Cylinder Lubrication System
CLU 3
for 2-Stroke Crosshead
Large Diesel Engines
The Large Diesel Engine Cylinder Lubrication System CLU 3 - excels due to its:

- Economical efficiency
- Operating reliability
- Ease of operation
- Ease of maintenance
The Economic Cylinder Lubrication System

**Optimum Economic Efficiency**

- through simple adaption to diesel engines with various number of cylinders and power outputs
- through a wide range of applications
  (It is suited for lubricating cylinders with a power output ranging from 1,000 to 6,000 kW for specific amounts of lubricating oil up to 3 g/kWh.)
- through an assembly procedure which is quick and easy
  (The compact pump unit has everything including drive, oil supply and hot water connections as well as pre-wired sensors; it can be fastened to the diesel engine in a horizontal or vertical position, the pump modules one each for two cylinders – are simply flanged onto each other.
  In comparison to conventional lubrication pumps, this reduces assembly costs by up to 50% depending on the number of cylinders.)
- through an attractive cost-benefit ratio
  (It offers more and costs less than conventional systems offering similar performance.)

The cylinder lubrication system CLU 3 consists of a modularly constructed pump unit, two progressive distributors for each cylinder to be lubricated as well as lubricating quills with accumulators for each lubrication point. Up to 12 cylinders with two lubrication levels are supplied as needed with this innovative lubrication system.

The load-dependent cylinder lubrication system CLU 3 has been approved for all Wärtsilä NSD 2-stroke large diesel engines of the RTA series with the remote control system DENIS 6.

Photo: DMR-Sulzer 7RTA/7U
The Reliable, Simple to Operate and Easy to Service Cylinder Lubrication System

**High Operating Reliability**
- through pressure sealed pump modules for supply pressures up to 2 bar (Mechanical level control valves are thus not necessary.)
- through defined settings for the delivery volume of the pump elements in six stages which prevents incorrect settings
- through a load-dependent electrically controlled pump drive (If there is a disturbance in the frequency control, the remote control system automatically sets the nominal electric motor speed.)
- through large dimensioned bore holes and pipe cross sections

- through slide controlled pump elements
  (This slide controlled pump element was developed for measuring highly viscous lubricants.)
- through tempered piston bore holes for pump elements and progressive distributors with high resistance to wear
- through hydraulically controlled progressive distributors
  (These distribute perforce the lubricating oil evenly.)
- through only very few moving components
  (To supply, for example, 16 lubrication points on one cylinder, only 10 pistons are in motion.)
- through integrated safety valves
  (These protect the parts of the system against overpressure if the pipes are blocked.)
- The lubrication pump unit type PC can be adapted precisely to the lubrication task determined by the number and size of the cylinders as well as the engine load. This is achieved on the one hand by controlling the electric motor speed and on the other hand by flanging pump modules onto each other.

**Simple Operation**
- through central setting of the oil delivery per cylinder lubricating level
- through pre-lubrication of all cylinders at the press of a button
  (Instead of pre-lubricating each cylinder individually with the use of cranks, pressing an electrical push-button is all that is needed.)
- through a shutoff valve integrated into every pump module
  (allows an oil change from running-in oil to normal oil quickly and easily)

**Ease of Maintenance**
- through modular technology
  (Defective components can be replaced quickly and easily – some can even be replaced during operation.)
- through fewer components
  (Only one pump unit is required for the entire cylinder lubrication system.)
- through measuring connectors
  (allow simple oil consumption check for each pump module or pump element)

**Reliable and Easy Monitoring**
- through the level indicator switch which monitors the oil supply
- through electric sensors on all pump elements
  (100% feed rate monitoring. Each pump element has a safety valve which interrupts the flow of oil if pressure exceeds 80 bar. This is displayed by a ball which sinks to the bottom of a gauge glass. In addition to this optical display, a fault signal is activated by a 2-wire NAMUR type sensor or a 3-wire NPN type sensor with LED.)
- through concentration of checks
  (Only one optical flow check per lubrication – level instead of maximum – eight needs to be observed.)

The pump unit is supplied with oil from an elevated tank via a central supply.

The contamination of the oil supply filter is also monitored with the level indicator switch.

To ensure lubrication even in arctic temperatures, the lubrication pump can be connected to the main oil system of the diesel engine.

Every pump module consists of an aluminium block casing each with two vertical and two horizontal pump elements. The pump elements are driven by an eccentric shaft. The modules joined together by screws make for a compact “self-supporting” pump unit.

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