

## **Inductively Coupled Plasma Optical Emission Spectrometry in Effective Condition Based Maintenance Engineering Plan**

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The Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) is a powerful tool for the determination of many wear down elements in a variety of different sample matrices. The Sri Lanka Navy commenced analysis of used lubricating oils in on-board main machineries and shore-based generators since the year 2017 which assists to implement Condition Based Maintenance (CBM) philosophy in the Sri Lanka Navy as a vital component in the P-F curve of machinery maintenance reliability. As per ASTM D 5185, the testing has been carried out. Results of the analysis capture only the particle sizes below 10 microns where the elements are necessary to be oil-solvable. In this, soluble residues are not counted. The paper is focuses on appraising the process practiced by the SLN to study the elemental behaviour of machineries fitted on-board to support the CBM development plan. The annual oil condition monitoring schedule has been published, and sample testing is done according to the promulgated directives. The findings of the analysis are plotted against each of the machinery, and the machinery health is monitored accordingly. Several failures were pre-identified and preventive actions were initiated. The numerical results against each similar type of engines with respect to the running hours of the machinery are compared and specific limitations against each make/model are identified. This will enable us to find the safe operating parameters as a baseline measurement and to promulgate the threshold limits.

**Keywords:** *inductively coupled plasma optical emission spectrometry, oil analysis, condition monitoring*