

MEMOP operation

Part I

PrimeServ Academy Copenhagen

MAN PrimeServ



Learning objectives

Upon completion of this module you ...

- will be able to recognize the various screens in the MOP's.
- will be able to explain the information displayed in the system.

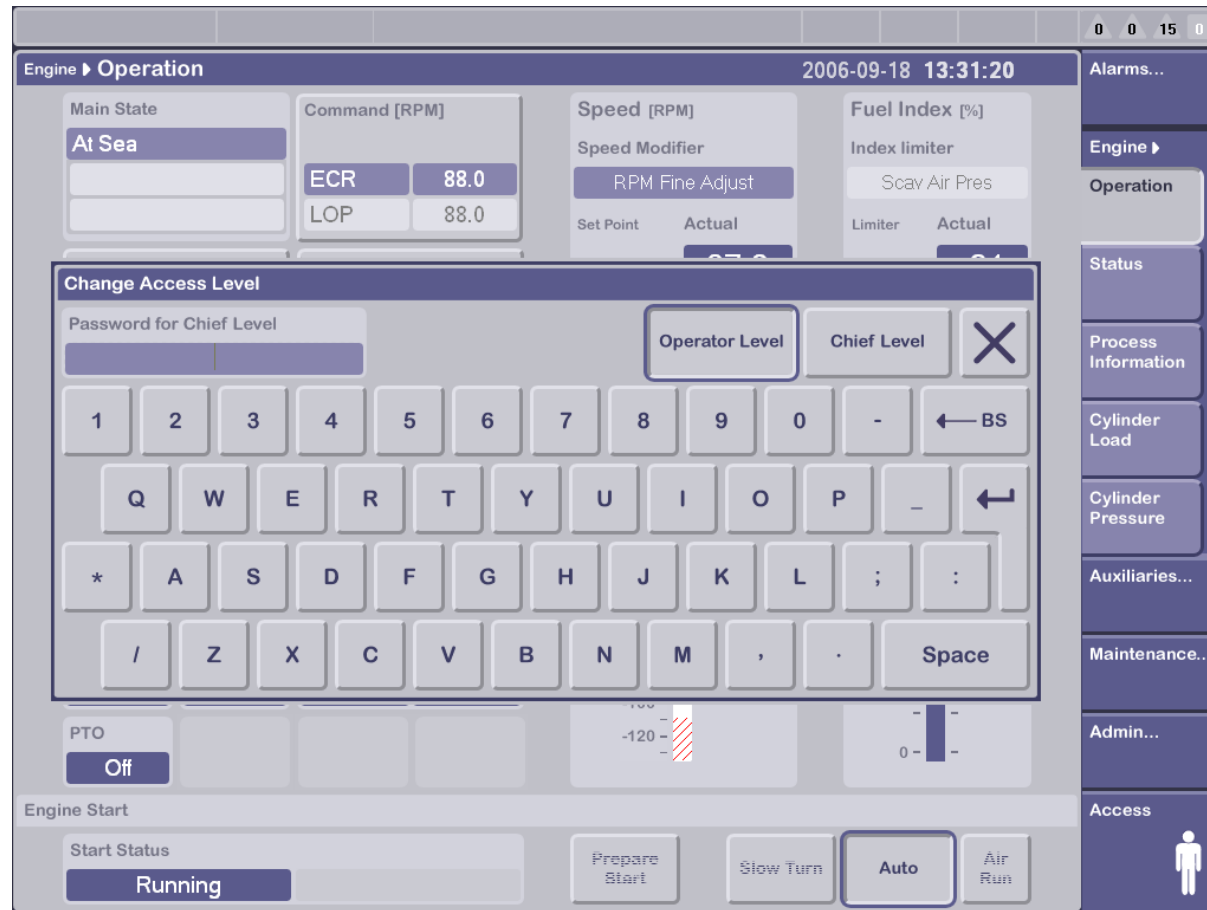


Engine: operation

The screenshot displays a control interface for an engine, titled "Engine Operation" with a timestamp of 2010-08-10 13:40:57. The interface is organized into several functional areas:

- Main State:** Shows "Standby".
- Command [RPM]:** Includes "ECR" set at 110.0 and "LOP" at 0.0.
- Running Mode:** Set to "Economy".
- Governor Mode:** Set to "RPM Control".
- Pressure Gauges:** Four vertical gauges show "Start Air" (28.5 Bar), "Inlet Oil" (2.7 Bar), "Hyd. Oil" (186 Bar), and "Scav. Air" (0.67 Bar).
- Speed [RPM]:** Features a "Speed Modifier" set to "Chief Max Speed". The "Set Point" is 67.0 and the "Actual" speed is 66.7. A vertical scale ranges from -120 to 120 RPM, with a limit marker at 110.0.
- Fuel Index [%]:** Shows an "Index limiter" set to "Scav Air Pres" with a "Limiter" value of 61 and an "Actual" value of 41. A vertical scale ranges from 0 to 100%.
- System Status:** Includes "HPS" (Auto), "Lubricator" (Running), "Auxiliary Blowers" (Auto/Stopped), and "PTO" (Off).
- Engine Start:** Shows "Start Status" as "Running" and includes buttons for "Prepare Start", "Slow Turn", "Auto", and "Air Run".
- Navigation:** A vertical sidebar on the right contains buttons for "Alarms...", "Engine", "Operation", "Status", "Process Information", "Process Adjustment", "Chief Limiters", "Auxiliaries...", "Maintenance...", "Admin...", "Power Off", and "Access".

Access level



Engine: status – start blocked

Engine Status 2006-09-20 09:37:45

Main State
Standby
Engine Not Ready
Start blocked

Start Conditions

- ! Main Starting Valve in service position
- ✓ Main Starting Valve blocked
- ! Start Air Distribution System in service
- ✓ Start Air Distribution System blocked
- ✓ Starting Air Pressure
- ✓ Control Air Pressure
- ! Control Air vented
- ! Turning Gear disengaged
- ✓ Aux. Blowers
- ✓ Hyd. Power Supply
- ✓ Hyd. Pressure

Start Air 24.1 Bar

Turning Gear Engaged

Control Air 6.0 Bar

Start Valve Cyl.-1 ...2 ...#

Blowers Stopped

Hyd. Oil 176 Bar

Crankshaft 342.0

Start Status Stopped

Access Chief

Engine: status

The screenshot displays the 'Engine Status' interface. At the top, it shows the date and time: 2006-09-18 10:54:18. The main state is 'Standby'. The start air system is shown with a main air supply at 24.1 Bar and control air at 6.0 Bar. The turning gear is disengaged. The start valve for cylinder 1 is shown. The start status is 'Running'. The interface includes a list of start conditions on the left, a schematic diagram in the center, and a vertical menu on the right with options like 'Alarms...', 'Engine Operation', 'Status', 'Process Information', 'Cylinder Load', 'Cylinder Pressure', 'Auxiliaries...', 'Maintenance...', 'Admin...', and 'Access'.

Engine Status 2006-09-18 10:54:18

Main State
Standby

Start Conditions

- ✓ Main Starting Valve in service position
- ! Main Starting Valve blocked
- ✓ Start Air Distribution System in service
- ! Start Air Distribution System blocked
- ✓ Starting Air Pressure
- ✓ Control Air Pressure
- ! Control Air vented
- ✓ Turning Gear disengaged
- ✓ Aux. Blowers
- ✓ Hyd. Power Supply
- ✓ Hyd. Pressure

Start Air 24.1 Bar

Control Air 6.0 Bar

Turning Gear Disengaged

Start Valve Cyl.-1 ...2 ...#

Blowers Stopped

Hyd. Oil 196 Bar

Crankshaft

Start Status Running

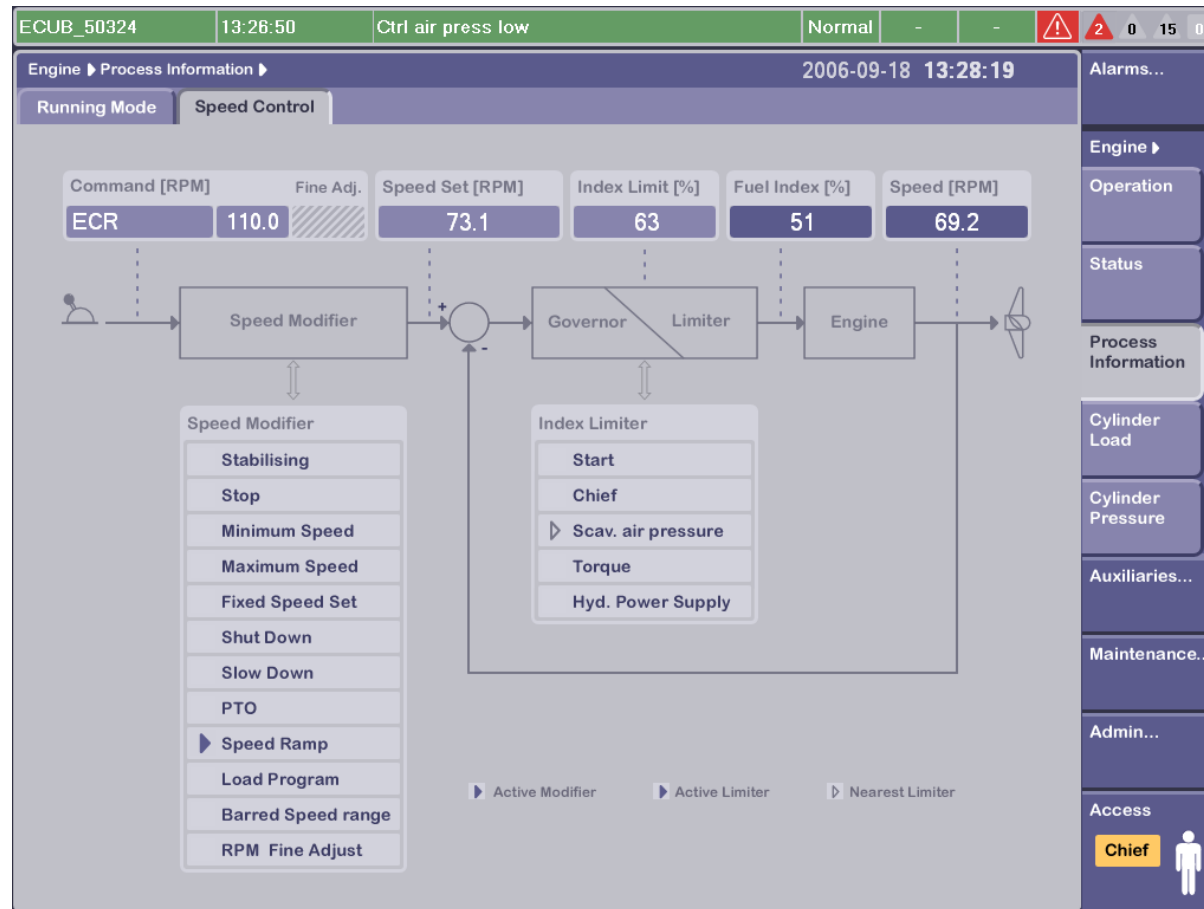
Alarms...

Engine

- Operation
- Status
- Process Information
- Cylinder Load
- Cylinder Pressure
- Auxiliaries...
- Maintenance...
- Admin...
- Access

Engine: process information

Speed control



Engine: process information

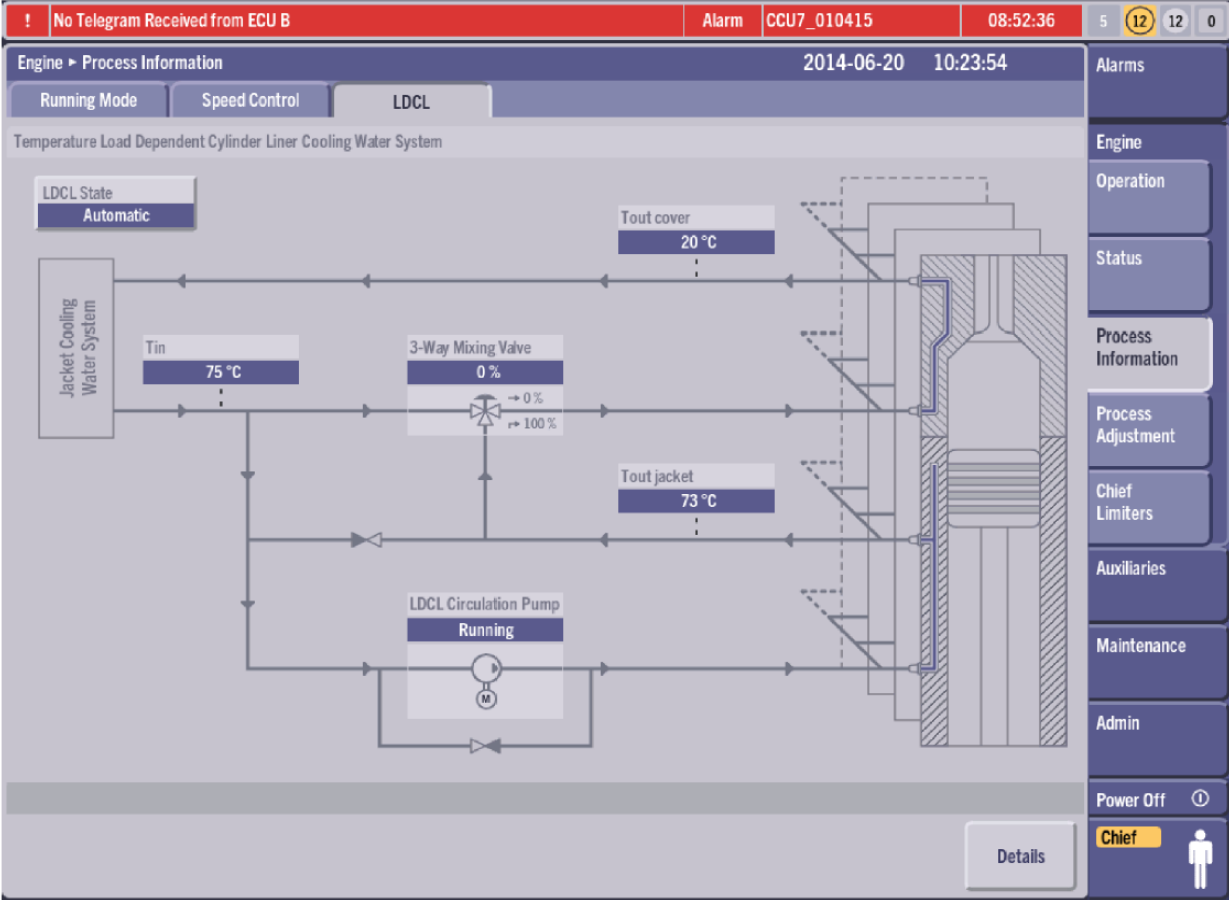
Running mode

The screenshot displays a control interface for an engine's process information. At the top, it shows the date and time as 2006-09-18 10:57:39. The main area is divided into two tabs: 'Running Mode' and 'Speed Control'. The 'Running Mode' tab is active, showing several key parameters in a grid layout. On the right side, there is a vertical navigation menu with options like 'Alarms...', 'Engine', 'Operation', 'Status', 'Process Information', 'Cylinder Load', 'Cylinder Pressure', 'Auxiliaries...', 'Maintenance...', 'Admin...', and 'Access'.

Parameter	Value
Running Mode	Emission
Estimated Engine Load	57 %
Maximum Pressure	106 Bar
Compression Pressure	95 Bar
Pcomp/Pscav	37.4
Exh. Valve Open Timing	114.8 °ATDC
Speed Set Point [RPM]	92.6
Speed Actual [RPM]	92.5
Fuel Index Set Point	71 %
Hyd. Oil Set Point	195 Bar
Hyd. Oil Actual	196 Bar
Pscav Actual	1.57 Bar

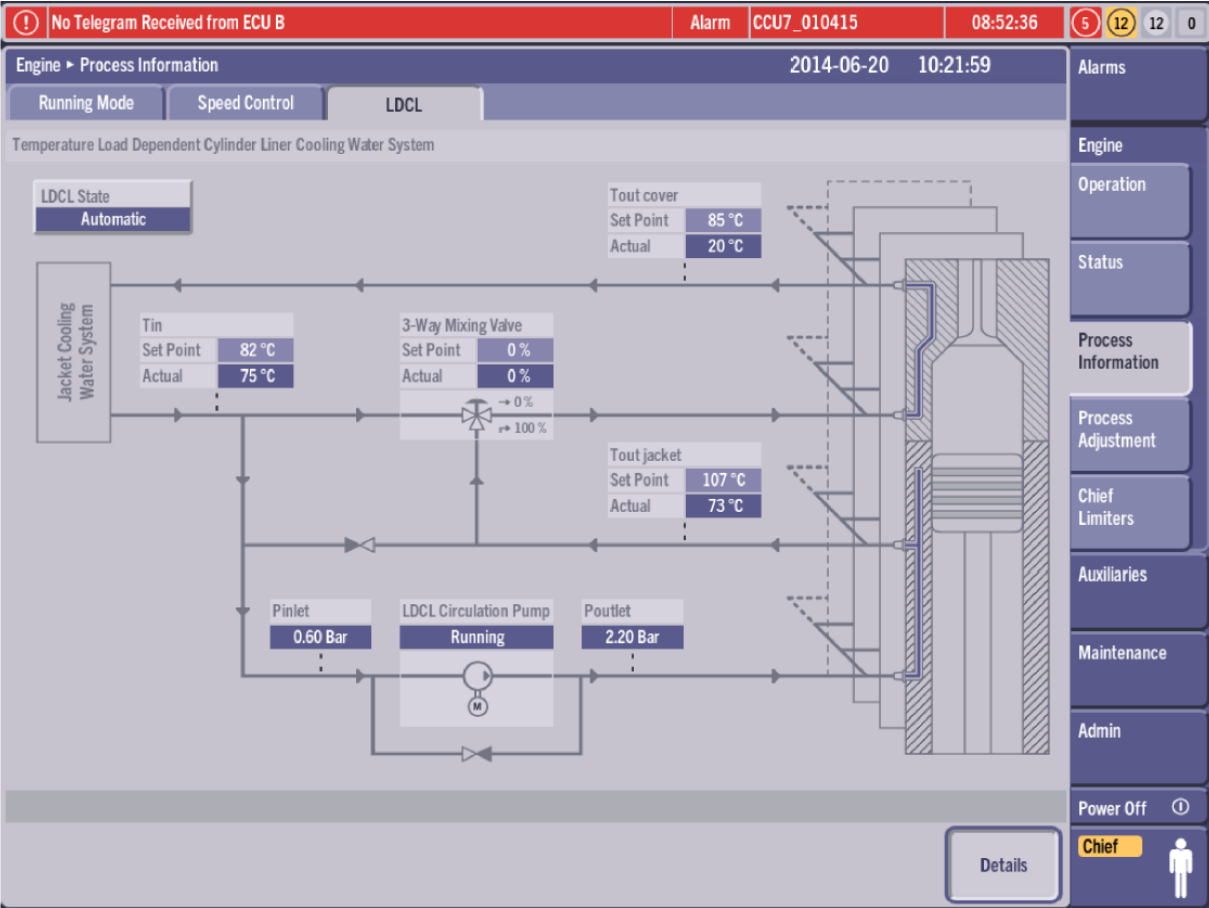
Engine: process information

Running mode



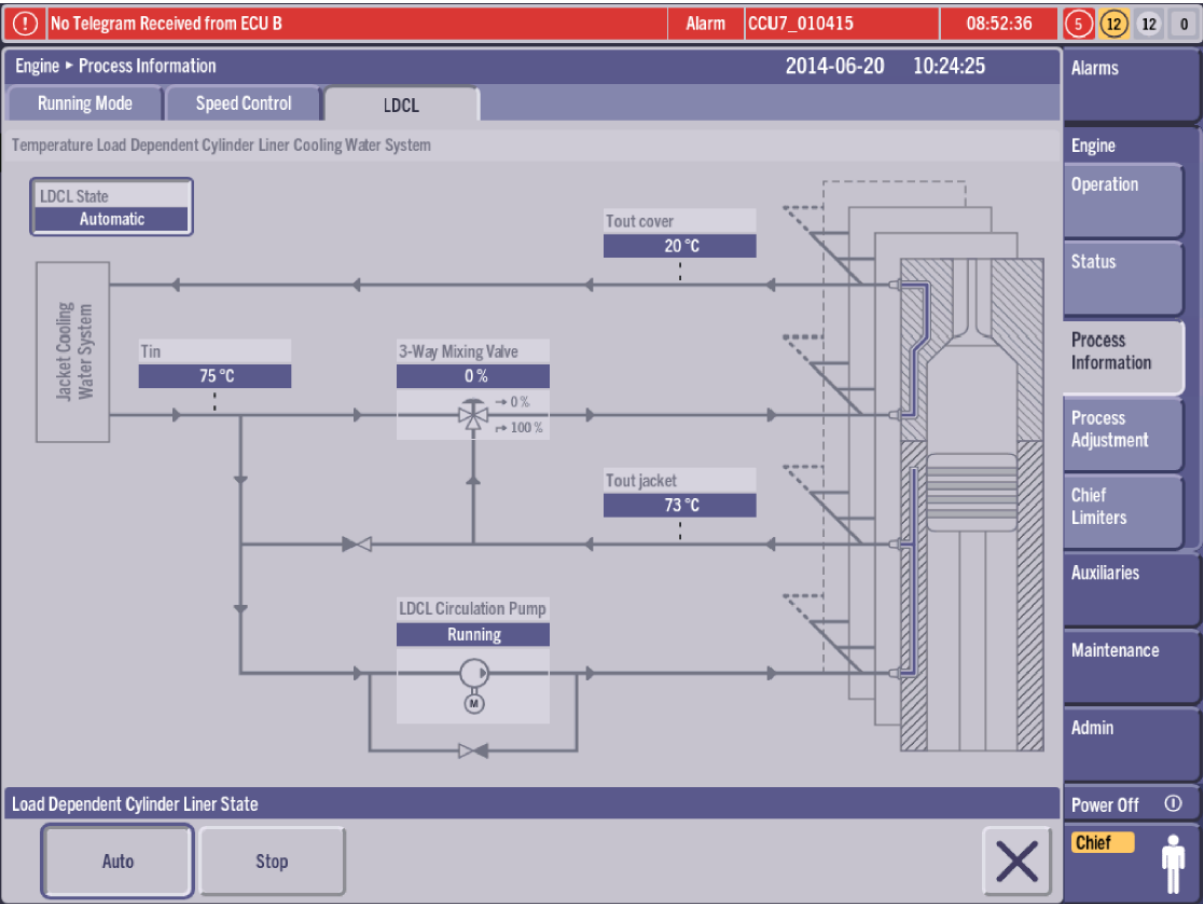
Engine: process information

Running mode



Engine: process information

Running mode



Engine: fuel quality

0 0 0 0

Engine ▶ Process Adjustment 2010-08-11 13:01:21

Auto Tuning Cylinder Load Cylinder Press. Fuel Quality

Alarms...

Engine ▶

Operation

Status

Process Information

Process Adjustment

Chief Limiters

Auxiliaries...

Maintenance...

Admin...

Power Off ⓘ

Access ⓘ

Chief ⓘ

Calorific Reference Value
36000 MJ/m³

($\frac{\text{Lower Calorific Value} \times \text{Density @ 15}^\circ\text{C}}{\text{Calorific Reference Value}} - 1) \times 100 =$ Calculated Fuel Quality Offset

Lower Calorific Value 40.00 MJ/kg × Density @ 15°C 900.0 kg/m³

Calculated Fuel Quality Offset +0 %

Applied Fuel Quality Offset +3 %

INSTRUCTION:
1. Set and save *Lower Calorific Value*.
2. Set and save *Density @ 15°C*.
3. Set and apply *Applied Fuel Quality Offset*.

Apply Fuel Quality Offset

Current 3 New 3

Fetch Calculated Offset

Apply

Engine: fuel quality new version

The screenshot displays the 'Fuel Quality' process adjustment interface. At the top, it shows 'Engine ▶ Process Adjustment' and the date/time '2013-05-28 09:32:49'. Below this are tabs for 'Auto Tuning', 'Cylinder Load', 'Cylinder Press.', and 'Fuel Quality'. The main area contains a flowchart for calculating fuel quality offsets. It features two columns of input fields: 'Reference shop test values' and 'Enter actual values'. The inputs are: Lower Calorific value [MJ/kg] (40.00), Density @ 15 °C [kg/m3] (900.0 and 850.0), and Fuel Temp. [°C] (25 and 110). These inputs feed into a 'Calculation' block, which outputs a 'Suggested Fuel Quality Offset' of +14%. This suggested offset is then adjusted to an 'Applied Fuel Quality Offset' of +13%. A right-hand sidebar contains navigation options: Alarms, Engine, Operation, Status, Process Information, Process Adjustment (highlighted), Chief Limiters, Auxiliaries, Maintenance, Admin, Power Off, and a user profile for 'Chief'.

Parameter	Reference shop test values	Enter actual values
Lower Calorific value [MJ/kg]	40.00	40.00
Density @ 15 °C [kg/m3]	900.0	850.0
Fuel Temp. [°C]	25	110

Calculation → Suggested Fuel Quality Offset: +14 %

Applied Fuel Quality Offset: +13 %

Engine: cylinder load

The screenshot displays the 'Engine Process Adjustment' interface. At the top, it shows the date and time '2010-08-11 12:48:47' and a status bar with four zeros. Below this, there are tabs for 'Auto Tuning', 'Cylinder Load', 'Cylinder Press.', and 'Fuel Quality'. The 'Cylinder Load' tab is active, showing 12 numbered buttons (1-12) for individual cylinder adjustment. Below these are two rows of sliders: 'High Load Offset [%]' ranging from -10 to 10, and 'Low Load Offset [%]' ranging from -5 to 5. All sliders are currently set to 0. On the right side, there is a vertical menu with buttons for 'Alarms...', 'Engine', 'Operation', 'Status', 'Process Information', 'Process Adjustment' (highlighted), 'Chief Limiters', 'Auxiliaries...', 'Maintenance...', 'Admin...', 'Power Off', and 'Access'.

Engine: cylinder pressure

The screenshot displays a control interface for engine cylinder pressure adjustment. At the top, it shows 'Engine ▶ Process Adjustment' and the date/time '2010-08-11 12:51:11'. Below this are tabs for 'Auto Tuning', 'Cylinder Load', 'Cylinder Press.', and 'Fuel Quality'. A row of buttons labeled 'All' through '12' allows selecting individual cylinders. The interface is divided into three main sections, each with 12 vertical sliders corresponding to the cylinders:

- Pmax Offset [Bar]:** The first slider is set to 0, while the others are in a '---' state.
- Pcomp/Pscav Offset [-]:** The first slider is set to 0.0, while the others are in a '---' state.
- Exhaust Valve Open Timing Offset [DEG]:** The first slider is set to 0.0, while the others are in a '---' state.

On the right side, a vertical menu contains several options: 'Alarms...', 'Engine ▶', 'Operation', 'Status', 'Process Information', 'Process Adjustment' (highlighted), 'Chief Limiters', 'Auxiliaries...', 'Maintenance...', 'Admin...', 'Power Off ①', and 'Access' with a user icon labeled 'Chief'.

Engine: process adjustment

Auto tuning

Optional, only applicable with PMI Auto tuning



0 0 41 0

Engine ▶ Process Adjustment 2013-07-04 16:52:16

Alarms

Engine

Operation

Status

Process Information

Process Adjustment

Chief Limiters

Auxiliaries

Maintenance

Admin

Power Off ⓘ

Chief ⓘ

0 0 41 0

Auto Tuning Cylinder Load Cylinder Press. Fuel Quality

All 1 2 3 4 5 6 7 8 9 10 11 12

Pmax [Bar] Mean Deviation

Ordered	103												
Current	139	-0.1	0.1	-0.1	0.2	0.1	0.0	-0.1	-0.3	0.0	0.2	-0.1	0.1
Deviation	36.1												
Offset Auto/Cont.	0 -4.3	0	0	0	-6	-6	6	3	-2	-7	-1	2	-3

Pcomp [Bar] Mean Deviation

Ordered	68												
Current	109	-0.3	0.1	0.0	-0.1	0.4	-0.1	-0.1	0.0	0.0	0.1	-0.2	0.2
Deviation	41.0												
Offset Auto/Cont.	0.0 - -	0.0	0.0	0.0	0.5	0.7	0.7	1.3	0.0	0.2	0.0	2.0	0.2

Pi [Bar] Mean Deviation

Ordered	15.0												
Current	15.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deviation	0.8												
Offset	- - -	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Info

STATUS: Tuning allowed

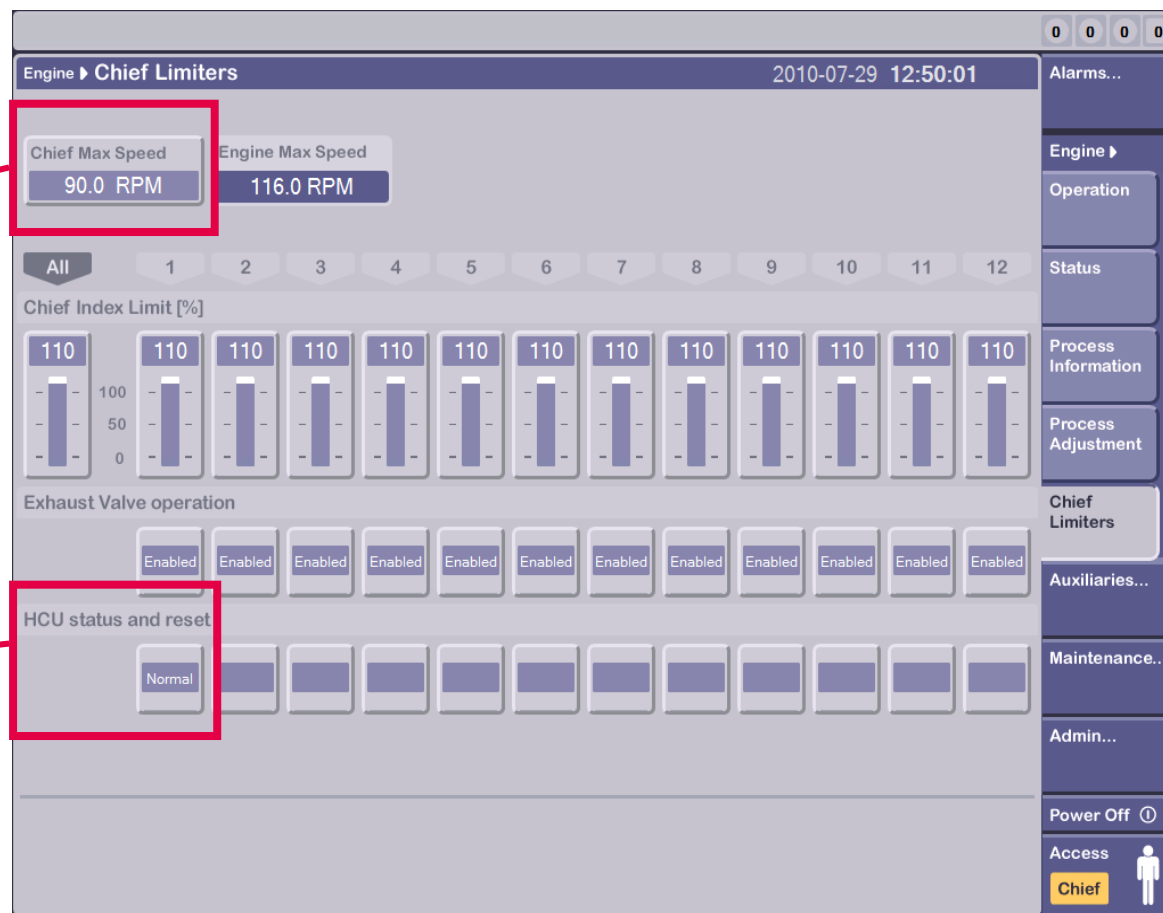
- ✓ Index stable
- ✓ Sufficient index
- ✓ Sensor values

REPORT: Last tuning successful

Engine: chief limiters

“Chief Max Speed” is acting as a speed modifier

“Reset” is similar to resetting the CCU, or, invalid / valid ch 30 & ch 31 on the CCU



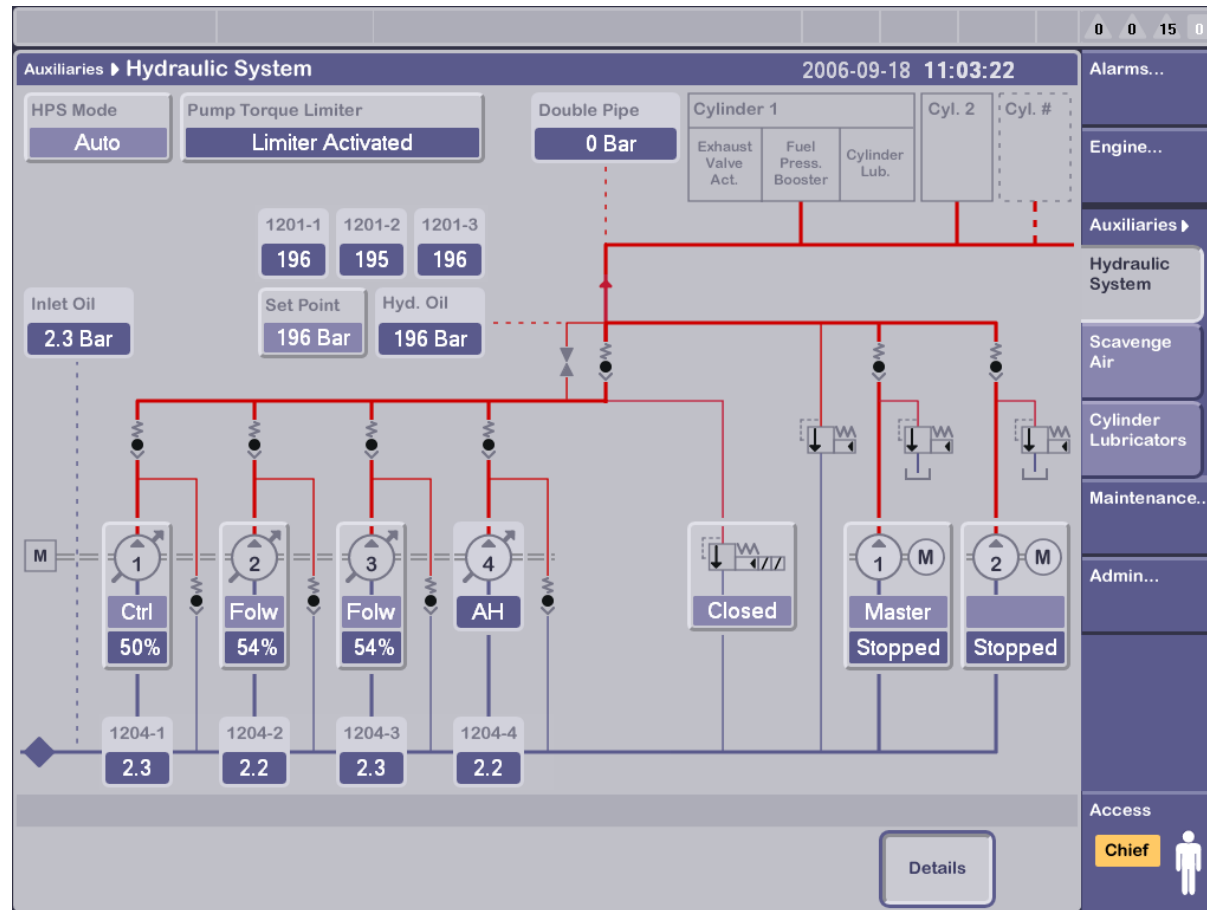
Engine: chief limiters

Chief Max Speed is acting as a speed modifier

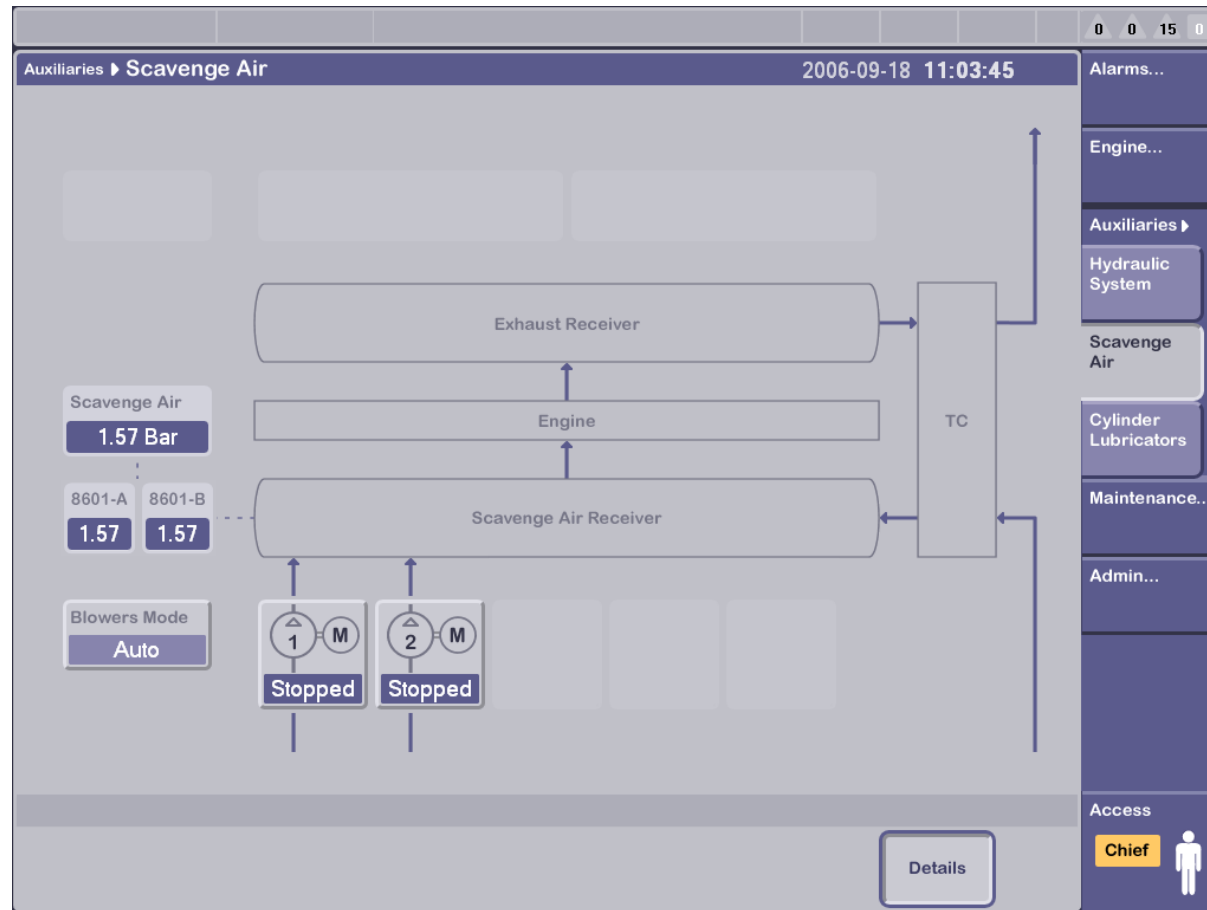
“Reset” is similar to resetting the CCU, or, invalid / valid ch 30 & ch 31 on the CCU

The screenshot displays the 'Chief Limiters' control panel. At the top, a status bar shows 'Run In Parameterset not Valid', 'Normal', 'ECUB_020125L', and the time '12:36:50'. Below this, the main interface is titled 'Engine > Chief Limiters' with a date and time of '2013-12-03 10:08:50'. The interface is divided into several sections: 'Chief Max Speed' and 'Engine Max Speed' both set to '200.0 RPM'; 'Chief Max Load' and 'Engine Max Load' both set to '110 %'. Below these are 12 individual cylinder limiters, each with a 'Chief Index Limit [%]' slider set to '110'. The 'Exhaust Valve operation' section shows 12 'Enabled' buttons. The 'HCU status and reset' section shows 12 'Normal' buttons. At the bottom, there is a 'Chief Max Speed' control with 'Current' and 'New' values both at '200.0', and an 'Apply' button. A right-hand sidebar contains navigation options: Alarms, Engine, Operation, Status, Process Information, Process Adjustment, Chief Limiters (highlighted), Auxiliaries, Maintenance, Admin, Power Off, and Chief (with a person icon).

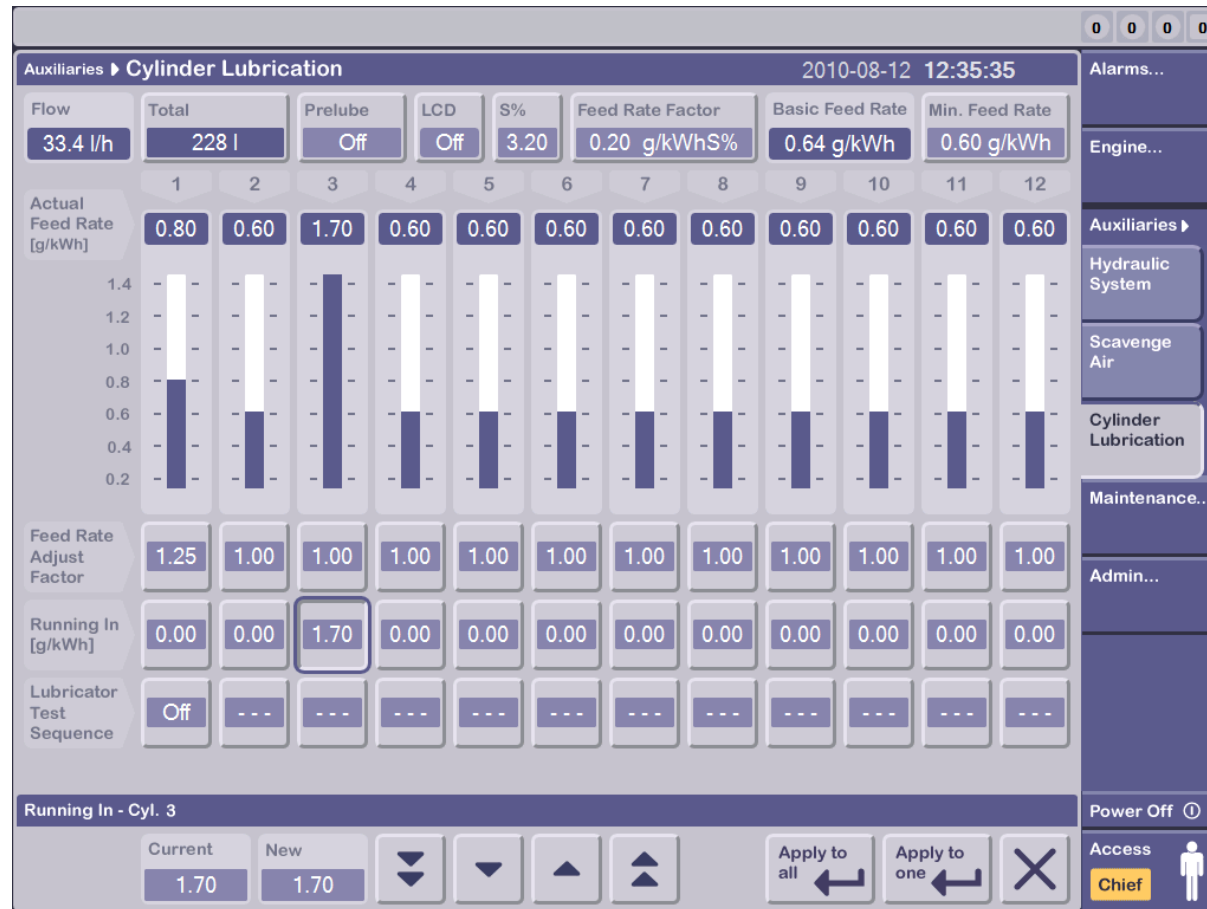
Auxiliaries: hydraulic system



Auxiliaries: scavenge air



Auxiliaries: cylinder lubricators



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