

MAN B&W moves towards Intelligent Cylinder Lubrication



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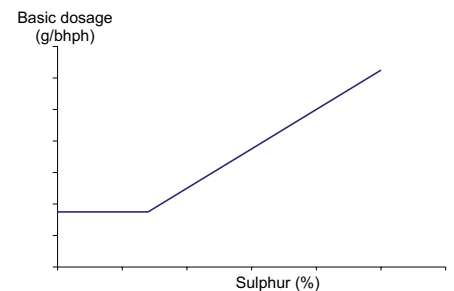
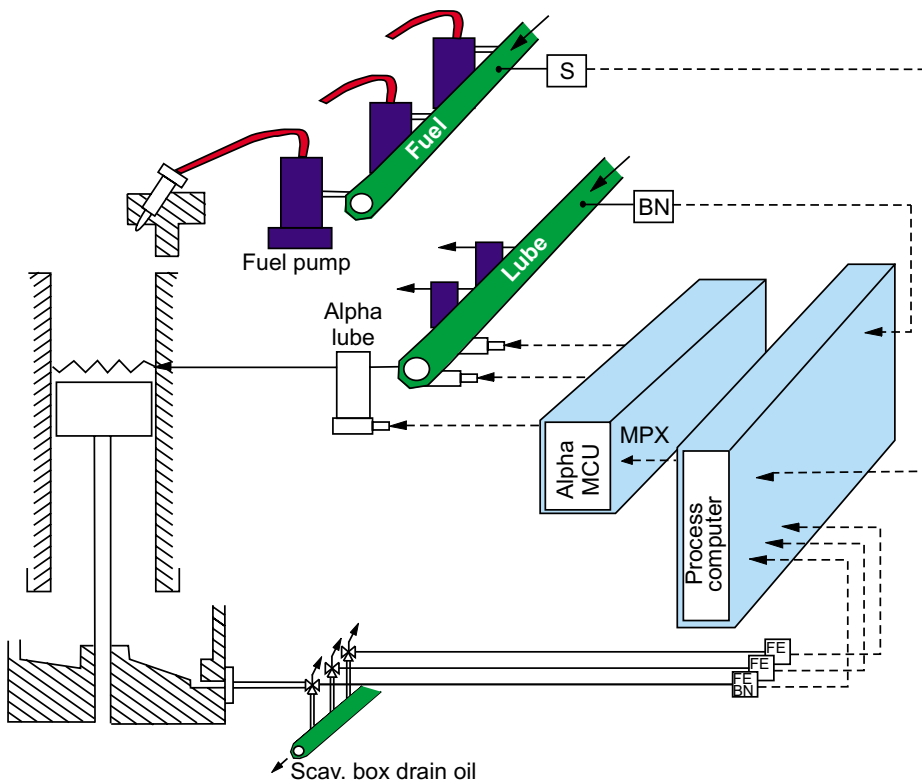
On-line cylinder process monitoring - via feedback signals of lubricant usage and fuel sulphur content to MAN B&W's electronic Alpha Lubricator system - ensures considerable cylinder oil savings along with controllable wear rates, scuffing control and longer intervals between engine overhauls.

Operational conditions beyond the normal are unavoidable, and many shipowners simply over-lubricate their engines under the false assumption that they will thus always be on the safe side. However, over-lubrication is not only expensive - it may even be counterproductive in promoting scuffing through excessive carbon deposits and/or "bore-polished" running sur-

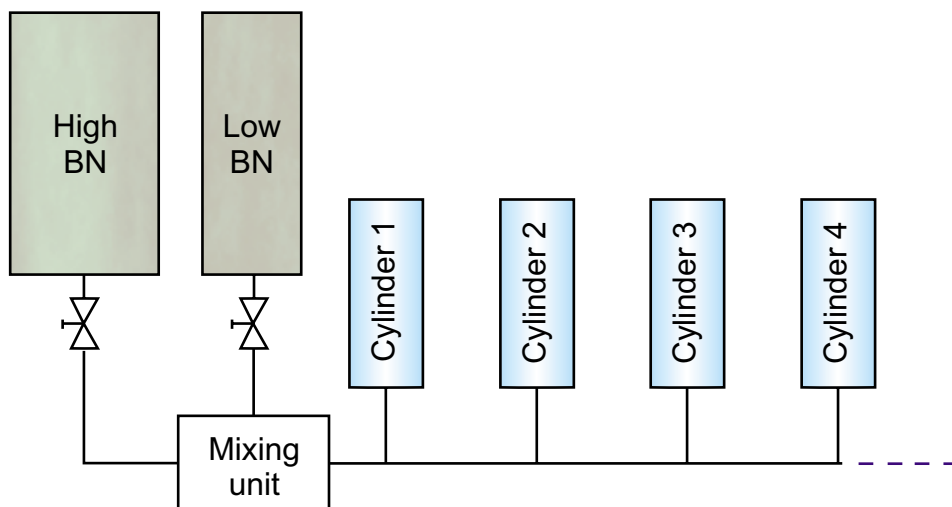
faces. In addition, excessive lube oil adds to the amount of visible smoke.

A wear study has proved that the optimal basic setting of cylinder lubricators should be proportional to the engine load and the fuel sulphur content. Feed rate control proportional to engine load is already one of two standard options of the Alpha Lubricator (the other is to control lubrication in proportion to the mean effective pressure).

Lubricator control in relation to the fuel oil sulphur content may either be carried out automatically, using a feed-forward signal from the fuel inlet line, or manually, based on the sulphur content from the bunker receipt or fuel oil analysis data.



Lubricating oil basic dosage based on fuel sulphur content



The mixing of lubricating oil with different BN values.

The properties of cylinder oil scraped from the cylinder liner wall reflect the chemical environment in the cylinder as well as the physical condition of rings and liner; and there is a direct relationship between some of the key parameters in the scrape-down oil and the actual cylinder condition. A lubrication algorithm - based on scrape-down oil analysis data, cylinder oil dosage, engine load and cylinder wear rate - can thus be created.

Automatic optimisation of lube oil dosage and cylinder lubrication efficiency becomes a reality by on-line monitoring of the scrape-down oil composition from each cylinder, with the system feeding the results into a computer, together with the above algorithm, and sending signals to each Alpha Lubricator.

Corrosive wear control can be based on either feed rate control or control of the cylinder lube oil base number (BN).

A reduction in the feed rate can reduce the BN alkalinity throughput, thereby limiting the amount of neutralisation agent supplied to the cylinder (but only to the minimal feed rate necessary for lubrication). On-line control of the BN at a fixed feed rate will thus provide further optimising possibilities through the mixing of lube oils of different BNs in an Intelligent Cylinder Lubrication concept, the first stage of which started service testing December 2001 exploiting new MAN B&W Diesel system patents.

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