

System to Generator Operational Intertripping Schemes

Introduction

1. At the GCRP meeting 23rd November 2007, National Grid submitted a paper entitled "Guidance on System to Generator Intertrips". The Panel considered that, whilst the paper was useful, additional information could be provided within the body of the Grid Code regarding System to Generator Operational Intertripping Schemes which would be beneficial to Users.

What is a System to Generator Operational Intertrip?

2. The Grid Code currently defines a System to Generator Operator Intertrip as:

'A **Balancing Service** involving the initiation of a **System to Generator Operational Intertripping Scheme** of automatic tripping of the User's circuit breaker(s) resulting in the tripping of **BM Unit(s)** or (where relevant) **Generating Unit(s)** comprised in a **BM Unit** to prevent abnormal system conditions occurring, such as over voltage, overload, **System** instability etc after the tripping of other circuit-breakers following power **System** fault(s).'

3. The System to Generator Operational Intertripping Scheme, applicable to thermal intertrips only, was introduced by CUSC Amendment Proposal 76 (Treatment of System to Generator Intertripping Scheme). There are other types of intertrips and schemes utilised by National Grid which are not covered by the System to Generator classification e.g. Commercial, Derogations, System to Demand Intertrip Scheme etc which cover other types of system issues e.g. stability or voltage.

System to Generator Operational Intertripping Scheme – Code Provisions

4. The Grid Code specifies that a System to Generator Operational Intertripping Schemes (inclusive of CCGT Module and Power Park Modules Intertripping Schemes) may be installed as part of a condition of the connection of the Generator and/or to enable the timely restoration of circuits following power system faults. The scheme specific details will be contained within the Bilateral Agreement.
5. The type of information contained with the Bilateral Agreement is usually as follows: the relevant category of the schemes (referred to as Category 1 Intertripping Scheme, Category 2 Intertripping Scheme, Category 3 Intertripping Scheme and Category 4 Intertripping Scheme, the Generating Unit(s) that can be instructed to be armed, and the time within which the circuit breaker(s) are to be opened. The Bilateral Agreement may also specify the conditions during which National Grid may instruct the schemes to be armed.
6. The provisions relating to the arming and disarming of the System to Generator Operational Intertripping Scheme (inclusive of compensation provisions) are specified in Section 4 (Balancing Services) of the CUSC. These include provisions requiring the System to Generator Operational Intertripping Scheme to be armed in response to an Ancillary Service instruction given by National Grid to the Generator in accordance with BC2.8 of the Grid Code.
7. The four categories of System to Generator Operational Intertripping Scheme are already defined terms within the Grid Code. As such it is not proposed to describe the individual categories within the body of the Grid Code text but it is acknowledged that there may be benefit in referring to the existing terms within the relevant (existing or new) provisions.

Proposal

8. It is therefore proposed that the Grid Code is amended such that it provides additional information regarding the System to Generator Operational Intertripping Scheme which may be of benefit to Users.
9. The existing provisions will be amended such that it provides additional information regarding:
 - The categories of System to Generator Operational Intertripping Scheme
 - The type of information specified in the Bilateral Agreements
 - Generic Intertrip timings
10. The existing definition of System to Generator Operational Intertripping Scheme will be amended such that it refers to Power Park Modules Intertripping Scheme. The current wording does not accurately reflect that a System to Power Park Modules will refer to the one four categories of intertripping schemes.
11. Site specific requirements regarding to the Scheme to Generator Operational Intertripping Schemes will continue to be specified within the Grid Code.

Recommendations

12. The GCRP are invited to:
 - a) note the existing Grid Code provisions
 - b) note the different types of intertripping
 - c) discuss the legal text
 - d) agree that the proposed changes should proceed for industry consultation

Appendix 1 – Grid Code Changes

Proposed Changes to Connection Conditions

CC.6.3.17 **NET** may require that a **System to Generator Operational Intertripping Scheme** be installed as part of a condition of the connection of the **Generator**. Scheme specific details shall be included in the relevant **Bilateral Agreement**.

The type of information contained within the **Bilateral Agreement** is usually as follows:

1. the relevant category(ies) of the scheme (referred to as **Category 1 Intertripping Scheme, Category 2 Intertripping Scheme, Category 3 Intertripping Scheme and Category 4 Intertripping Scheme**),
2. the **Generating Unit(s)** that can be instructed to be armed, and
3. the time within which the **Generating Unit(s)** circuit breaker(s) are to be automatically tripped.

The **Bilateral Agreement** may also specify the conditions during which **NET** may instruct the schemes to be armed.

CC.6.3.18 The time within which the **Generating Unit(s)** circuit breaker(s) need to be automatically tripped is determined by the specific conditions local to the **Generator**. This 'time to trip' can typically range from 100ms – 10sec. A 10sec trip may allow the initiation of an automatic reduction in the **Generating Unit(s)** output prior to the automatic tripping of the **Generating Unit(s)** circuit breaker.

Proposed Changes to Glossary and Definitions

System to Generator Operational Intertripping Scheme A **System to Generating Unit** or **System to CCGT Module** or **System to Power Park Module Intertripping Scheme** forming a condition of connection and specified in Appendix F3 of the relevant **Bilateral Agreement**, being either a **Category 1 Intertripping Scheme, Category 2 Intertripping Scheme, Category 3 Intertripping Scheme or Category 4 Intertripping Scheme**.