PPM Reactive Power Capability

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EGCRP

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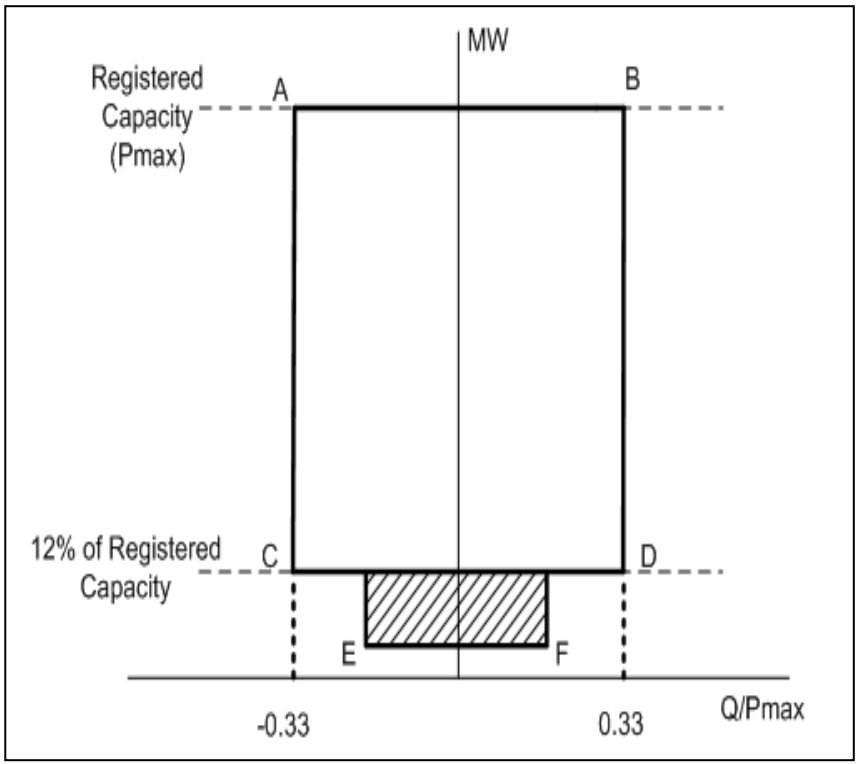
Figure PPM 1.4 Reactive Power Capability of PPMs



Point E	minimum Mvar production capability of the **Controllable PPM** at the cut-in speed of the individual **Generation Units**
Point F	miniminimum Mvar production capability of the **Controllable PPM** at the cut-in speed of the individual **Generation Units**

Registered Capacity Definitions

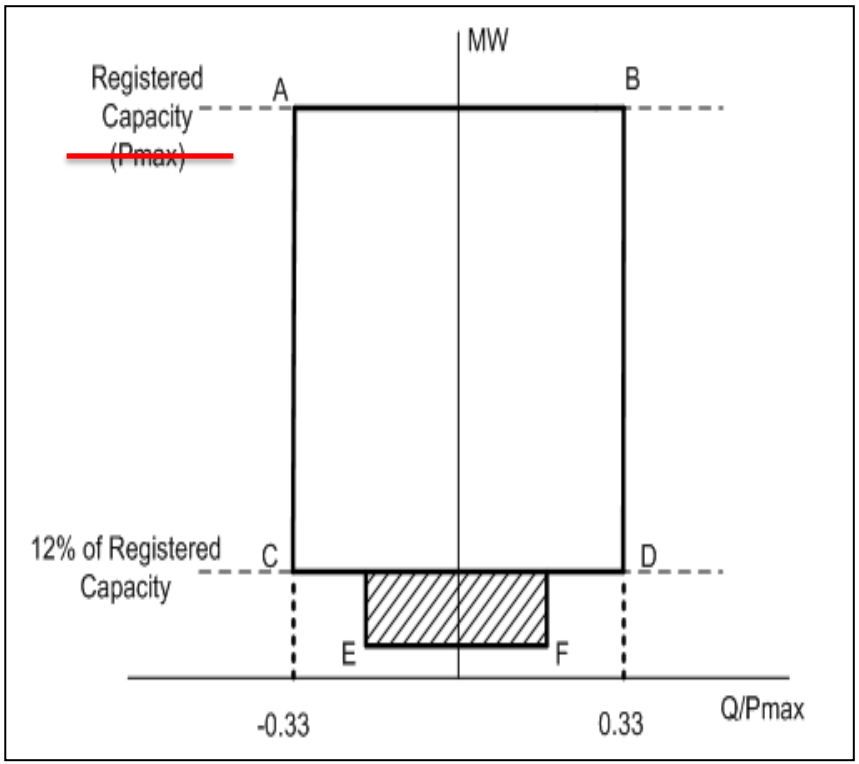
Registered Capacity	The maximum Capacity, expressed in whole MW, that a Generation Unit can deliver on a sustained basis, without accelerated loss of equipment life, at the Connection Point which is under the dispatch (or control of a Controllable PPM) of the TSO. This shall be the value at 10°C, 70 % relative humidity and 1013 hPa. The values of an Interconnector's Operating Characteristics for operation of the Interconnector pursuant to the Grid Code registered under the Connection Conditions.

How to Capture Reactive Power Capability

- Option 1
  - State that registered capacity and the reactive power capability curve apply in both directions
- Option 2
  - Utilised the existing interconnector methods

OPTION #1

Figure PPM 1.4 Reactive Power Capability of PPMs



Point E	minimum Mvar absorption capability of the **Controllable PPM** ~~at the cut-in speed~~ when any of the individual ~~**Generation**~~ **PPM Units** begins to export or import **Active Power**
Point F	minimum Mvar absorption capability of the **Controllable PPM** ~~at the cut-in speed~~ when any of the individual ~~**Generation**~~ **PPM Units** begins to export or import **Active Power**

ESPS Registered Capacity Definitions

Registered Capacity	The maximum Capacity, in either flow direction, expressed in whole MW, that a ~~Generation~~ PPM Unit can deliver on a sustained basis, without accelerated loss of equipment life, at the Connection Point which is under the dispatch (or control of a Controllable PPM) of the TSO. This shall be the value at 10°C, 70 % relative humidity and 1013 hPa. The values of an Interconnector's Operating Characteristics for operation of the Interconnector pursuant to the Grid Code registered under the Connection Conditions.

Point to Note

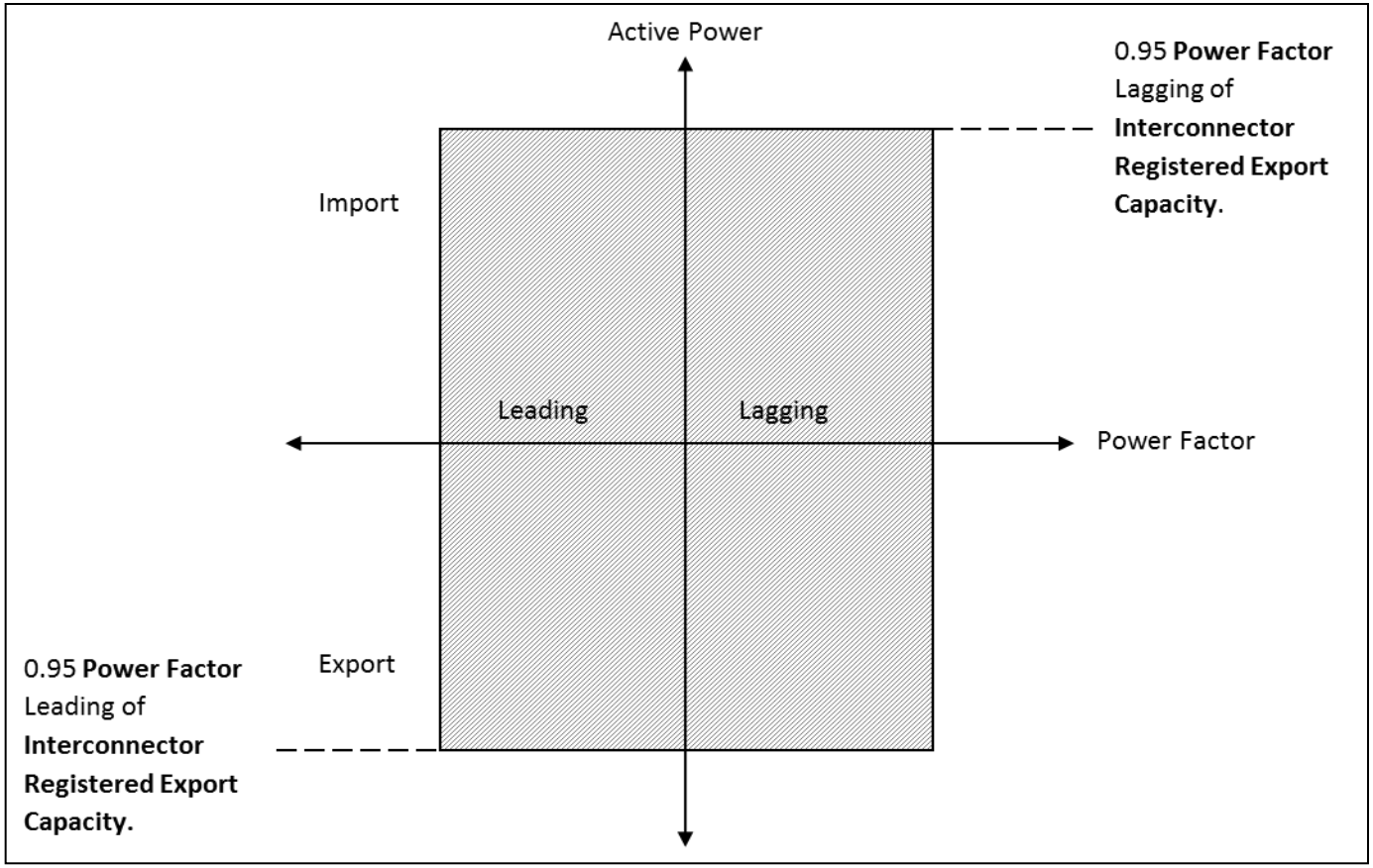
- Attractive option as:
  - registered capacity is referenced throughout the PPM code.
  - all references would now more accurately represent the import portion of ESPS

OPTION #2

I/C Registered Capacity Definitions

Interconnector Registered Capacity	The maximum Capacity, in either flow direction, expressed in whole MW, that an Interconnector can deliver on a sustained basis, without accelerated loss of equipment life, at the Connection Point. This figure shall include transmission power losses for the Interconnector.
Interconnector Registered Export Capacity	The maximum Capacity, expressed in whole MW that an Interconnector may export (transfer energy from the Power System to a remote network) on a sustained basis, without accelerated loss of equipment life, as registered with the TSO.
Interconnector Registered Import Capacity	The maximum Capacity, expressed in whole MW that an Interconnector may import (transfer energy from a remote network into the Power System) on a sustained basis, without accelerated loss of equipment life, as registered with the TSO.

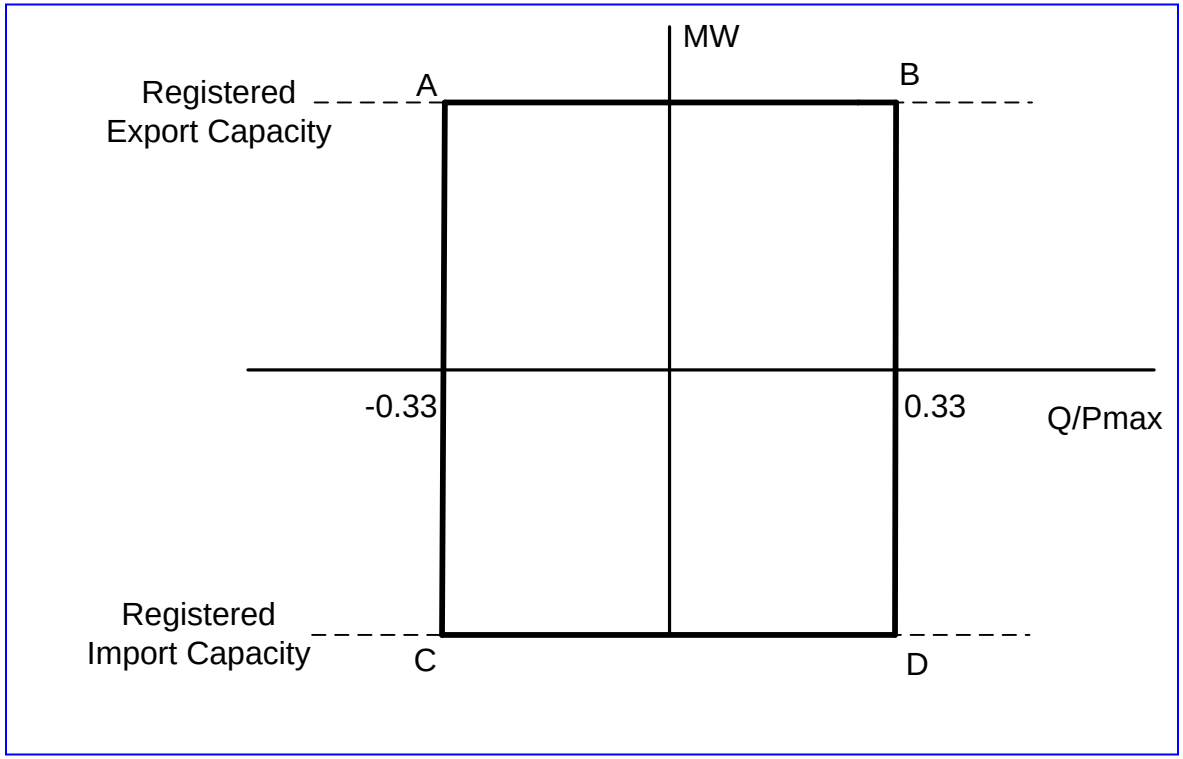
Figure CC7.5.10 I/C Reactive Power Capability



ESPS Registered Capacity Definitions

~~Interconnector~~ ESPS Registered Capacity	The maximum Capacity, in either flow direction, expressed in whole MW, that an ~~Interconnector~~ ESPS can deliver on a sustained basis, without accelerated loss of equipment life, at the Connection Point. ~~This figure shall include transmission power losses for the Interconnector.~~
~~Interconnector~~ ESPS Registered Export Capacity	The maximum Capacity, expressed in whole MW that an ~~Interconnector~~ ESPS generation may export ~~(transfer energy from the Power System to a remote network)~~ on a sustained basis, without accelerated loss of equipment life, as registered with the TSO.
~~Interconnector~~ ESPS Registered Import Capacity	The maximum Capacity, expressed in whole MW that an ~~Interconnector~~ ESPS demand may import ~~(transfer energy from a remote network into the Power System)~~ on a sustained basis, without accelerated loss of equipment life, as registered with the TSO.

Figure PPM1.4.1 Reactive Power Capability of ESPS



WFPS1.6.3.1 Reactive Power Capability for ESPS

Point A	minimum Mvar absorption capability of the **Controllable ESPS** at 100% **Registered Export Capacity** and is equivalent to 0.95 power factor leading
Point B	the minimum Mvar production capability of the **Controllable ESPS** at 100% **Registered Export Capacity** and is equivalent to 0.95 power factor lagging
Point C	minimum Mvar absorption capability of the **Controllable ESPS** at 100% **Registered Import Capacity** and is equivalent to 0.95 power factor leading
Point D	the minimum Mvar production capability of the **Controllable ESPS** at 100% **Registered Import Capacity** and is equivalent to 0.95 power factor lagging

Point to Note

- Less attractive option as:
  - registered capacity is referenced throughout the PPM code.
  - in order to accurately represent the import portion of ESPS all references to registered capacity would now need to include;
    - Registered capacity &
    - ESPS Registered Export Capacity &
    - ESPS Registered Import Capacity.

THOUGHTS???

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