



Berg Huettenmaenn Monatsh (2022) Vol. 167 (5): 197–198

<https://doi.org/10.1007/s00501-022-01226-2>

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BHM Berg- und
Hüttenmännische
Monatshefte

Editorial

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Accepted March 15, 2022; published online March 31, 2022

Many large-scale plants are required in the high-quality steel production. Lubricants are used in almost all these systems to operate them efficiently and economically. Due to the complexity and diversity of the systems, each has specific demands on the lubricants and therefore more than 200 different types of lubricants are used in a modern steel mill. This variety of types for maintaining plants and keeping of risk stocks pose logistical challenges on the plant operators. Especially, specific lubricant expertise is needed to handle product changes, knowing the expected lubricant lifetimes in machinery and managing long change intervals, and thus being able to achieve a maximum plant availability and efficiency.

To efficiently determine the operability of the medium lubricant (“blood of the machine”), continuously optimized laboratory analyses and adapted analysis methods are necessary. These should point out the main properties and possible problems it can cause to the system, which is used to select suitable lubricants and initiate targeted countermeasures if required. The ever-increasing demand on reliability and stability of processes, systems, and their components requires a continuous market screening or the development of tailored lubricants directly with the producers to create a new and better standard.

The selection of the most suitable lubricant for each specific system is a challenging task. The knowledge-based guide to the selection and qualification of lubricants published in this special issue intends to provide plant engineers and operators with advice for selecting suitable lubricants for the special demands of heavy machinery. Furthermore, different fields of application for lubricants in the steel industry are presented: ranging from rolling bearing lubrication and safe operability of cooling fluids to fire-

proof hydraulic fluids. Lubricant niche applications are also brought into focus and presented in detail, namely electrically insulating lubricants in binding machines to avoid creep stress and tar oils used as seals for the safe storage of gases in the gasholders.

The topic of operating lubricants is a large field of activity and research, being crucial for heavy industry’s success as it ensures long, efficient, and safe operation of the machines. Due to the persistent transformation of steel production towards new – greener – production facilities, such as electric furnaces, special challenges not yet foreseen will be posed to the field of lubrication requiring continuous research in the future.

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