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Guide for reclaiming and using phosphate ester hydraulic fluid

磷酸酯液压液再生与使用导则

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Phosphate ester hydraulic fluid degradation classification	2
5 Phosphate ester hydraulic fluid purification and regeneration	3
6 Re-use of deteriorated phosphate ester hydraulic fluid after treatment	5
7 Disposal of spent phosphate ester hydraulic fluid	6

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting is required. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Electricity Council. This document is under the jurisdiction of the National Electrochemical Standardization Technical Committee (SAC/TC322). This document was drafted by: Xi'an Thermal Engineering Research Institute Co., Ltd., State Grid Shandong Electric Power Company Electric Power Science Research Institute, State Grid Anhui Electric Power Power Science Research Institute of Guangdong Power Grid Co., Ltd., Power Science Research Institute of Heilongjiang Power Generation Co., Ltd., Datang Harbin First Thermal Power Plant, Zhanjiang Electric Power Co., Ltd., China Southern Power Grid Co., Ltd. Ultra-high Voltage Transmission Company Power Research Institute, State Grid Fujian Province Electric Power Research Institute of China Electric Power Co., Ltd. The main drafters of this document are. Tang Jinwei, Wang Xiaowei, Wang Juan, Long Guojun, Xie Jialin, Yu Naihai, Liu Zien, Qian Yihua, Wang Ximing, Hao Yunhai, Qi Guodong, Qi Jiong, Liu Yongluo, Gao Zhanyang, Yan Tao, Zheng Guanwen, Zhang Xiwen, Liao Jianping, Lian Hongsong, Zheng Dongsheng. Guidelines for the regeneration and use of phosphate ester hydraulic fluids

1 Scope

China's national guide to reclaiming and reusing phosphate ester hydraulic fluid. Phosphate ester is the fire-resistant fluid used in the electro-hydraulic control systems of steam turbines and in other places where a leak of mineral oil onto a hot surface would ignite. Its fire resistance is why it is used, and its chemistry is why it needs particular care: it

hydrolyses in the presence of water to produce acidic phosphates, which attack the servo valves the fluid exists to operate and which catalyse further hydrolysis, so degradation accelerates once it begins. Reclamation therefore centres on keeping the acid number and the water content down - by vacuum dehydration, by ion exchange or adsorbent treatment to remove the acids, and by filtration. Since a turbine's control fluid charge is expensive and its failure means a trip, the guide is about maintaining the fluid rather than replacing it.

This document specifies the requirements for degradation classification, purification and regeneration, reuse after treatment, and scrap disposal of phosphate ester hydraulic fluids. This document applies to the purification, regeneration and reuse of phosphate ester hydraulic fluid used in steam turbine electro-hydraulic speed control system and lubrication system. Other equipment The phosphate ester hydraulic fluid used is implemented as per the reference.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 264 Determination of acid value of petroleum products

GB/T 265 Determination of kinematic viscosity and calculation of dynamic viscosity of petroleum products

GB/T 1884 Laboratory determination of density of crude oil and liquid petroleum products (density meter method)

GB/T 3535 Determination of pour point of petroleum products

GB/T 3536 Determination of flash point and fire point of petroleum products - Cleveland open cup method

GB/T 6540 Determination of color of petroleum products

GB/T 7305 Determination of water separation of petroleum and synthetic fluids

GB/T 7600 Determination of moisture content of transformer oil and turbine oil in operation (coulometric method)

GB/T 12579 Determination of foam characteristics of lubricating oils DL/T 421

Determination of volume resistivity of power oil DL/T 429.1 Determination of transparency of power oil DL/T 429.7 Determination method of sludge precipitation of power oil DL/T 432 Method for determination of particle size in power oil DL/T 433 Determination of chlorine content in fire-resistant oils - Oxygen bomb method DL/T 571 Guidelines for operation and

maintenance of phosphate ester fire-resistant oil for power plants DL/T 706 Determination of auto-ignition point of fire-resistant oil for power plants DL/T 1978 Classification standard for particulate pollution of power oil DL/T 1979 Determination of mineral oil content in phosphate ester fire-resistant oil for power use SH/T 0308 Determination of air release value of lubricating oil

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Purification Physical methods are used to remove moisture, gas and solid particles from oil, so that the relevant quality indicators of oil products (such as moisture, particle pollution level, etc.) reach to the process of using the requirements.