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GRID CODE - CODE FOR WIND POWERED GENERATING STATIONS

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1 Scope

- 1.1 This code, intended for developers and operators of **Wind Powered Generating Stations**, is an integral part of the Grid Code of the power system of Kosovo and should be read in conjunction with the rest of the Grid Code which (with certain exceptions noted below) and is applicable to all **Wind Powered Generating Stations**.
- 1.2 The aim of this document is to provide a self-contained description of the technical and operational requirements that are to be met by the developers and operators of **Wind Powered Generating Stations** that wish to connect to the Kosovo electricity network and participate in the Kosovo electricity market.
- 1.3 The code follows a similar structure to the rest of the Grid Code, covering:
- **Planning** – setting out the requirement for **Generators** to provide specified information to enable the Transmission System Operators (**TSO**) to plan the operation and development of the Kosovo transmission network
 - **Connection** – setting out the requirements to be met by the **TSO** and by **Generators** either connected to, or seeking connection to the Kosovo transmission network
 - **Operational Planning** – covering medium (year-ahead) to short-term (day-ahead) planning procedures, such as:
 - the scheduling and coordination of system outages;
 - the forecasting of production and demand, system security assessment; and
 - day-ahead scheduling of generation production.
 - **Balancing** – describing the information and procedures required to allow the **TSO** to discharge his licence obligation to maintain a balance between generation and demand in real-time, and to enable the **Generator** to support the **TSO** in this.
 - **Operations** – covering a number of areas of real-time operation of the power system, including:
 - monitoring of the **Generator's** compliance with the Grid Code;
 - operational liaison and the exchange of information under normal and abnormal system conditions;
 - safety co-ordination to allow work and/or testing to be carried out across a connection point;
 - contingency and restoration plans following total or partial shutdown of the system;
 - the arrangements for carrying out tests and inspections on the **Generator's** plant.

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- 1.4 The Code for Wind Powered Generating Stations applies to all **Wind Powered Generating Stations (WPGS)** that are or have applied to be connected to the transmission network, and to **Wind Powered Generating Stations** with installed capacity ≥ 10 MW that are or have applied to be connected to the distribution network.
- 1.5 In addition to these specific requirements, developers and operators of **Wind Powered Generating Stations** are bound by the other articles of the Grid Code – which are mandatory on all **Generators** (with certain exceptions, as noted below).

2 Definitions and Interpretation

- 2.1 Terms shown in **bold** typeface are defined below, or are defined in the Glossary of the Grid Code (Chapter 2 of the Grid Code).

Generator has the meaning accorded in the Glossary (Grid Code), and is here extended to include the developers (in their capacity of connection applicants) and operators of all windfarms connected to the transmission network and those with installed capacity ≥ 10 MW connected to (or applying for connection) to the Distribution Network.

Wind Turbine Generator (WTG) – is a **Generating Unit** that generates electricity by wind turbines, including its associated control equipment.

Wind Turbine Generator Module – a group of **WTGs** connected together by a single electrical cable or circuit within the **Generator's** internal network.

Wind Powered Generating Station (WPGS) – one or more **WTG Modules** connected together by the **Generator's** internal network and thence to a single or multiple point(s) of connection to the Transmission or Distribution Network.

Network collector of Wind Power Generating - represents the network of medium voltage (35kV, 20kV and 10kV) containing busbar and medium voltage equipment in which are connected (aggregated) a certain number of wind turbine generators.

- 2.2 In this part as well as in the other parts of the Grid Code, in the context of wind powered generation, references to the **Generator** are to be interpreted as referring to the developer, owner or operator (as the case may be) of a **Wind Powered Generating Station**, and references to **Generating Unit(s)** as referring to the individual **Wind Turbine Generators** within the site.

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3 Planning Code

3.1 Developers and operators of **Wind Powered Generating Stations** should be bound by the general provisions of the **Planning Code**. In particular, the following articles apply:

- Article 8 (Preliminary Project Planning data), all bullets are apply except the last three bullets of article 8.2 of Planning Code.

In addition to the items detailed therein, the **Generator** shall provide data on the number, type and rated Active Power of the **WTGs** connected, or proposed to be connected, to the transmission or distribution network (as the case may be); and data on the rating, electrical parameters and winding arrangement of the transformer connecting the **Wind Powered Generating Station** to the transmission or distribution network (as the case may be).

3.2 Developers of **Wind Powered Generating Stations** intending to apply for connection to the transmission network should be aware that they are required to provide Project Planning data at this level of detail at the time of making the application in order for the **TSO** to carry out the relevant connection design studies.

- Article 11.3 .1.1 (**Generating Unit Data**), applies all except the 11th, 12th and 14th bullets.

In addition to the items detailed therein, the **Generator** shall provide data on the configuration and electrical parameters of the **Wind Powered Generating Station** collection network, and the configuration of the **WTGs** connected to the collection network. The **Generator** shall also provide details of the protection and switching arrangements of **Generating Units** and other electrical plant within the Station.

- Article 11.4.2 (Reactive Compensation equipment) applies without exception.

If the **Generator** chooses to provide reactive power compensation by means of switched capacitor bank(s), it must arrange that the capacitance units are sized so that the maximum step change in voltage imposed on the system at the point of connection as a result of a capacitor switching event does not exceed $\pm 10\%$.

- Article 11.4.3 (Short Circuit Contribution) applies without exception.
- Articles 12.2.4 (**Generating Unit** parameters), 12.2.5 (Genset and Station Transformer), 12.2.7 (Excitation System), 12.2.8 (Governor and Associated Primer Mover parameters) do NOT apply to **WTGs**.

3.3 Modeling Requirements for Wind Turbine Generators

3.3.1 This condition applies to all **WTGs** that are, or are proposed to be, connected to the transmission network and to all **WTGs** in **Wind Powered Generating Stations** of installed capacity ≥ 10 MW that are, or are proposed to be, connected to the distribution network.

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- 3.3.2 The **TSO** requires suitable and accurate dynamic models for all such **Generating Units** in order to be able to assess the impact of the **Generator's** actual or proposed installation on the dynamic performance and security and stability of the power system.
- 3.3.3 Modeling requirements for conventional (synchronous) **Generating Units** are adequately met by the **Generator** (or connection applicant as the case may be) identifying the relevant PSS/E library model(s) and providing the applicable data parameters for the model(s) in the connection application form. Where there are no suitable library models available, specially written models – known as PSS/E “user-written models” – are supplied.
- 3.3.4 Consequently, the **TSO** requires that all **Generators** to whom this condition applies shall provide:
- (i) an unambiguous reference to a standard PSS/E library model that is suitable to represent the static and dynamic behaviour of the **WTG(s)** in the **Wind Powered Generating Station** in the **TSO's** planning studies; or
 - (ii) model(s) in the form of user-written subroutine(s) specific to each type of **WTG** in the **Wind Powered Generating Station**, and any associated control equipment. In this case, the **Generator** must authorize or otherwise procure that the **TSO** has full permission to use the models in any national or regional network planning study that the **TSO** requires to carry out.
- 3.3.5 The **Generator** (or connection applicant as the case may be) must also provide details on the type, configuration, electrical parameters and switching arrangements for any reactive compensation equipment (to be) installed in the **Wind Powered Generating Station**.
- 3.3.6 The models for **WTGs** and the **Wind Powered Generating Station**, (in the form of computer software based on a mathematical representation of the behaviour of the machine) must be able to calculate how quantities such as Active Power output, Reactive Power output, turbine speed, etc., vary as factors such as the voltage at the Connection Point change. They must take account of the inherent characteristics of the machines and the actions of the **WTG** control systems and any relevant station-level control systems.
- 3.3.7 The dynamic model(s) must represent the features and phenomena likely to be relevant to angular and voltage stability. These features include, but may not be limited to:
- (a) the electrical characteristics of the **WTG**;
 - (b) the separate mechanical characteristics of the wind turbine and the generator and the drive train between them;
 - (c) variation of power co-efficient with pitch angle and tip speed ratio;
 - (d) blade pitch control;
 - (e) converter controls;
 - (f) the controlled response of reactive compensation equipment associated with the **WTG** and/or the **Wind Powered Generating Station**; and

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- (g) the response of **WTG** protection schemes, including the Fault Ride Through scheme if fitted.

3.3.8 The models provided shall be treated as Preliminary Project Planning Data, Standard Planning Data or Detailed Planning Data as appropriate, as set out in the Planning Code (Grid Code).

3.3.9 The **Generator** (or connection applicant as the case may be) must warrant that the model when used in multi-machine studies reasonably accurately simulates the predicted static and dynamic behaviour of the actual **WTG** under all credible system conditions, and must support this by reference to factory or site test results carried out on the actual **WTG**, or one of the same type (e.g., a manufacturer's type test).

3.4 Computer Environment

These models must run on the PSS/E software used by the **TSO** for studies on the Kosovo and regional networks. In simulations of dynamic response they must not require a simulation time step of less than **5ms**. Details of the current PSS/E version, computer platform, compiler version etc, will be provided by the **TSO** upon request. The **TSO** may from time to time request that the models be updated to be compatible with changes in the **TSO's** computing environment. Each **Generator** shall ensure that such updated models are provided without undue delay.

3.5 Model Aggregation

For computational reasons, it is essential that the models of individual **WTGs** can be aggregated into a smaller number of models, each representing a number of **WTGs** of the same type at the same site. At the discretion of the **TSO**, a representation of the **Wind Powered Generating Station** collector network may be included in the aggregate model.

3.6 Model Documentation

3.6.1 The model(s) should be fully documented. The documentation should describe in detail the model structure, inputs and outputs and how to set up and use the model, and should adopt the style of documentation of standard PSS/E library models.

3.6.2 The **TSO** may, when necessary to ensure the proper running of its complete system representation or to facilitate its understanding of the results of a dynamic simulation, request additional information concerning the model, including the source code of one or more routines in the model.

3.6.3 The **Generator** shall comply with any such request without delay. Where the **Generator** or any other party designates such information as confidential on the basis that it incorporates trade secrets, the **TSO** shall not disclose the information so designated to any third party, except if instructed to do so by the Energy Regulatory Office or an appropriate court of

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jurisdiction, in which case the **TSO** will inform the **Generator** as soon as reasonably practicable.

4 Connections Code

4.1 Developers and operators of **Wind Powered Generating Stations** should note that they and the **TSO** are bound by the provisions of the **Connections Code** in respect of any application for a new or modified connection of a transmission-connected **Wind Powered Generating Station** or of a distribution-connected **Wind-Powered Generating Station** with an installed capacity $\geq 10\text{MW}$.

The following articles of the **Connections Code** do NOT apply to **Wind-Powered Generating Stations**:

- Article 7.4.2 (Active Power Control)
Superseded by the **WPGS** Active Power control system (see below)
- Article 7.4.3 (Black Start and Island Operation)
The **Generator** is NOT required to provide a Black Start capability. This requirement is superseded by the **WPGS** Black Start Shutdown requirement (see below).
- Article 7.4.4 (Excitation Systems)
Superseded by the **WPGS** Reactive Power control system (see below)
- Article 7.4.5 (Loss of Synchronism Protection);
Superseded by the **WTG Fault Ride-Through Protection** (see below)
- Article 7.4.6 (Plant subject to Central Dispatch)
Superseded by the **WPGS** Active Power control system (see below)

4.2 WPGS Active Power control system

4.2.1 Each **Wind Powered Generating Station** with an installed capacity $\geq 10\text{ MW}$ shall be provided with an Active Power control system capable of operating each **WTG** in the station at a reduced level of output in response to an Active Power control set-point signal sent by the **TSO**, and of acknowledging to the **TSO** that the new set-point has been implemented.

4.2.2 If, in addition, the **Generator** wishes to offer a frequency-sensitive **Ancillary Service**, the Active Power control system must have the capability to respond automatically and smoothly to a LFC signal sent by the **TSO**.

4.2.3 The rate of change of output to achieve the new Active Power Control set-point shall be no less than the maximum ramp rate advised by the **TSO**, which shall at all times be within the maximum ramp rate of the individual **WTGs** as specified in the **Connection Agreement**, or as

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may be advised by the **TSO**. The **Generator** may from time to time be notified by the **TSO** of ramp rate setting(s) to be applied during start-up, normal operation and shut-down of the **WTGs** in the station. The **Generator** will be notified by 'TSO no less than 30 days' for any required change.

4.2.4 The Active Power control system shall also provide for the automatic submission of a revised forecast of WPGS output at any pre-set time up to 60 minutes before real-time (see **Operational Planning**, below), and the acknowledgement and implementation of any revised Active Power set point signal sent by the **TSO**.

4.2.5 The Active Power control system of a WPGS shall be capable of delivering 100% of the power available at the prevailing wind speed (less any reduction instructed by the TSO) so long as the voltage at the **WPGS Connection Point** is within the range **(0.95–1.05) pu** of its nominal value. The Active Power delivered shall be reduced no more than proportionately as the **Connection Point** voltage reduces below **0.95pu**.

4.3 Black Start Shutdown requirement

The **Generator** shall provide means to disconnect the **WPGS** and prevent its reconnection to the network in the event of the **TSO** initiating its **Black Start Plan**, such that upon receipt of a Black Start Shutdown signal from the **TSO**, the designated circuit-breaker(s) at the **WPGS's Connection Point** shall be tripped and the **WPGS** will be shut down in a controlled manner (the circuit-breakers for which this facility shall be provided shall be designated in the **Generator's Connection Agreement**).

The **WPGS** may only be reconnected (i.e. made live) when the network is fully restored, on receipt of a **Black Start Shutdown OFF** command from the **TSO**.

4.4 WPGS frequency response

4.4.1 The **WPGS** Active Power control system is NOT required to provide a frequency sensitive response (i.e. articles 4.1 to 4.5.1 of the **Balancing Code (Frequency Control Code)** – see below – do NOT apply to **WPGS**).

4.4.2 However, article 4.5.2 (High Frequency response) does apply, and is mandatory on all **WPGS**, requiring the **WPGS** to ramp down station output proportionately to the system frequency deviation above **50.05Hz** and to reduce output to zero when the frequency exceeds **51.5Hz**. Also, all **WPGS** are required to initiate shutdown of station output when system frequency goes below **47.5Hz**, in conformance with the **TSO's** Low Frequency in Contingency Planning Code (article 5.5.4 of the **Operations Code**).

4.4.3 The typical frequency response characteristic of the Active Power control scheme is as shown in Figure -1. Applicants for connection of **WPGS** to the transmission network should note that the **TSO**, in its connection offer, will advise of any site-specific characteristic or settings that may be required.

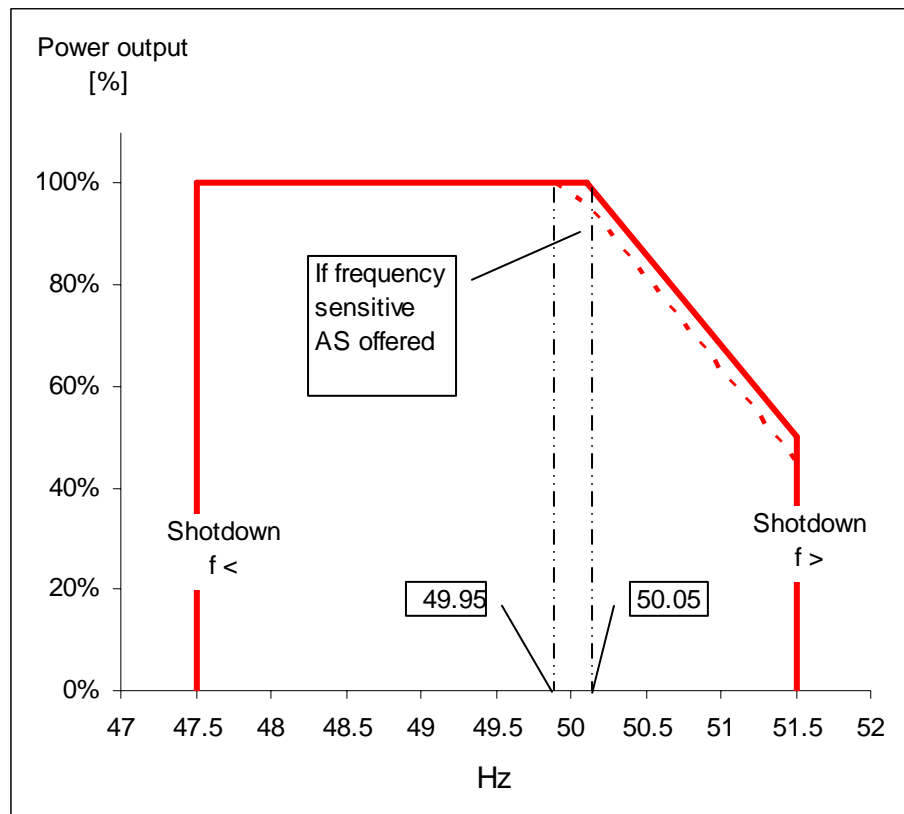


Figure 1: WPGS frequency response characteristic

4.4.4 If the **Generator** chooses to offer a Primary Frequency Control response Ancillary Service, whereby the **WPGS** Active Power output will be varied in proportion to frequency deviations, then article 4.4.2 of the Balancing Code (Primary Control) will apply, and the **WPGS** frequency response characteristic must be modified as indicated by the dotted line in Figure 1. The frequency range over which Primary Control response is required is **(49.95 - 50.05)Hz**, and the slope (droop) of the characteristic will be specified in the Ancillary Service agreement between the **Generator** and the **TSO**.

4.5 WPGS Reactive Power control system

4.5.1 Each **Wind Powered Generating Station** to which this code applies shall be provided with a Reactive Power control system capable of controlling the reactive power delivered to, or the power factor measured at, its **Connection Point** within the limits indicated in Figure 2 over the full range of Active Power output of the **WPGS**, when the voltage at the **Connection Point** is at within the range **97% – 103%** of its nominal value.

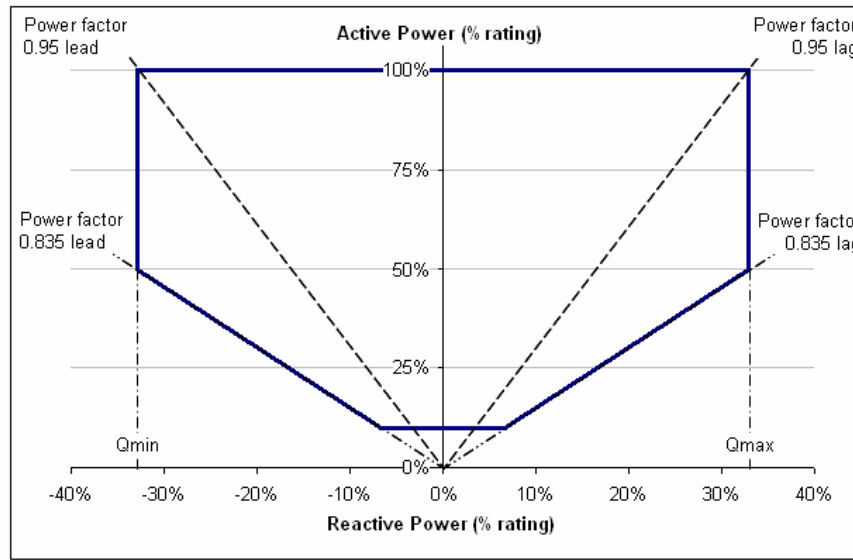


Figure 2: WPGS Reactive Power capability with respect to Active Power range

- 4.5.2 The control system shall provide continuous steady state control of voltage and reactive power at the **WPGS Connection Point**, with a characteristic such as is illustrated by line AE of Figure 3. The area enclosed within points ABCDEFGH defines the Reactive Power capability range within which the **WTGS** is required to operate. The segments AH and DE represent the limits on reactive power capability imposed by the maximum value of the quadrature current, I_q^{\max} .
- 4.5.3 The voltage set-point of the characteristic shall be adjustable between (typically) **0.95** and **1.05** pu, and its slope (the change in voltage, based on nominal, that results in a change of reactive power from 0 to Q_{\min} or 0 to Q_{\max}) of between **2%** and **7%**.

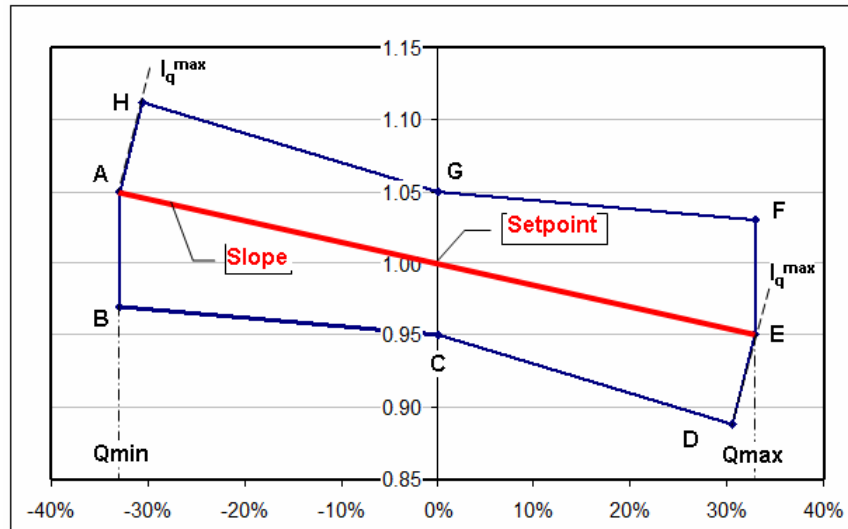


Figure 3: **WPGS** Voltage/Reactive Power control characteristic

4.5.4 Applicants for connection of a **Wind Powered Generating Station** to the transmission network should note that the control characteristic and settings detailed above are indicative only. The **TSO** will specify in the Connection Agreement any site-specific characteristic or settings that will be required.

4.6 Fault Ride Through

- 4.6.1 All **WTG**-s in a **Wind Powered Generating Station** shall be provided with a Fault Ride Through (FRT) protection scheme with a voltage-time characteristic as illustrated in Figure -4. The FRT scheme shall be capable of retaining the **WTG** synchronized to the **WPGS** collection network and to the transmission or distribution network (as the case may be) for faults anywhere in the Kosovo electricity network so long as the voltage measured at the **WPGS Connection Point** during the fault and during the post-fault recovery remains above the voltage-time characteristic for the length of time indicated by the horizontal axis.
- 4.6.2 For the duration of the voltage dip, the **WPGS** shall provide **Active Power** at least in proportion to the voltage at the **Connection Point**, and shall maximize the reactive current injected to the network without exceeding **WTG** limits. The maximization of reactive current shall continue for at least **600 ms** or until the network voltage recovers to within the normal operational range (as specified in paragraph 3.2 of the Electrical Standards Code – published on the KOSTT website), whichever is the sooner.
- 4.6.3 Also during the voltage dip, the reduction in Active Power produced by the **WPGS** shall be at least 90% of its maximum **Available Active Power** as quickly as the technology allows, and in any event within 1 second of the voltage at the **Connection Point** recovering to the normal operating range.

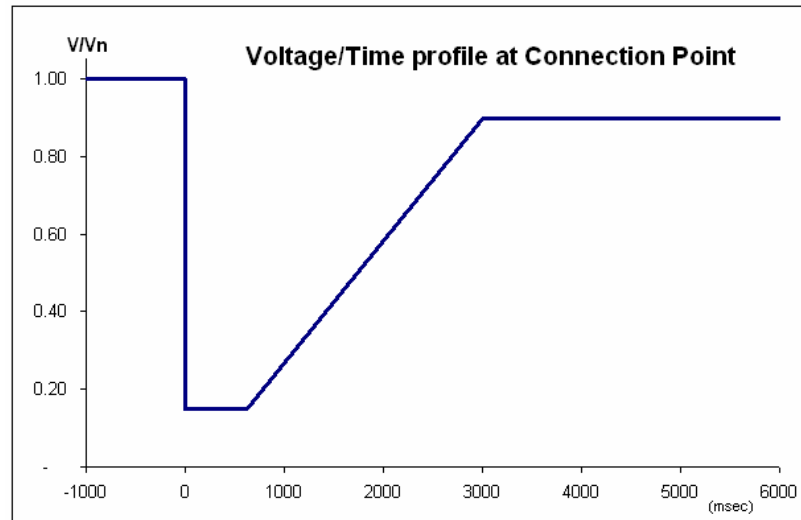


Figure -4: Fault Ride Through capability of WTG-s

4.6.4 Applicants for connection of a **WPGS** to the transmission network should note that the control characteristic and settings detailed above are indicative only. The **TSO** will specify in the Connection Agreement of any site-specific characteristic or settings that will be required.

4.7 Signals from the WPGS to the TSO

To facilitate the **TSO's** discharge of its licence obligation to balance the system in real time and to maintain the integrity and security of supply of the Kosovo electricity supply system, **Generators** shall provide the following signals from the **WPGS** to the **TSO SCADA** system. The signals to be sent are divided into a number of logical groups, as follows:

4.7.1 Signals List #1(WPGS output)

- Active Power output (MW) at the lower voltage side of the **WPGS** connection transformer;
- Reactive Power output/demand (\pm MVAr) at the lower voltage side of the **WPGS** connection transformer;
- Voltage (in kV) at the lower voltage side of the **WPGS** connection transformer;
- Available Active Power (MW) at the lower voltage side of the **WPGS** connection transformer;
- WPGS** connection transformer tap positions;
- Voltage Regulation set-point (in kV);
- On/off status indications for all Reactive Power devices > 5 MVAr (typically the position indication from capacitor bank/SVC circuit breakers).

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4.7.2 Signals List #2 (WGPS Availability)]

- (a) Availability (0-100 % signal);
- (b) Percentage of **WTGs** shutdown due to high wind speed conditions (0-100 %);
- (c) Percentage of **WTGs** not generating due low wind speed shutdown (0-100 %);

4.7.3 Signals List #3 (WPGS Active and Reactive Power control system data)

- (a) Active Power Control set-point value (MW);
- (b) Active Power Control status indication (ON/OFF);
- (c) Reactive Power Control set-point value (MVar);
- (d) Reactive Power Control status indication (ON/OFF);

4.7.4 Signals List #4 (Meteorological Data, (Units, Range))

- (a) Wind speed at hub height (0-70 m/s);
- (b) Wind direction at hub height (0-360 deg);
- (c) Air temperature (-40 +40 deg °C);
- (d) Air pressure (735-1060 mbar)

4.8 Inspection and Testing

Article 9 of the Connections Code (Grid Code) applies in its entirety, with the following modification:

The **TSO** has the right to inspect, and to observe the testing of, the **Generator's** plant connected to the transmission system, during commissioning of the **Generator's** plant and/or local network and during subsequent operation of the station. In the latter case, the **TSO** must give the **Generator** written notice of its intent to inspect and/or test the **Generator's** plant, as per article 9.3 of the Connections Code (Grid Code). The **TSO** will receive a copy of all recorded test data, treating these as the **Confidential Information** of the **Generator**. Each party to the inspection and/or test shall bear its own costs.

5 Operational Planning Code

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Operators of **Wind Powered Generating Stations** should note that they are bound by all the provisions of the **Operational Planning Code**, with the following modifications and/or exceptions:

5.1 Revised Physical Nominations to Balancing Mechanism

Article 4.4.12 (Emergency Amendment of Approved Schedules). In order to support the **TSO** in its duty to balance the system in real time, and to allow for the limited accuracy of wind speed forecasts made up to 30 hours ahead of real time, each **Generator** shall provide the facility to revise, and if necessary, amend their Physical Nomination submission at any time up to 60 minutes before the hour of market operations in which the revised value is to apply. If the **TSO** accepts the revised submission (which it is not obliged to do), it will send an acknowledgement to the **Generator** and notify the Market Operator. The revised Physical Nomination will be the reference against which deviations from nominated output will be measured.

5.2 Dynamic Data Parameters

Articles 5.1.1 to 5.1.5 apply to all **WPGS**, to the extent appropriate to their generating technology.

Article 5.1.6 (Other Generating Unit Information) does NOT apply to **WTGs**.

6 Balancing Code

6.1 Operators of **Wind Powered Generating Stations** which participate as **Generators** in the Kosovo electricity market are required to comply with the provisions of the **Balancing Code**, in order that **TSO** can discharge its license obligation to maintain its integrity of the Kosovo power system and ensure the security and quality of supply. In particular, **Generators** are responsible to control their **WPGS** output in accordance with their contractual agreements and their Physical Nominations to the market, to the extent that this is achievable at the prevailing wind conditions.

The **TSO**, in issuing dispatch instructions to **Generators** shall take due account of the limitations on their ability to conform to nominated output or dynamic parameters that are imposed by the prevailing wind conditions (articles 2.4.10.7 , 2.4.15.1 (2nd bullet) and 2.6.1.2 do not apply).

Also, in recognition that a **Wind Powered Generating Station** is not always manned, the telephonic communication required under articles 2.4.10.8, 2.4.12.3, and 2.4.13.1 of the **Balancing Code** may be replaced by automatically-generated responses.

6.2 Voltage Control Code

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This applies in its entirety to **Generators**. **Generators** and developers should note that their options for Voltage Control (article 3.4.4 of the **Voltage Control Code**) include the use of controllable VAR sources and/or switched reactors and capacitors as part of the power station equipment.

6.3 Frequency Control Code

- 6.3.1 Primary Control reserve and response (mandatory on all synchronous generators unless relieved under a derogation) is not required from **WPGS**, owing to the nature of their prime energy source, but may be offered as a commercial service under an Ancillary Service contract with the **TSO**.
- 6.3.2 Secondary and Tertiary Control reserve and response: **WTGs** have limited capability in this regard due to the nature of their prime energy source.
- 6.3.3 **Generators** which offer to provide Primary, Secondary and/or Tertiary frequency response from a **WPGS** under an Ancillary Service (AS) agreement with the **TSO**, must:
- (i) have pre-qualified their Active Power control system as capable of a frequency sensitive response – see paragraph 4.4 of this code (**WPGS** Frequency Response); and
 - (ii) have responded to an instruction from the **TSO** to activate or call-off their frequency response AS by reducing the output of each synchronized **WTG** in the **Wind Powered Generating Station** below that which would otherwise be generated at the current or forecast wind speed.
- 6.3.4 Articles 4.1 to 4.5.1 of the **Balancing Code (Frequency Control Code)** do NOT apply to **WPGS**.
- 6.3.5 Low frequency shutdown (at system frequency $\leq 47.5\text{Hz}$) and high-frequency shutdown (progressively at system frequency $\geq 50.05\text{Hz}$ and completely at 51.5Hz) – see paragraph 4.4 (**WPGS** Frequency Response) – is a mandatory service required of all **WPGS** to which this code applies.

7 Operations Code

Generators should note that they are bound by the provisions of all applicable sub-codes in the Operations Code (Grid Code), specifically:

- (a) the Testing & Monitoring Code;
- (b) the Operational Liaison and Event Information Supply Code;
- (c) the Safety Co-ordination Code (for transmission-connected **WPGS**);
- (d) the Contingency Planning Code (except paragraph 5.5.3.6 – loss of synchronism protection);
- (e) the Plant and Apparatus Identification Code; and

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(f) the System Test Code.

The Demand Control Code does NOT apply to **WPGS**.

8 Resources and Documents

8.1 Resources

Nr.	Name of Document
1.	Law on Electricity
2.	Transmission System Operator Licence
3.	
4.	

8.2 Documents and forms

8.3 Revision Information

Version	Date	Description	Preservation time
1.0	26.12.2010	Edition 1	