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## 1 Technical and operational requirements

Each generating unit to be appointed as a phase shifter must have the performance characteristics listed in the following specifications.

### 1.1 Feed-in point

The voltage support ancillary service can only be provided by units which are directly connected at grid level 1 (220/380 kV).

The bidder must specify the feed-in point (grid connection point in grid level 1) for each generating unit.

Requirement met	Yes	No	Comment No. _____
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### 1.2 Available reactive power for each generating unit

Generating units intended for participation in the extra-obligatory provision of reactive energy must have a reactive power range of  $\pm 5$  Mvar. The maximum available reactive power ranges for basic load and full load must be specified for all generating units intended for use.

Requirement met	Yes	No	Comment No. _____
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### 1.3 Reactive power droop

For all generating units, the maximum available (ind. or cap.) reactive power needs to be activated at the latest when the voltage at the feed-in point deviates from the specified setpoint voltage by  $\pm 2.5$  %.

It must be possible to deploy the full amount of available reactive power employed for phase shifting at the feed-in point to the transmission system in no more than 15 minutes if necessary

The minimum and maximum possible and the operationally used voltage-reactive power gradient needs to be specified for all generating units intended to be used for voltage support.

Requirement met	Yes	No	Comment No. _____
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### 1.4 Voltage control

Each generating unit or each group of generating units to be operated under voltage control must be capable of maintaining the required setpoint voltage at the feed-in point insofar as this is possible with the available reactive power capacities. The agreed reactive power range must be fully deployed for the purpose of maintaining the setpoint voltage if necessary.

Requirement met	Yes	No	Comment No. _____
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### 1.5 Service life

Generating units operated as phase shifters under voltage control must, in synchronous mode, be capable of adjusting their reactive power exchange continuously and constantly with a view to maintaining the specified setpoint voltage.

Requirement met	Yes	No	Comment No._____
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### 1.6 Availability

The availability of the generating unit will be agreed in a separate contract.

## 2 IT requirements

### 2.1 Receipt of swissgrid voltage specifications

Each generating unit intended for participation in voltage support must always be capable of receiving written instructions from swissgrid with regard to voltage and/or reactive power provision. The bidder receives an Internet address and the corresponding credentials from swissgrid. The bidder must also be capable of responding to the instructions of swissgrid and confirming their implementation. The ancillary service provider (ASP) also receives a daily or intra-day voltage schedule as an e-mail attachment. The ASP must provide an e-mail address for this.

The bidder must be in a position to implement the written instructions it receives or changes in instructions regarding voltage and/or reactive power within 15 minutes when operating the generating unit.

All IT connections must be available for a performance test and acceptance by swissgrid at least three weeks prior to the possible start of provision of the ancillary service.

Requirement met	Yes	No	Comment No._____
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### 2.2 Specifications cycle

The participating generating units receive setpoint voltages from swissgrid for the following day at least once a day. A so-called voltage schedule containing the setpoint voltages for the 24 hours of the following day is published on the Internet every day. The setpoint voltage at the feed-in point into the transmission system can change at the start of any hour.

In addition to reading or downloading the daily voltage schedule, the bidder must always be in a position to implement changes and update the voltage schedule. Changes to the current voltage schedule are announced by swissgrid at least one hour in advance.

If a change is made to the current voltage schedule it must be possible to implement the new setpoint value in the affected generating unit within the first 5 minutes of it taking effect.

Requirement met	Yes	No	Comment No._____
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### 2.3 Required documents

For each generating unit that intends to participate in voltage support, swissgrid requires at least the following information or documents:

- a. Block diagram of the generating unit (single-phase illustration) with all generators, transformers, busbars, switching elements and measurement and metering equipment,
- b. Data sheets for all generators and transformers,
- c. Operating diagrams for all generators (active power vs. reactive power, operating limits).

The documents are needed to determine the possible fields of application of the generating unit. If these documents are not available, swissgrid may obtain the necessary information from other sources and documents or by carrying out appropriate operational tests.

Requirement met	Yes	No	Comment No._____
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### 2.4 Function checks

The bidder shall always assist with a function check of the voltage control capability of the generating unit by swissgrid.

Requirement met	Yes	No	Comment No._____
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## 3 General regulations

### 3.1 Place of performance

The place of performance for the provision of reactive power and the delivery of reactive energy is the grid entry point to the transmission system (grid level 1).

Requirement met	Yes	No	Comment No._____
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### 3.2 Consultation with other grid participants and regional control centres

For each generating unit intended for participation in voltage support, the head office or control centre from where the power station is operated or controlled must be specified.

The bidder is under obligation to coordinate all technical and organisational measures required for the provision/delivery of reactive power/energy with all third parties concerned (e.g. power plant owners).

The bidder must always furnish swissgrid with appropriate proof of this cooperation with all involved parties (e.g. grid connection, grid usage contracts).

Requirement met	Yes	No	Comment No._____
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#### 4 Legally binding declaration of the prequalifying party

The prequalifying party hereby declares that

- it has received the prequalification documents in their entirety,
- its queries have been answered with sufficient clarity,
- the information and documents it has submitted are correct and in accordance with the truth,
- the data transmitted in the form of data files correspond to the printed data and
- it is fully in agreement with the procedure described in the prequalification documents.

The prequalifying party is aware that

- in the event of successful prequalification, the prequalification documents it has submitted, including data files, will become part of the framework agreement governing the awarding of contracts for the provision of control energy and
- false statements and declarations made knowingly as regards expertise, efficiency and reliability may result in its exclusion from the subsequent tendering and contract awarding procedures as well as the cancellation without notice of any contracts awarded.

With the admission to prequalification, it undertakes to notify swissgrid in writing immediately should any essential changes occur with respect to company or power data which have been provided as a basis for prequalification. It is aware that the incorrectness of the above declarations may lead to its company's exclusion from the future tendering and contract awarding procedures and result in the cancellation without notice, with good cause, of any existing framework agreement.

#### Signature

\_\_\_\_\_  
Location

\_\_\_\_\_  
Name:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name: