

MODIFICATION RECOMMENDATION FORM



RECOMMENDATION TO CER BY EIRGRID OF MODIFICATION TO GRID CODE.

ABSTRACT / TITLE OF MODIFICATION	MPID 246 HOUSEKEEPING – REACTIVE POWER
MODIFICATION NUMBER	MPID 246
RECOMMENDED AT GCRP MEETING NUMBER	GCRP #37
LIST OF GRID CODE SECTION(S) AFFECTED BY PROPOSED MODIFICATION:	WFPS1.6.3.1
CURRENT GRID CODE VERSION :	5
MODIFICATION DESCRIPTION Overview THE REASON FOR THE RECOMMENDED MODIFICATION	<p>Following a review of the modifications approved for WFPS capabilities there were some queries from industry regarding interpretation of the new standards. A review of the clauses has highlighted a number of housekeeping items that require amendments.</p> <p>This modification deals with the clarification of WFPS1.6.3.1 which defines the Reactive Power capability expected from WFPS. The new text modification specifies the full voltage ranges for which the Reactive Power range is expected.</p>

History of Progression through GCRPs, Working Group and/or Consultation	<p>EirGrid presented the modification proposal MPID 246 to the Grid Code Review Panel members at a meeting held in the Clarion IFSC Hotel in Dublin on the 4th December 2013. No objections were raised by the panel members and the modification was recommended for approval.</p>
Summary Note of any Objections to the Recommended change from GCRP Members or Consultation Responses	<p>No objections were raised.</p>
Outcome of any GCRP Meeting Actions Relating to the Recommended Modification	<p>No actions were raised.</p>
Implication of not implementing the Modification	<p>The current Grid Code clause of WFPS1.6.3.1 does not specify the operational voltage ranges where Reactive Power capability is expected from WFPS. This modification aims to update the text with a view to clarifying the voltage range for which the capability is expected.</p>

RECOMMENDED MODIFICATION

RED-LINE VERSION

WFPS1.6.3 REACTIVE POWER CAPABILITY

WFPS1.6.3.1 **Controllable WFPSs** operating in **Power Factor** control mode, **Voltage Control** mode or constant **Reactive Power** mode shall be at least capable of operating at any point within the P-Q capability ranges illustrated in *Figure WFPS1.4*, as measured at the **Connection Point** over the normal and disturbed **Transmission System Voltage** ranges specified in [CC.8.3.2](#).

Referring to *Figure WFPS1.4*:

Point A represents the minimum Mvar absorption capability of the **Controllable WFPS** at 100% **Registered Capacity** and is equivalent to 0.95 power factor leading;

Point B represents the minimum Mvar production capability of the **Controllable WFPS** at 100% **Registered Capacity** and is equivalent to 0.95 power factor lagging;

Point C represents the minimum Mvar absorption capability of the **Controllable WFPS** at 12% **Registered Capacity** and is equivalent to the same **Mvar** as Point A;

Point D represents the minimum Mvar production capability of the **Controllable WFPS** at 12% **Registered Capacity** and is equivalent to the same **Mvar** as Point B;

Point E represents the minimum Mvar absorption capability of the **Controllable WFPS** at the cut-in speed of the individual **WTGs**;

Point F represents the minimum Mvar production capability of the **Controllable WFPS** at the cut-in speed of the individual **WTGs**;

The **TSO** accepts that the values of Points E and F may vary depending on the number of **WTGs** generating electricity in a low-wind scenario;

Figure WFPS1.4 represents the minimum expected **Reactive Power** capabilities of the **Controllable WFPS**. The **Controllable WFPS** is obliged to tell the **TSO/DSO** if it can exceed these capabilities, and submit the actual P-Q capability diagram based upon the installed plant and **Collector Network** characteristics to the **TSO** during **Commissioning**.

The **Grid Connected Transformer** tap changing range must be capable of ensuring nominal voltage at point Y for any **Voltage** at the **Connection Point** (Point Z) within the ranges specified in WFPS1.6.1.

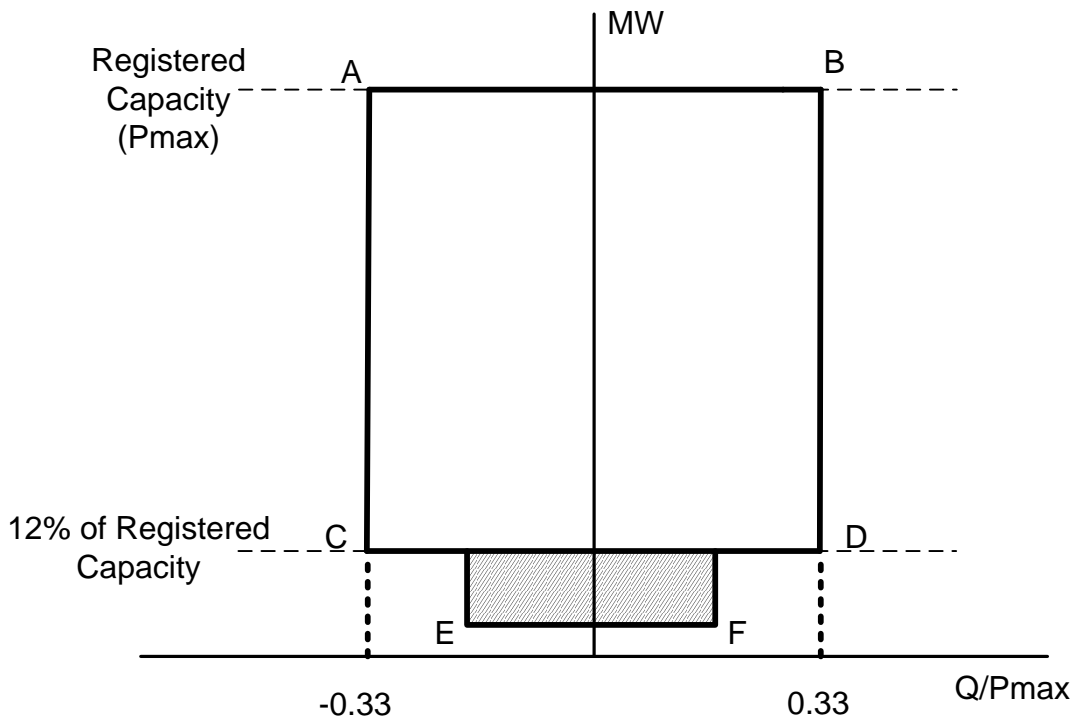


Figure WFPS1.4 – Minimum **Reactive Power** Capability of **Controllable WFPS**

GREEN-LINE VERSION

WFPS1.6.3 REACTIVE POWER CAPABILITY

WFPS1.6.3.1 **Controllable WFPSs** operating in **Power Factor** control mode, **Voltage Control** mode or constant **Reactive Power** mode shall be at least capable of operating at any point within the P-Q capability ranges illustrated in *Figure WFPS1.4*, as measured at the **Connection Point** over the normal and disturbed **Transmission System Voltage** ranges specified in CC.8.3.2.

Referring to *Figure WFPS1.4*:

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Point C represents the minimum Mvar absorption capability of the **Controllable WFPS** at 12% **Registered Capacity** and is equivalent to the same **Mvar** as Point A;

Point D represents the minimum Mvar production capability of the **Controllable WFPS** at 12% **Registered Capacity** and is equivalent to the same **Mvar** as Point B;

Point E represents the minimum Mvar absorption capability of the **Controllable WFPS** at the cut-in speed of the individual **WTGs**;

Point F represents the minimum Mvar production capability of the **Controllable WFPS** at the cut-in speed of the individual **WTGs**;

The **TSO** accepts that the values of Points E and F may vary depending on the number of **WTGs** generating electricity in a low-wind scenario;

Figure WFPS1.4 represents the minimum expected **Reactive Power** capabilities of the **Controllable WFPS**. The **Controllable WFPS** is obliged to tell the **TSO/DSO** if it can exceed these capabilities, and submit the actual P-Q capability diagram based upon the installed plant and **Collector Network** characteristics to the **TSO** during **Commissioning**.

The **Grid Connected Transformer** tap changing range must be capable of ensuring nominal voltage at point Y for any **Voltage** at the **Connection Point** (Point Z) within the ranges specified in WFPS1.6.1.

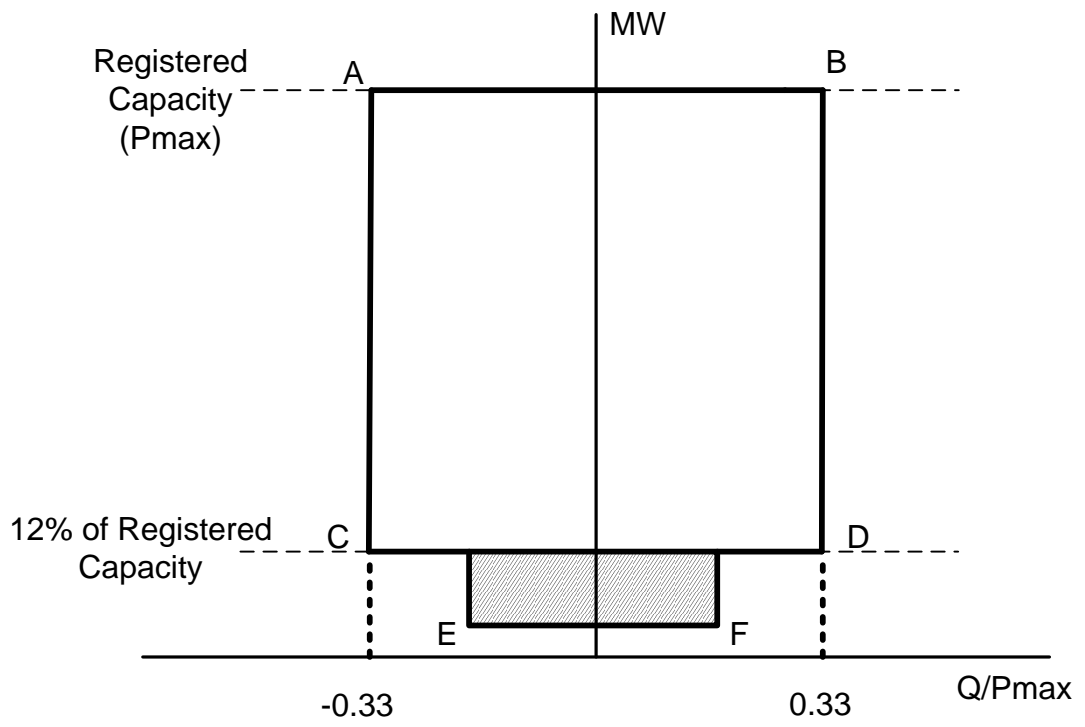


Figure WFPS1.4 – Minimum **Reactive Power** Capability of **Controllable WFPS**