

Development of Graph-Theoretic Model for Ranking Top of Rail Lubricants

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Abstract : Selection of the correct lubricant for the top of rail application is a complex process. In this paper, the selection of the proper lubricant for a Top-Of-Rail (TOR) lubrication system based on graph theory and matrix approach has been developed. Attributes influencing the selection process and their influence on each other has been represented through a digraph and an equivalent matrix. A matrix function which is called the Permanent Function is derived. By substituting the level of inherent contribution of the influencing parameters and their influence on each other qualitatively, a criterion called Suitability Index is derived. Based on these indices, lubricants can be ranked for their suitability. The proposed model can be useful for maintenance engineers in selecting the best lubricant for a TOR application. The proposed methodology is illustrated step-by-step through an example.

Keywords : lubricant selection, top of rail lubrication, graph-theory, Ranking of lubricants

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