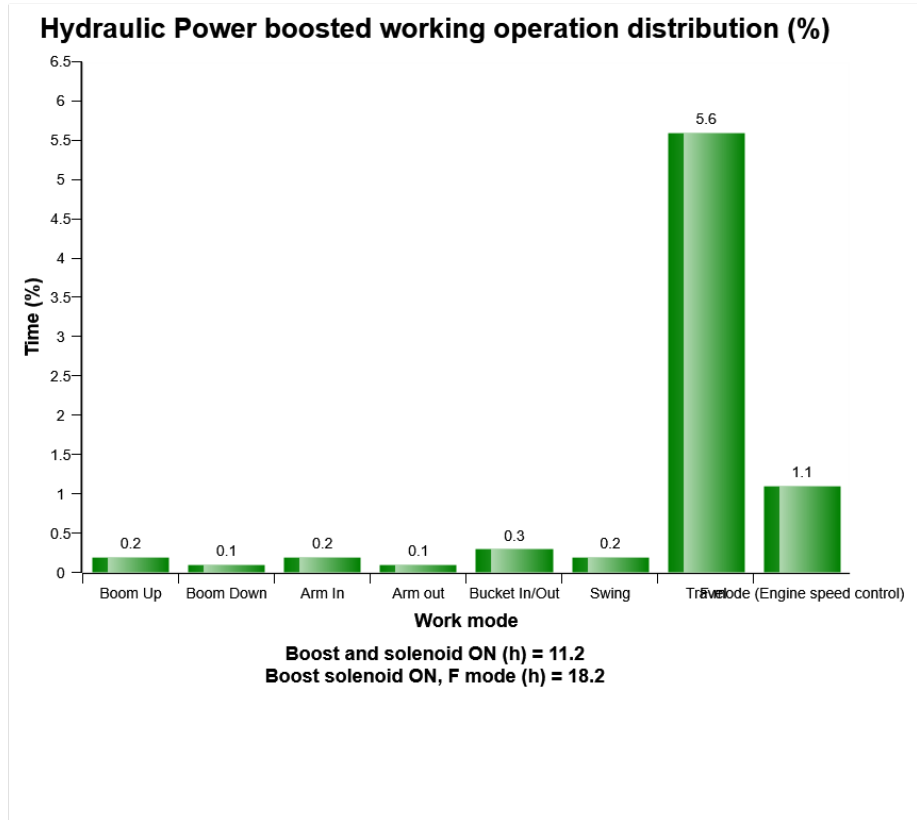
Yellow bar = High working temperature. It is normal to have some registrations in this region.

Red bar = Alarm.

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

Hydraulic Power boosted working operation distribution (%)

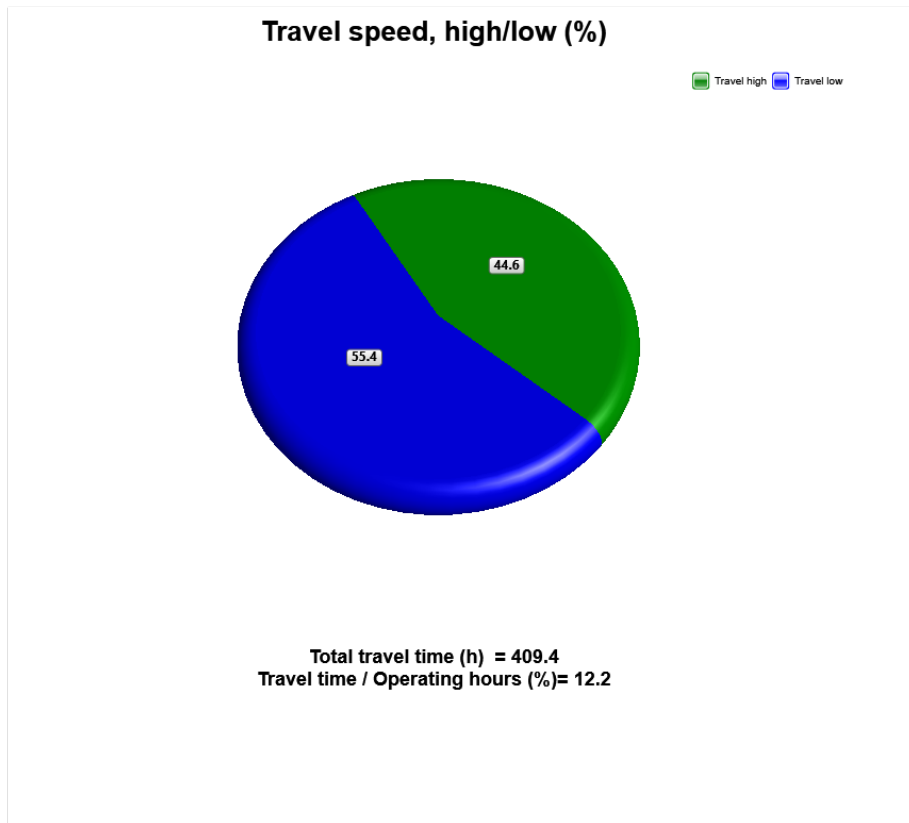Boost and solenoid ON (h) = 11.2
Boost solenoid ON, F mode (h) = 18.2

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
EC250E	310308	3350.7	22/10/2019

Travel speed, high/low (%)

Travel high Travel low

44.6

55.4

Total travel time (h) = 409.4
Travel time / Operating hours (%)= 12.2

Definition:

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

Blue sector: Travel switch in low position

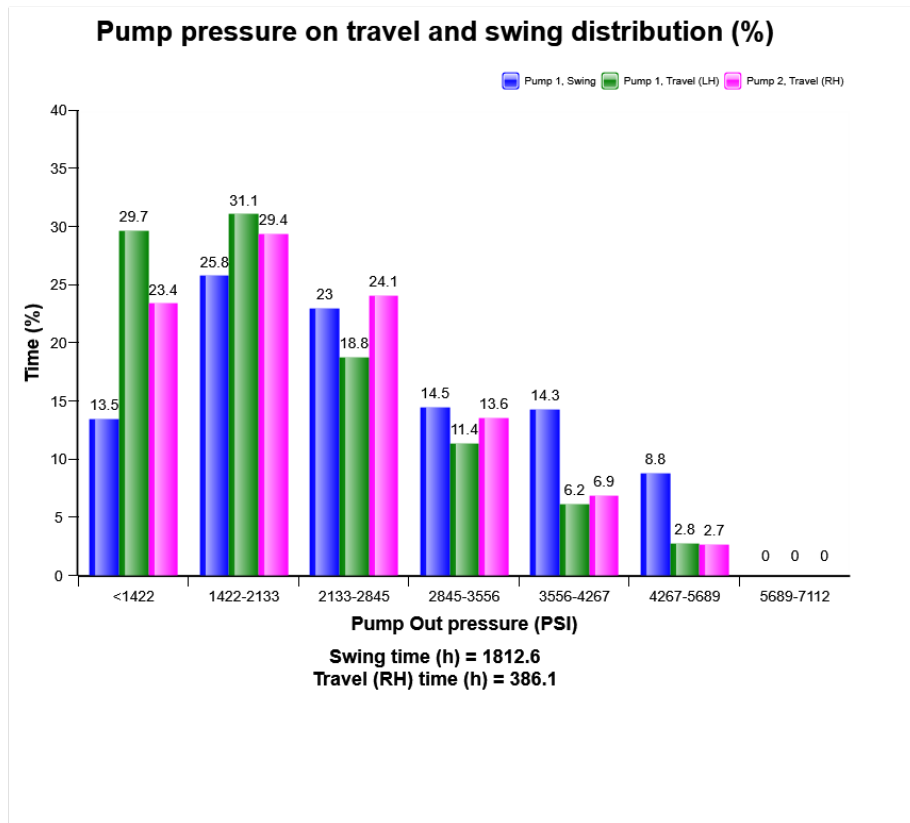Green sector: Travel switch in high position

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
EC250E	310308	3350.7	22/10/2019

Pump pressure on travel and swing distribution (%)

Legend: Pump 1, Swing | Pump 1, Travel (LH) | Pump 2, Travel (RH)

Y-axis: Time (%)
X-axis: Pump Out pressure (PSI)

Pump Out pressure (PSI)	Pump 1, Swing	Pump 1, Travel (LH)	Pump 2, Travel (RH)
<1422	13.5	29.7	23.4
1422-2133	25.8	31.1	29.4
2133-2845	23	18.8	24.1
2845-3556	14.5	11.4	13.6
3556-4267	14.3	6.2	6.9
4267-5689	8.8	2.8	2.7
5689-7112	0	0	0

Swing time (h) = 1812.6
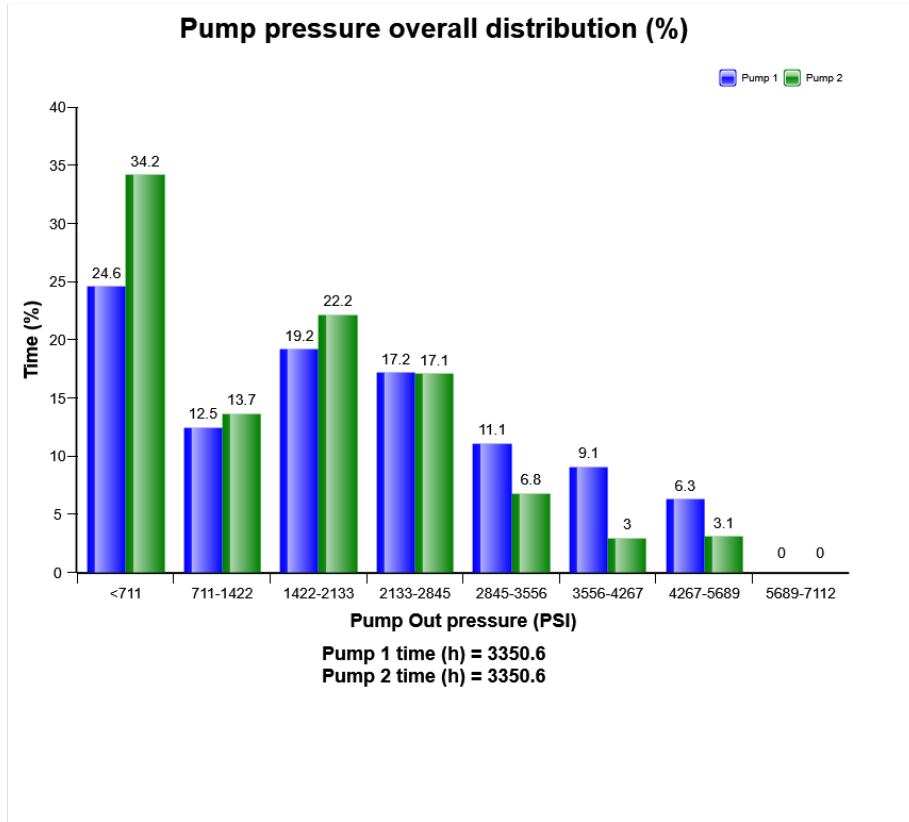**Travel (RH) time (h) = 386.1**

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.

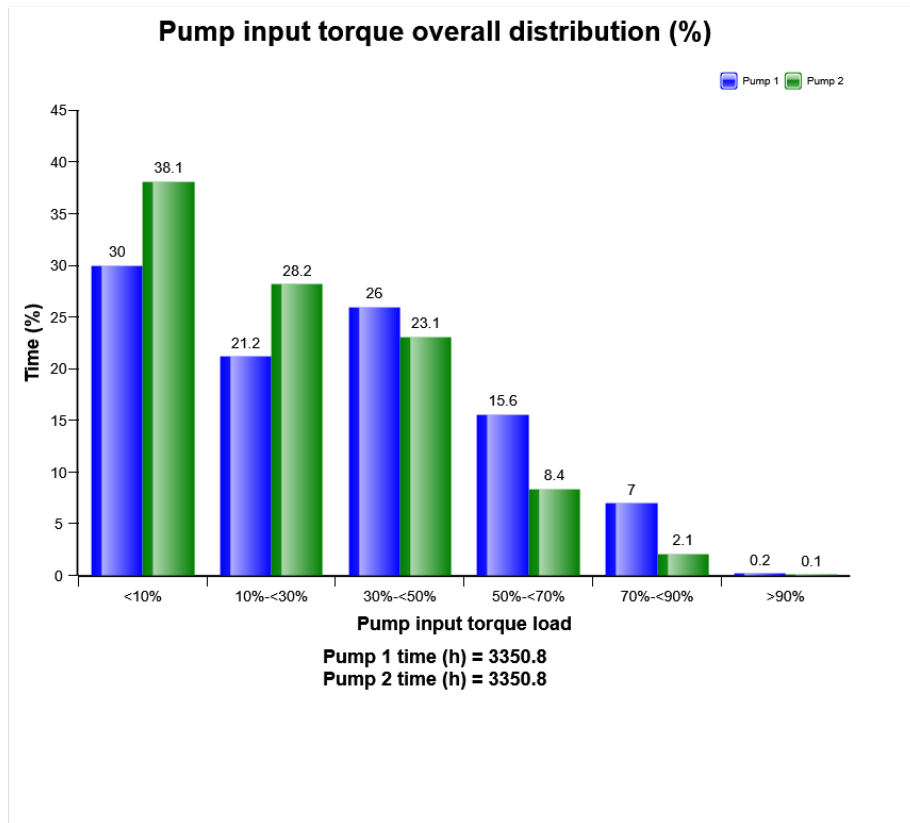| Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Pump pressure overall distribution (%)

Pump 1   Pump 2

Time (%) vs Pump Out pressure (PSI)

Pump Out pressure (PSI)	Pump 1	Pump 2
<711	24.6	34.2
711-1422	12.5	13.7
1422-2133	19.2	22.2
2133-2845	17.2	17.1
2845-3556	11.1	6.8
3556-4267	9.1	3
4267-5689	6.3	3.1
5689-7112	0	0

Pump 1 time (h) = 3350.6
Pump 2 time (h) = 3350.6

Definition:

The diagram describes Pump outlet pressure of 2 Pumps distribution.

Pump input torque overall distribution (%)
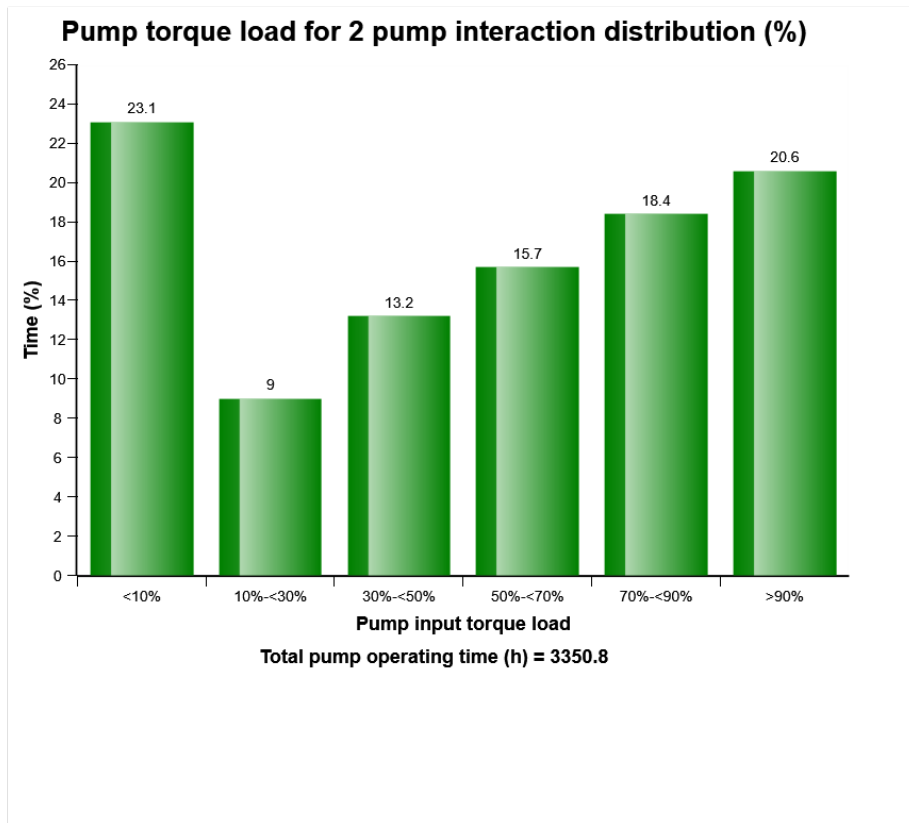
Pump 1 time (h) = 3350.8
Pump 2 time (h) = 3350.8

Definition:

The diagram describes Pump torque load of 2 Pumps distribution.

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Pump torque load for 2 pump interaction distribution (%)

Chart: Time (%) vs Pump input torque load

- <10%: 23.1
- 10%-<30%: 9
- 30%-<50%: 13.2
- 50%-<70%: 15.7
- 70%-<90%: 18.4
- >90%: 20.6

**Total pump operating time (h) = 3350.8**

Definition:

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

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Hydraulic working mode distribution (%)

Total logged time (h) = 3350.8
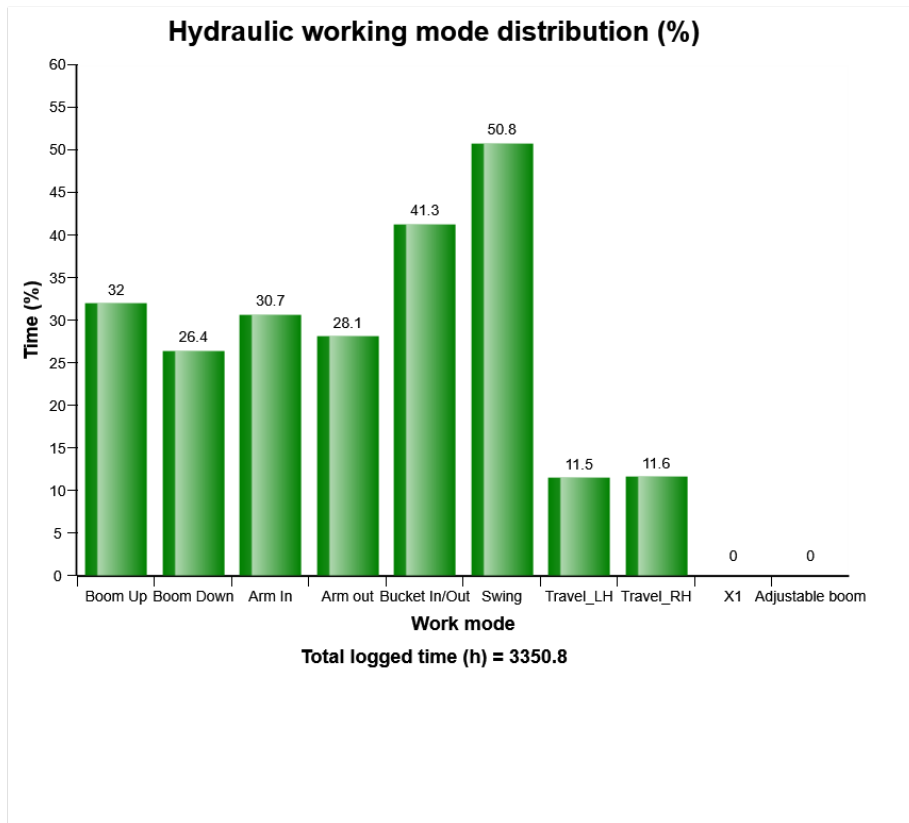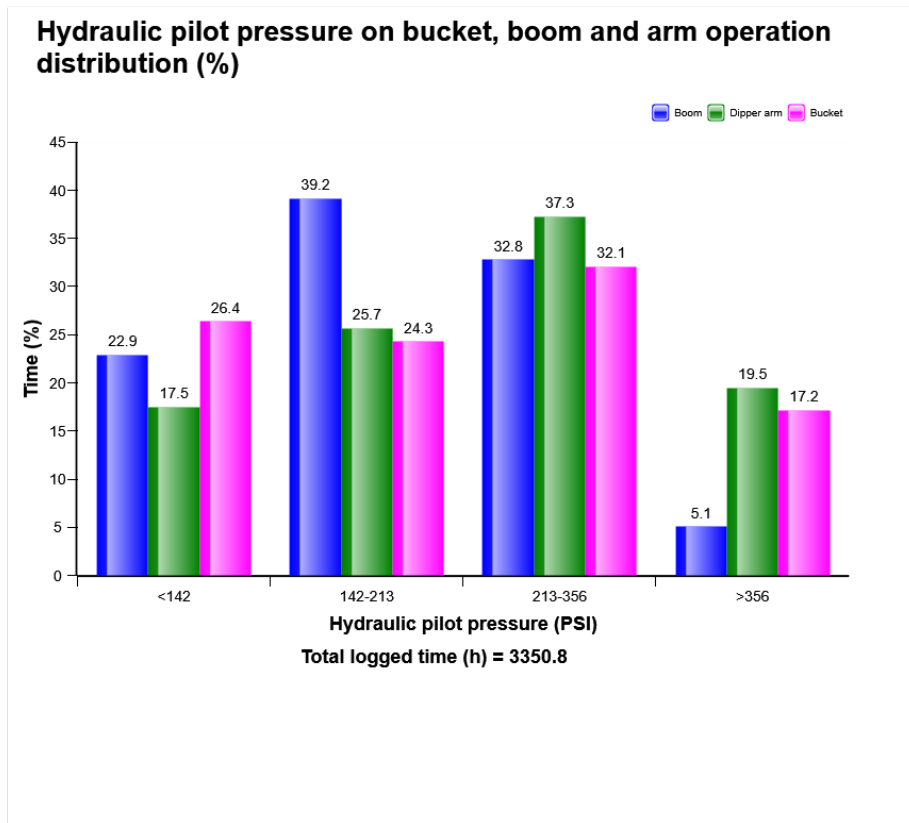
Definition:

The diagram describes hydraulic working operation mode distribution.

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Hydraulic pilot pressure on bucket, boom and arm operation distribution (%)

Legend: ■ Boom ■ Dipper arm ■ Bucket

Chart data — Time (%) vs Hydraulic pilot pressure (PSI):

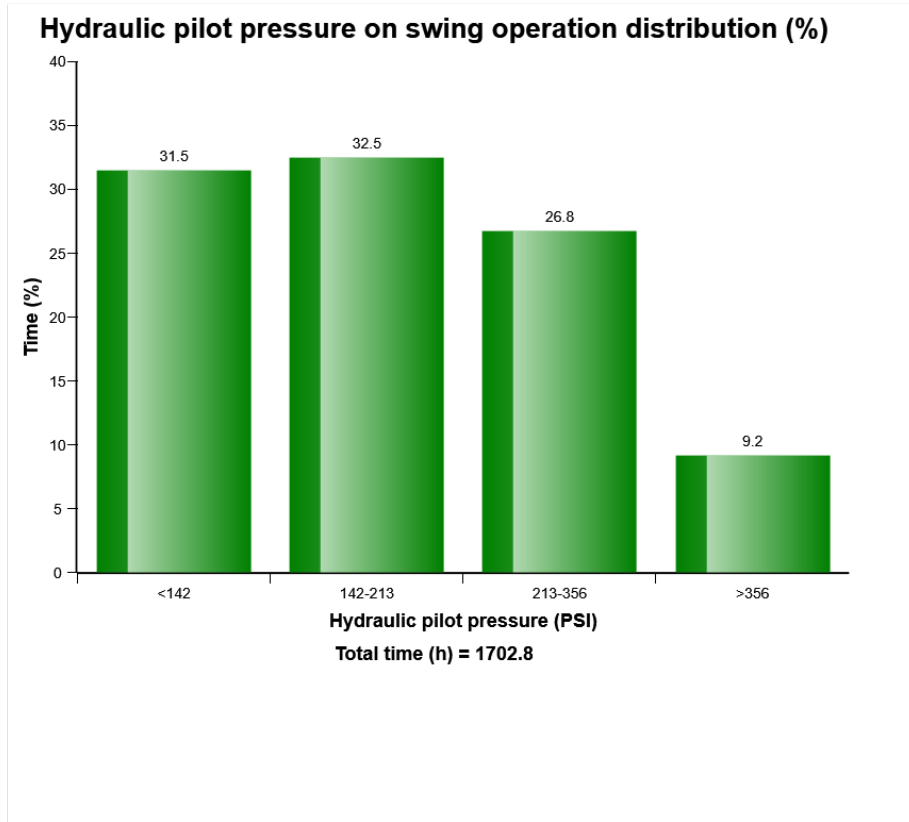| Hydraulic pilot pressure (PSI)	Boom	Dipper arm	Bucket
<142	22.9	17.5	26.4
142-213	39.2	25.7	24.3
213-356	32.8	37.3	32.1
>356	5.1	19.5	17.2

Total logged time (h) = 3350.8
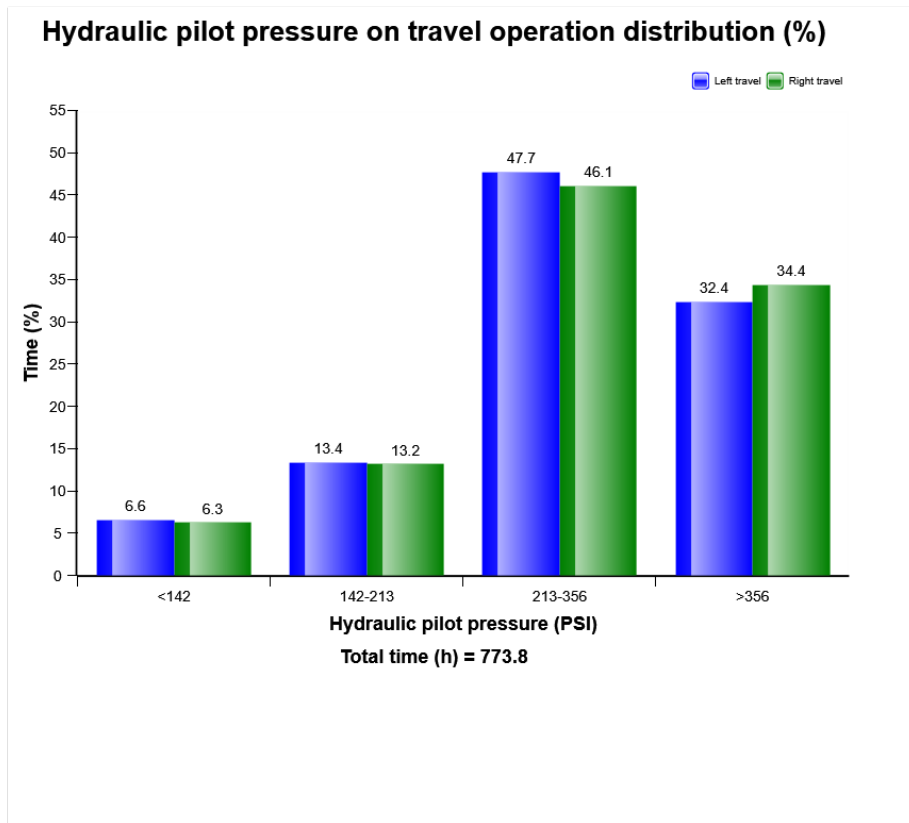
Definition:

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

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Hydraulic pilot pressure on swing operation distribution (%)

Bar chart showing Time (%) on the y-axis (0 to 40) versus Hydraulic pilot pressure (PSI) on the x-axis with categories: <142 = 31.5, 142-213 = 32.5, 213-356 = 26.8, >356 = 9.2

Hydraulic pilot pressure (PSI)

Total time (h) = 1702.8

Machine model	SerialNo	Operating Hours	Reading Date
EC250E	310308	3350.7	22/10/2019

Hydraulic pilot pressure on travel operation distribution (%)

Definition:

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

High hydraulic oil temperature
Total number of occurences = 0

Op hours	Year	Month	Day	Hour	Minute	Duration (seconds)	Extreme (° F)
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32
0	2000	0	0	0	0	0	32

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.