

Operational Report Return Form 2024: Guidance Notes

General Comments

These notes are intended as guidance to assist in the completion of the IPOWERE Operational Report return spreadsheet.

The Operational Report provides guidance and benchmark performance indices to operators and users of engines and all types of power generation facilities worldwide. As such, it relies upon the contributions of users to ensure it is both comprehensive and statistically valid. We hope that you will be able to participate in the compilation of this report, and that you will find the output to be useful and interesting. The 2024 report will cover reciprocating engine, gas turbine, steam turbine, wind turbine, water turbine, solar, and energy storage power generation assets and submissions for these types of facilities will be most appreciated.

This data collection is for one 12 month period of operational data. The reporting period can be calendar years, organisation financial years or other 12 month reporting periods to suit the organisation's preference. New Contributors are welcome to provide additional data covering two or more years.

If the organisation has existing operating or management reports that contain the relevant data we would be happy to receive those (or relevant extracts) and collate the data ourselves. This would make it easier for the organisation to take part in the survey.

Please feel free to recommend this to relevant colleagues, and to circulate these documents to other possible contributors. As with any benchmarking exercise, the greater the number of contributors, the better the outcome. All contributors providing a valid report will receive a copy of the final report.

Please provide as much data as you are able to. If you are unable to provide all of the data requested, then please provide as much as possible – part completed returns are clearly better than none at all.

If you have any queries on the data requested, or any other aspect of the Operational Report then please contact either the IPOWERE office:

IPowerE Office:

enquiries@ipowere.org

Tel +44 (0) 1234 214340

Should you need more time then let us know as we will appreciate receiving your data as soon as you can provide it. Please take note that anonymous returns are accepted and that Confidentiality of these will be respected.

1 Company Data Worksheet

Company and Contact Details

In every case please enter the name, address and contact details for your organisation. This information will be used by IPOWERE for our own records, and will be published in the Operational Report unless you prefer your contribution to be anonymous.

Confidentiality

If you require that your company details are not published with your operational data then please state “**YES**” in the box in the “Confidentiality” section. If you do so, then your company details will be withheld from the published report, and you will be assigned a reference number only. You will, of course, be advised what your own reference number is.

Reporting Period

Please provide the start/finish dates for the 12 month period to which the data refers. This can be a calendar year, or a financial or technical 12 month reporting period, to the preference of the Contributor. It is suggested that the most recently completed 12 month calendar year be provided.

For some earlier reports we have received three years of data, which was to enable some history to be built up. For this report and in future, only the latest year would be needed from our regular contributors.

Please provide a separate spreadsheet for each 12 month period provided.

Fuels Used

If you have average fuel properties available then please provide them. These may be from your own analysis, or your fuel suppliers. If you do not have this information, then we will use a nominal average value for each fuel type. This information is to be entered on the Company Data sheet and replaces the example data on the return form.





Engine or Cycle efficiency calculations are typically based upon metered fuel consumption at a temperature of 15°C. If the fuel is metered at a higher temperature than this, there is normally a correction factor applied. If your fuel consumption is not corrected to 15°C then please advise the temperature at which it is metered, and we will apply a correction.

Operations and Staff Numbers

This section is intended to provide a high level analysis of the number of Operations and Maintenance staff as compared to the operating duty of the station. Please feel free to provide further information or explanatory notes if this may assist with this.

The Institution of Power Engineers

Registered office: Bedford Heights, Manton Lane, Bedford MK41 7PH
Registered in England and Wales as a Company Limited by Guarantee No. 07244044
Registered Charity No. 1139906

 +44 (0)1234 214340
 +44 (0)1234 355493
 enquiries@ipowere.org
 www.ipowere.org

2 Engine Data Worksheet

General Engine Parameters

Please provide as much information as you are able to for your power generation plant and engines.

The "Set Number" is your own designation.

Outage Hours, Availability and Reliability

Unplanned/forced outage is where the plant either shutdown of its own accord, or could not safely have been left running for a period of more than one hour after discovery of the problem.

Unplanned/forced outages contribute to the engine reliability indicator.

Planned R&M hours is plant outages for scheduled work – either routine planned maintenance or repairs that can safely be scheduled for a convenient time.

Planned R&M plus forced outage hours contribute to the engine availability indicator.

Plant Utilisation and Load Factor

These parameters are an indication of plant utilisation based upon total MWh generated.

Generation from Heat Recovery and Auxiliaries Consumption

Where additional generation from heat recovery is installed (e.g. steam turbine generation from exhaust gas boilers) then please indicate this separately to output from the main generator itself. If heat recovery generation is shared between engines, then please indicate this or apportion to individual engines in the most appropriate way.

If the generator output does not account for all generator parasitic electrical auxiliaries consumption, then please provide the auxiliaries consumption. If auxiliaries consumption is not accurately metered then please provide an estimate. Auxiliaries consumption is for each individual generator itself, and not for station or site "common" auxiliaries.

The intention of these parameters is to establish the net efficiency of the generating set itself, after allowing for its own parasitic auxiliaries consumption. Net efficiency also including heat recovery generation is calculated separately.

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3 Gas Turbine and CCGT Data Worksheet

General Parameters

Please provide as much information as you are able to for your plant. If you are reporting for a gas turbine combined cycle plant (CCGT) then please show the data for each generating unit including the steam turbine generator output individually and in the total generation.

Note that gas turbine open cycle and combined cycle returns are to use "Return Form 2" which can be downloaded from the links at the bottom of the operational report page on the IPowerE website. Open cycle (simple cycle) gas turbines are shown as a separate entry on the same return form.

The "Set Number" is your own designation.

Outage Hours, Availability and Reliability

Unplanned/forced outage is where the plant either shutdown of its own accord, or could not safely have been left running for a period of more than one hour after discovery of the problem.

Unplanned/forced outages contribute to the plant reliability indicator.

Planned R&M hours is plant outages for scheduled work – either routine planned maintenance or repairs that can safely be scheduled for a convenient time.

Planned R&M plus forced outage hours contribute to the plant availability indicator.

Plant Utilisation and Load Factor

These parameters are an indication of plant utilisation based upon total MWh generated.

Generation from Heat Recovery and Auxiliaries Consumption

Where additional generation from heat recovery is installed (e.g. combined cycle plants) then please indicate this separately to output from the main generator itself. If heat recovery generation is shared between gas turbines, then please indicate this or apportion to individual plant in the most appropriate way.

If the generator output does not account for all generator parasitic electrical auxiliaries consumption, then please provide the auxiliaries consumption. If auxiliaries consumption is not accurately metered then please provide an estimate. Auxiliaries consumption is for each individual generator itself, and not for station or site "common" auxiliaries.





The intention of these parameters is to establish the net efficiency of the generating set itself, after allowing for its own parasitic auxiliaries consumption. Net efficiency also including heat recovery generation is calculated separately.

FURTHER QUERIES

The Operational Report Working Group will be pleased to answer any questions. Send any questions to enquiries@ipowere.org

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4 Wind Turbine/ 5 Hydro – Water Turbine / 6 Solar/ 7 Energy Storage / 8 Other Data Worksheets

General Parameters

Please provide as much information as you are able to for your power generation renewable power facility, energy storage facility or other type of facility and please provide data for each generating unit individually and in the total for the facility.

The “Set Number” is your own designation.

Outage Hours, Availability and Reliability

Unplanned/forced outage is where the plant either shutdown of its own accord, or could not safely have been left running for a period of more than one hour after discovery of the problem.

Unplanned/forced outages contribute to the plant reliability indicator.

Planned R&M hours is plant outages for scheduled work – either routine planned maintenance or repairs that can safely be scheduled for a convenient time.

Planned R&M plus forced outage hours contribute to the plant availability indicator.

Plant Utilisation and Load Factor

These parameters are an indication of plant utilisation based upon total MWh generated.

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