

Problems of Adapting the Operating Thermal Power Plant Equipment to the Technological Emission Indicators Stipulated by the Reference Document on Best Available Techniques 38-2022 “Large Combustion Plants”

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Abstract—The article considers problems relating to reduction of pollutant emissions at Russian thermal power plants (TPPs) in connection with the introduction of new technological indicators proposed in the new edition of the Reference Document on Best Available Techniques (ITS) ITS 38-2022. The results obtained from investigating more than 40% of boiler units that operate at Russian TPPs in regard to technical and environmental characteristics are summarized. It is shown that boilers commissioned before December 31, 2000, pose the main problem in adapting the existing TPPs to the new technological indicators, because they were designed without the use of air-protection measures and technologies except for ash collectors. The article estimates the scales of replacing and modernizing the main and auxiliary equipment of these Russian large fuel combustion power plants (LCPs) for reducing the emissions of marker pollutants to a level not higher than the technological indicators specified for this group. The introduction of new technological indicators for solid fuel ash emissions will require a serious change in the existing structure of ash-collecting plants by replacing or modernizing them. Currently, Russian TPPs are not equipped with operating flue gas desulfurization systems, as a result of which the sulfur dioxide emissions from more than 40 coal-fired boilers do not comply with the established technological indicators. The nitrogen oxide emissions from gas-and-fuel oil fired boilers are in the main in compliance with the environmental requirements in contrast to 25% of coal-fired boilers, at which these requirements are not complied with. For the oldest and numerous group of boilers that were commissioned before December 31, 2000, the article considers ways of introducing the best available techniques (BAT) recommended in the ITS 38-2022 and proposes specific low-cost and quickly introduced air-protection measures for reducing the marker pollutant emissions into atmospheric air to a level not higher than the technological indicators (BAT-associated Emission Levels, BAT-AELs) with taking into account the existing technical and economic constraints.

Keywords: marker pollutants, technological indicators (BAT-Associated Emission Levels (BAT-AELs)), best available techniques, TPPs, large fuel combustion power plants, ash collectors, Environmental Performance Enhancement Programme

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