

LFSM-O requirements defined at national level

Technological constraints must be taken into account



Network Codes Implementation at National Level: “Limited Frequency Sensitive Mode at Overfrequency” (LFSM-O) Parameters Need to Take Technological Constraint Into Account

The Commission regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators defines a ‘limited frequency sensitive mode at overfrequency’ or ‘LFSM-O’ as “a power-generating module or HVDC system operating mode which will result in active power output reduction in response to a change in system frequency above a certain value”. LFSM-O is thus to be activated, when the system is in an emergency state of overfrequency and needs fast reduction of active power production.

While EU Member States are currently drafting their own complementary LFSM-O parameters, EUGINE, the European Engine Power Plants Association, representing the leading European manufacturers of power plants based on internal combustion engines and their key components, would like to highlight the following key facts:

- A response time for reaching 90% of the set point for active power decrease in case of increasing frequency of less or equal to 8 seconds for an active power change of 45% implies a decrease ramp rate of 5,1 %Pn/s. Such a requirement is extremely high and cannot be fulfilled by an internal combustion gas engine.
- After EUGINE had expressed this concern in its contribution to the public consultation on the draft IGDs on frequency stability parameters, ENTSO-E had acknowledged that “**technological constraint shall be duly taken into account**” ([see pages 34/35 of ENTSO-E’s responses to the comments](#))

- In its final version of the IGD on “Limited Frequency Sensitive Mode” from 31.01.2018, ENTSO-E states that “The recommended response times for active power decrease in case of increasing frequency [is for] Synchronous power generating modules: ≤ 8 s for an active power change of 45% maximum power” but also that **“the response of thermal power generating modules is determined by the maximum ramp to change active power output.”**
- Although such as short response time of 8s can also be found in the draft of the German guideline VDE-AR-N 4110, a specific provision foresees as well that internal combustion engines and gas turbines only have to reduce power by 0,33 % Pn/s to 1,11 % Pn/s, depending on their size (i.e. respectively for $>$ and \leq 2MW), which is **a reasonable requirement which could be used as a reference by other EU Member States .**

EUGINE would like to underline that any national LFSM-O parameter should take technological constraints into account and should not go beyond the limits of the maximum power ramp rate of the prime mover. **As a consequence, EUGINE recommends the above-mentioned minimum decrease ramp rates to be enshrined in all national grid codes which are currently under preparation:**

- **0,33 % Pn/s for engines $>$ 2MW**
- **1,11 % Pn/s for engines \leq 2MW**

EUGINE and its member companies would be pleased to discuss this issue in more details with the relevant European & national organisations.

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