VGB POWERTECH

Technical-Scientific Report

Availability of Power Plants 2012 – 2021

VGB-TW 103Ve (2022)

www.vgbe.energy

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For a comparison of diagrams, a two-sided view starting from page 2 is set.

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Amendments can be sent to the e-mail address vgb.standard@vgb.org. The subject line should contain the exact specification of the relevant document in order to clearly assign the e-mail content to the appropriate VGB-Standard.

Reference to series

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The following reports couldn't generate for this period because there are no sufficient data present, which permit to build a collective in accordance with VGB criteria.

I. Introductory Remarks

Introduction

Since 1970 VGB has been collecting data according to standardized uniform definitions and recording procedures. With the liberalization of the energy markets, the technical and economic assessment of power plants has gained more and more importance. On the basis of the cooperation between Eurelectric and VGB it was decided to merge data collection regarding the availability and unavailability of power plants. These data provide information about the availability and utilization of thermal power plants in order to compare the performance of power plants and to assess plants´ behaviour in daily operation. Reasons for unavailability of systems and main components also have being collected since 1988 in order to identify and assess direct cause.

However power generation in Europe has changed substantially over the last decade.

The development of renewables, the generation decrease of conventional power plants, the different European energy policies, and the electricity market development need more flexibility in operation and effective tools to help taking the right decisions.

According to the suggestions of the VGB Technical Group “Performance Indicators” (TGPI) the database system KISSY has been modified and upgraded in order to be able to provide technical benchmark reports in real time. The European utilities which provide data are able to analyse the data online. Currently the German, English, French, Italian, Dutch, and Portuguese languages are supported. In the future apart from the existing parameters, it will also be possible to evaluate the parameters that were newly defined by the TGPI with the new online analysis tool. Commercial background information (e.g. price data of the electricity stock exchange) are foreseen to be included in the KISSY system, too.

In addition to upgrade the KISSY database, the associated VGB-Standards are already published in different languages. The former VGB Guidelines “Availability of Thermal Power Plants”, “Unavailability of Thermal Power Plants” and “EMS Event Criterion Key Systems” had been merged into one, completely revised guideline and in the meanwhile has been updated by the newly defined parameters for several times on a regular update basis. The up-to-date English, French and German versions can be downloaded from the VGB Homepage for free.

General remarks concerning the report

This report is divided into 5 parts according to the fuel type and to the type of power plants; that means:

Part A: Fossil fired units without combined cycle units and gas turbines, which are taken into account in two other parts (B and C). It is important to note that in part A some results are presented according to the technology of the boiler or the furnace type. In these two cases we don't differentiate the main fuel taken into account and we also mix different capacities together. That means for example, that in sub chapter A.5.1.2.1 all sub critical units consider without distinguishing the fuel (coal, biomass, lignite) and the capacity.

Part B: Combined Cycled Units. In this sub chapter the results are presented under consideration of the total unit, as well as the separating into the steam turbine part and the gas turbine part.

Part C: Gas Turbine Units. This sub chapter focuses on the simple gas turbines (including the GT of CCGT) and is divided into two parts: the open cycle units and the jet engine units.

Part D: Nuclear Power Plants. The units included are those with light water reactors (BWR and PWR) all together or separated. All other types of reactors are not taken into account due to the smallness of the statistical sample.

Part E: Hydro Power Plants. This sub chapter presents the results of pumped storage hydro power plants (PSP) as well as storage hydro power plants (SP). In addition to the availability data the number of change of operating mode is also presented.

The new charts incorporate the worst, median and best quartile values for the parts A to D. The definition of each value is recalled below:

– The first quartile also called the lower (or worst) quartile or the 25^{th} percentile separating the lowest 25 % of data from the highest 75 %.
– The second quartile (the median or the 50^{th} percentile) cuts the data set in half, 50 % being higher and 50 %being lower.
– The third quartile (also called the best or upper quartile or the 75^{th} percentile) separating the highest 25 % of data from the lowest 75 %.

Remark: all weighted average values are written in normal and the quartile values are written in Italic font.

Further definitions can be found in the public, free VGB-Standards:

– *VGB-S-002-01 Basic Terms of the Electric Utility Industry*
– *VGB-S-002-02 Hydropower*
– *VGB-S-002-03 Technical and Commercial Indicators for Power Plants*