

# Grid Code Gas Insulated Switchgear (GIS) Working Group

Meeting Name	Grid Code Gas Insulated Switchgear (GIS) Working Group
Meeting No.	1
Date of Meeting	26 <sup>th</sup> February 2008
Time	10:00am – 2:30pm
Venue	Room B1.1, National Grid Offices, Warwick

This note outlines the key points from the first meeting of the Grid Code (GIS) Working Group

## Members Present:

Duncan Burt	BU	Chairman
Richard Dunn	RD	Secretary
Emma Carr	EC	National Grid
Rod Richardson	RR	National Grid
John Norbury	JN	RWE Trading
Jeff Norfolk	JNo	RWE Trading
Claire Maxim	CM	E.On
John Morris	JM	British Energy
Keith Hodson	KH	Central Networks
Chris Holdsworth	CH	CE Electric UK
Dave Sanderson	DS	EdF Energy Networks
Bridget Morgan	BM	Ofgem

## Apologies:

None

### 1. Introductions

1. DB welcomed those present to the first meeting of the GIS Working Group. DB explained that the Working Group had been convened as a joint Grid Code/CUSC Working Group but was operating under the Grid Code governance arrangements as the issue had first been raised at the Grid Code Review Panel and the fact that the Grid Code governance did not require a firm proposal to amend the Grid Code in order for the GCRP to convene a Working Group. CUSC governance required a firm amendment proposal to be put forward to the CUSC Panel before a Working Group could be established and RWE had not put forward such an Amendment Proposal.

### 2. Working Group Terms of Reference

2. EC circulated draft Terms of Reference for the Working Group at the meeting which had been drawn up by National Grid (see Appendix A). DB invited comments on the draft Terms of Reference from WG Members.
3. Comments principally focused on the references to potential CUSC changes in the draft TORs. JN explained that he had raised the issue at the GCRP since he viewed GIS as principally a technical matter but accepted that any changes to the ownership boundary to accommodate GIS would require changes to the CUSC. However, he would not like to see detailed technical requirements incorporated into any CUSC changes. DB commented that the Working Group could take CUSC changes forward with any Grid Code drafting. If there was a significant amount of CUSC drafting this could be referred back to the CUSC Panel for consideration but the Panel would require a firm Amendment Proposal to be put forward to it before it could progress the issue, either convening a Working Group or going straight to industry consultation. The eventual Grid Code consultation on the issue could also address CUSC changes so that any later formal CUSC consultation might be straightforward.
4. CM questioned whether the Group had the relevant expertise to identify options to resolve issues not only for the Grid Code but also for the CUSC and any other

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associated documents. For example the Group did not have a Member from the Scottish TOs. BM believed that the Group would need to set out any required CUSC changes and refer these to the CUSC Panel. CM requested that this process should be recorded. EC agreed to add the process as an Appendix to the draft Terms of Reference for the Working Group whilst RD would sound out the Scottish TOs about providing a nomination for Member of the Group.

**Action: National Grid (EC& RD)**

### 3. RWE Paper on GIS

5. DB invited JN to reprise his presentation to the GCRP of the RWE paper on GIS for the benefit of those Working Group Members who were not at the GCRP.
6. JN indicated that GIS created a lack of definition and certainty for Users. This lack of precision was becoming increasingly problematical and RWE believed it was important to resolve the issues particularly for any new sites. The paper had been raised in response to problems that were being encountered at a site that was planned to be replanted with GIS and to help prevent similar problems arising at other new and existing sites. The crux of the problem was that the ownership boundary resided within the gas zone for GIS which gave rise to a variety of problems including who was responsible for safety and maintenance to highlight just two key areas. The User was also restricted in terms of choice of equipment supplier for original and replacement assets at a GIS site and similarly restricted in terms of ongoing maintenance. In addition, the User had no visibility of the extent of contestability in the original provision of the User's GIS assets that were procured by National Grid. RWE suggested that the issue could be solved by re-defining the boundary between National Grid and the User at GIS sites in the Connection Conditions of the Grid Code so that it included all connected GIS assets (up to an external connection to the User's assets) and treated as licensed assets by National Grid. This was on the basis that Users could not add value or be more efficient in procuring or maintaining User's assets so that it was probably best to treat all these assets as an integrated part of the GIS substation.
7. KH confirmed that DNOs had encountered similar issues at GIS sites and were particularly concerned that it was difficult to identify the extent of legal liability with GIS. CH agreed that single ownership could be a viable approach but it would also need to embrace single ownership by the DNOs e.g. for 132kV boards. This would however raise regulatory issues about the asset base and the return and a host of other issues. KH noted that single ownership was a principle that had been endorsed by the ENA. He agreed to circulate the ENA paper to RD for onward transmission to Group Members.

**Action: KH & RD**

8. JN clarified that the RWE proposal was put forward purely from the standpoint of Generators. CM commented that if it was difficult or impossible to identify the physical boundary clearly at present within GIS that suggested logically that the boundary would need to be adjusted to reflect this fact. EC commented that this was one possible solution but it had limitations.

### 4. Brainstorming of other Issues Raised by GIS

9. National Grid circulated the slides at the meeting contained in Appendix 2 in order to facilitate discussion.
10. RR explained that the commonest GIS configurations were shown as A (gas zone across main busbar) and B (gas zone across disconnector and main and reserve busbars) in the diagram on slide 1 although there was no real standard GIS configuration. However most GIS installations were of the B type. National Grid referred to these GIS installations as "tiger" bars as ownership of the gas zone could be with either National Grid, the DNO or the Generator. It was noted that the benefits

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of lower maintenance costs associated with GIS were not necessarily shared with the User. It was agreed that the impact on maintenance costs would need to be explained at a future meeting of the Group and options considered for sharing these savings with the User.

**Action: National Grid (RR & DB)**

11. JN noted that the definition of the electrical ownership boundary in CUSC 2.12 did not refer to GIS. RR pointed out that the definition did however refer to SF6 and that National Grid had interpreted this as an application to GIS. DS suggested that one approach to a revised definition could be to refer to metal clad switchgear but CM noted that there was need to retain the separate definition of rack-out switchgear. DS suggested that in operational terms the definition needed to reflect logic and practice.
12. The Group considered the suggested headings for brainstorming the issues raised by GIS contained in slide 2. After discussion it was agreed that the issues would be considered under the following 3 broad categories:

- Construction
- Operation
- Enduring Ownership boundary

It was agreed that maintenance, site safety and responsibility and commercial issues would also be grouped under one or more of these categories. DS raised the issue of retrospection and RR explained that National Grid wished to achieve clarity in this area and had not really considered whether retrospection could or should apply. It was agreed that any preferred solution could be tested as to whether it was capable of embracing retrospection. EC agreed to incorporate the issue of retrospection in the draft TORs for the Group.

**Action: National Grid (EC)**

### **Construction**

13. RR confirmed that cost was not necessarily a major factor in the choice to adopt GIS. More important factors were the application at coastal sites to prevent corrosion and at sites where space was restricted and/or planning permission for AIS would be much more difficult to obtain as it was more visually intrusive than GIS. GIS could not be described as National Grid's solution of choice. DS raised the issue of the apportionment of the benefits arising from the savings on the cost of land (especially in the south east) achieved by the GIS option. RR confirmed that such savings were not factored into the GIS connection design. EC noted that National Grid's connection offers were referable to Ofgem if a User believed this was a key issue in the offer structure.
14. Other issues raised in discussion of the Construction category were:
  - GIS can be the preferred solution for replacing time-expired assets for good reasons (e.g. environmental, limited space);
  - At distribution level voltages, GIS could be the lowest cost choice based solely on lifetime costs, excluding land, higher levels of pollution etc.
  - Limited scope for contestability or self-build as effectively tied to the same manufacturer and National Grid's spec – prospect of User building its own GIS substation given boundary, safety issues etc. is severely limited;
  - Construction could technically be by any relevant licensee now that the PES licences do not exist – no artificial geographical constraints;
  - Need to consider circumstances where work could be better undertaken on a licensed or an unlicensed basis
  - No practical point of permanent physical disconnection with GIS (unlike AIS) – gas zone separators do not therefore provide scope for

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- external connection
- Alliance preference for plant comparability would not necessarily impact on a DNO's replacement policy if the DNO constructed the GIS

15. DB summarised the outputs from the discussion:

- single unit construction approach to GIS was likely to be the most effective (either single owner or two parties working together). Ownership could subsequently be split;
- no practical contestability with GIS
- Advantage of AIS connections were that, based on the comments of the group they appeared to provide greater opportunity for contestability

### Operations

16. Issues raised in discussion of the Operations category were:

- Operational arrangements currently tend to follow the arrangements for the ownership boundary;
- If the busbar selector was in the busbar gas zone the ownership boundary would allow control by National Grid;
- There were both GIS and AIS examples of the User owning the busbar and therefore responsible for operations;
- It was not necessary for National Grid to carry out the physical task of switching the assets under its control – Scottish TOs do the physical switching on their system to National Grid's instructions. A similar regime could apply offshore in due course (on the basis that onshore arrangements should apply offshore unless there was a good reason that they should not);
- Plenty of examples exist of DNOs operating National Grid assets and vice versa
- Switching to synchronise/de-synchronise a generator with the Grid was a much more dynamic activity than switching DNO circuits and therefore, in terms of control, the two categories should be considered separately;
- If the majority of maintenance costs fall on the generator for GIS then the generator should operate the GIS
- Any change of ownership arrangements to reflect GIS should not impact on operational arrangements;
- reductions in the voltage at which generators will be synchronised with the Grid are likely to be more common in future on average with more renewable generation coming on to the system. The increased use of generator-voltage circuit breakers for main thermal power plants should also significantly reduce the incidence of routine generator synchronising at grid voltage.

The Group concluded that responsibility for operation should generally follow ownership and that maintenance costs would not be a significant driver with GIS.

### Enduring Ownership

17. Issues raised during discussion on the enduring ownership category were

- the RWE proposal envisaged enduring ownership by National Grid i.e. enduring ownership by a single entity;
- National Grid could not accept responsibility for CAP048 (Interruption) payments on assets formerly owned by the Generator – CAP048 arrangements were mainly designed to incentivise National Grid to minimise any interruption;

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- Unintended consequences for SQSS was an issue since there was no clear definition of where the transmission system ended – in the CUSC this was “where agreed”;
- Enduring ownership considerations different at DNO and Generator sites;
- DNOs did not believe that they had heard convincing evidence for them to change from their existing arrangements (under which a single party, often the DNO, may own the busbars section on the transmission side);
- Any change would require appropriate charging to be put in place that were non-discriminatory
- The implications of decommissioning need to be explored
- It is likely that the enduring maintenance of Generator-User's GIS assets would be carried out by National Grid irrespective of ownership. It was noted that most Generator-User assets in AIS substations are maintained by National Grid as an unlicensed activity and therefore the likelihood of GIS maintenance by anyone other than National Grid would be unlikely.

18. The Group concluded that further work was required on an enduring solution.

### 5. Consider RWE Proposed Solution

19. The RWE solution had been considered under the three categories discussed in the brainstorming session

### 6. Next Steps

20. DB indicated that further work was required to analyse the issues raised under the three main categories particularly in the areas of:

- Safety
- Retrospection
- Commercial (charging issues)
- Legal issues
- Compensation
- Maintenance (presentation at next Group meeting)

RD would produce draft notes of the meeting and EC would work up a check list of issues raised under the three main categories of Construction, Operations and Enduring Ownership. EC would arrange for a presentation to be made to the Group at the next meeting on maintenance costs of GIS.

**Action: National Grid (RD & EC)**

National Grid would look to include attendance from an in-house GIS specialist, Paul Coventry, at the next meeting.

**Action: National Grid**

### 7. Date of Next Meeting

21. It was agreed that the next meeting should be scheduled towards the end of April. The Secretary would circulate potential dates for the next meeting to Working Group Members who would provide their preferences back to him.

**Action: National Grid (RD)**

## DRAFT

### Grid Code Working Group Gas Insulated Switchgear (GIS) Terms of Reference

#### Objectives

A paper was presented to the November GCRP by RWE highlighting a number of issues with GIS. The GCRP recommended establishing a joint working group with the CUSC but under the governance of the Grid Code.

The objective of the group is to discuss the issues and proposals under 'Scope of Work' and agree a way forward regarding possible modifications to the Grid Code and the CUSC.

#### Membership

The membership of the working group will be drawn from the GCRP or their nominated representatives, the Relevant Transmission Licensees and Ofgem.

#### Scope of Work

The group will consider the following issues, as agreed by the GCRP:

- (a) Identify all current issues with GIS
- (b) Identify all possible options to resolve issues and the consequences of each option for the Grid Code, CUSC and any other associated documents within the framework
- (c) Identify advantages and disadvantages of each option and agree a preferred option
- (d) Consider the implications on the Grid Code and CUSC in detail

#### Deliverables

National Grid will produce:

- a GCRP paper recommending a way forward on the above issues, taking into account the group discussions
- draft legal text of any proposed Grid Code changes

#### Timescales

The working group will aim to complete its work for the GCRP meeting ????

[National Grid slides from the first Group meeting]