

14. February 2020

Recommendation of GC ESC Expert Group PSH on amending NC RfG with regard to applicability of pump-storage power-generating modules

NC RfG, Article 6 (2) - old

Pump-storage power-generating modules shall fulfil all the relevant requirements in both generating and pumping operation mode. Synchronous compensation operation of pump-storage power-generating modules shall not be limited in time by the technical design of power-generating modules. Pump-storage variable speed power-generating modules shall fulfil the requirements applicable to synchronous power-generating modules as well as those set out in point (b) of Article 20(2), if they qualify as type B, C or D.

NC RfG, Article 6 (2) – new

Pump-storage power-generating modules shall fulfil the requirements in generating operation, pumping operation and synchronous compensation mode as described below.

- a) Synchronous compensation operation of pump-storage power-generating modules shall not be limited in time by the technical design of power-generating modules. Synchronous compensation operation of full-converter variable speed machines is performed by the converters.
- b) Pump-storage power-generating modules with fixed speed machines and single shaft ternary machines shall be considered as synchronous power generating modules.
- c) Pump-storage power-generating modules with variable speed machines shall be considered as power park modules. For doubly-fed induction machines, the parameters of Table 3.1 or Table 7.1 shall apply to define the voltage-against-time profile with regard to fault-ride-through capability.
- d) The requirements of this regulation, that apply to pump-storage power-generating modules in pumping mode and concern active power, shall apply in a way that the same effect as to behavior of active power generation is achieved by the behavior of active power consumption.
- e) To pump-storage power-generating modules in pumping operation mode Table 2 is not applicable below a threshold of 49.0 Hz, unless a higher value of this threshold is defined by the relevant TSO.

- f)* To pump-storage power-generating modules with fixed speed machines in pumping operation mode and synchronous compensation operation mode, Articles 13(2), 13(3), 13(4), 13(5), 13(7), 14(2), 15(2), 15(5) and 15(6) (e) shall not apply. In pumping operation mode, the second sentence of Article 17(3) shall not apply; in synchronous compensation operation mode, Article 17(3) shall not apply entirely.
- g)* To pump-storage power-generating modules with single shaft ternary machines in pumping operation mode, Articles 13(4), 13(5) and 15(5) shall not apply. In addition, Articles 13(2), 13(3), 13(7), 14(2), 15(2), 15(6)(e) and the second sentence of Article 17(3) shall not apply, if only pumps are operated. Where Articles 13(2) or 15(2) are applicable, the reference active power for LFSM-O or LFSM-U respectively is the maximum capacity of the turbine.
- h)* To pump-storage power-generating modules with single shaft ternary machines in synchronous compensation operation mode, Articles 13(2), 13(3), 13(4), 13(5), 13(7), 14(2), 15(2), 15(5), 15(6)(e) and 17(3) shall not apply.
- i)* To pump-storage power-generating modules with variable speed machines in pumping operation mode, Articles 13(4), 13(5) and 15(5) shall not apply.
- j)* To pump-storage power-generating modules with variable speed machines in synchronous compensation operation mode, Articles 13(2), 13(3), 13(4), 13(5), 13(7), 14(2), 15(2), 15(5) and 15(6)(e) shall not apply.