The European Association of Internal Combustion Engine Manufacturers

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ACER Consultation - Network Code on Requirements for Grid Connection applicable to all Generators

EUROMOT supports the development and completion of the European internal market for electricity and has actively been participating in the stakeholder consultation conducted by ENTSO-E regarding the "Network code for requirements for grid connection applicable to all generators" (NC RfG) which was submitted to ACER together with supporting documents on 13 July 2012.

The NC RfG together with the other network codes currently being prepared forms a very important part of developing the EU energy market. It is essential that any harmonised rules should be proportionate and cost-effective.

EUROMOT acknowledges that ENTSO-E has put a lot of effort into drafting the NC RfG and supporting documents and generally appreciates the work done. Nevertheless, EUROMOT does not agree with all assessments and continues to have substantial concerns regarding some issues, in particular the treatment of fault ride through (FRT), industrial combined heat and power production (CHP) and retroactively applying requirements.

EUROMOT therefore asks ACER to reconsider these three issues which we address in more detail with reference to the related articles of the NC RfG, especially Article 3.2 (retroactive application of scope) 3.6.h (CHP), Article 9.3 and Article 11.3 (FRT), without prejudice to the effect of eventual national implementation of the code.

1. Article 3.6.h: Industrial Cogeneration, CHP

EUROMOT welcomes the intent of Article 3.6.h to exempt combined heat and power production (CHP). Although steam turbine processes with steam extractions are very common in industrial CHP installations, all other CHP types and solutions, i.e. hot water, direct flue or exhaust gas heating, etc., should be considered in this article as well. Often industrial CHP plants also consist of gas or diesel engines or turbines. The generation of heat and power in these types of CHP applications are also rigidly coupled. The current wording would mean that CHP plants producing for example hot water will not be eligible for treatment as described in Article 3.6.h. In EUROMOT's view all simultaneous production of heat and power from the same prime mover are CHP and should be eligible for the same and equal treatment under Article 3.6.h.

EUROMOT recommends including hot water producing CHP under the provisions of Article 3.6.h.

2. Article 9.3, Article 11.3 (FRT)

EUROMOT recognises the need for a reasonable level of connection requirements regarding fault ride through (FRT). This is important for both generation and transmission system operators in order to provide society with the expected level of security of supply. However, the proposed FRT requirements will be technically very challenging and could un-necessarily create difficulties for generation as well as raising the overall cost level of electricity production.

Unfortunately, one short-coming of the NC RfG drafting process is that no cost-benefit analysis was made to ensure that measures proposed are proportionate. Especially, the extreme fault ride through scenarios (e.g. 250 ms clearance time!) which form part of the ENTSO-E NC RfG proposal are neither proportionate nor cost-effective for smaller synchronous power modules and will be counterproductive with regards to the overall European targets of maintaining security of supply as well as increasing renewable power generation[1]. Synchronous generation modules, in our case driven by internal combustion engines, can provide different stabilizing services to the grid and – if powered by various bio-fuels – also form part of the renewable energy portfolio.

Below, EUROMOT proposes FRT requirement levels B and C type generation and D type generation which will ensure security of supply while at the time being technically proportionate and cost-effective solutions:

- **D type Generation modules in transmission system > 110 kV**

  EUROMOT acknowledges that a severe fault in the bulk transmission system can be felt over a large area and can affect many users. Due to the relatively short electrical distances the voltage level will also be depressed towards zero level for a larger area.

[1] ACER, Framework Guidelines On Electricity Grid Connections FG-2011-E-001 20 July 2011

Therefore short fault clearing times typically in the region of 100-150 ms are appropriate to minimize the disturbance and ensure system stability[2].

EUROMOT strongly recommends setting a clearance time of 100-150ms together with a retained voltage level (U_{ret}) of between 0-20% and reasonable normal operational considerations, generator slightly overexcited and at nominal voltage for generators of type D connected to the bulk transmission system.

- **B and C type Generation modules in distribution system < 110 kV**

  For B and C type generation modules in distribution systems the situation is different from the D type generation modules described above. In distribution systems the trip times for a fault are typically longer than in a transmission system. However, it is not likely that a fault in the distribution system is seen as a severe fault over a large area as the electrical distances are longer. It is also not likely to be seen as a severe fault in the transmission system.

  A reasonable FRT requirement for generation modules connected to distribution systems will take this into consideration and should be based on the same fault clearance times associated with the transmission system i.e. 100 - 150ms (transmission system faults can be seen over a wide area but are cleared quickly). This should be combined with the higher residual voltage seen by a potentially larger number of generators (i.e. a retained voltage of U_{ret} of 30%) together with a reasonable normal operational consideration, or the generator slightly overexcited at nominal voltage.

  EUROMOT strongly recommends setting a clearance time of 100-150ms together with a retained voltage level (U_{ret}) of 30% and reasonable normal operational considerations generator slightly overexcited and at nominal voltage for generators of type B and C connected to the distribution system.

3. Article 3.2: Applying NC RfG requirements retroactively

The proposal of ENTSO-E to allow network operators to apply the requirements of the NC RfG retroactively based on a cost-benefit analysis (CBA) is causing uncertainty in the market. Currently, our members already experience customers using the proposed ENTSO-E NC RfG as a reference for the requirements in power plants, instead of existing national network codes. Power plant customers plan for the future based on scenarios in which, after the ENTSO-E NC RfG is applied across Europe, Network Operators decide to apply the new requirements retroactively to specific power plants based on the outcome of a cost-benefit analysis. If new requirements are adopted following a cost-benefit analysis, this could mean that our member's customers would have to invest heavily into retrofitting the whole power plant. Due to this, our member's customers already today are asking for products compliant with the most stringent requirements proposed in the NC RfG. This is exclusively due to the fact that the risk exists that the new requirements will be applied retroactively.

[2] Ensto-e Network code for requirements for grid connection applicable to all generators, requirements in context of present practices. Brussels 26.6.2012

EUROMOT urges ACER to discard the option of applying the requirements retroactively once the code enters into force as this causes uncertainties in the market.

4. Possibility of stricter rules under justified special circumstances

As outlined above, in EUROMOT's view both a reasonable fault clearance time and reasonable initial conditions assigned by the TSO and relevant network operator under Article 9.3.3-4 and Article 11.3.3 are necessary to facilitate a reasonable environment for synchronous generators to continue to support the grid and help to facilitate the foreseen paradigm change of the electrical system[3].

Of course, in any system rare combinations of circumstances that may produce instability cannot be completely ruled out as is shown in the second example given in "requirements in the context of present practices p.31". To set requirements at an EU level based on extreme conditions may result in unreasonable demands for FRT capabilities of local generators and thus cannot be considered an optimal basis for the NC RfG. Instead, should special circumstances exist which justify stricter measures, these should be dealt with nationally using the provisions of Article 7 in the NC RfG.

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[3] Entso-e "Network Code "Requirements for Generators" in view of the future European electricity system and the Third Package network codes

EUROMOT is the European Association of Internal Combustion Engine Manufacturers. It is committed to promoting the central role of the IC engine in modern society, reflects the importance of advanced technologies to sustain economic growth without endangering the global environment and communicates the assets of IC engine power to regulators worldwide. For more than 20 years we have been supporting our members - the leading manufacturers of internal combustion engines in Europe, USA and Japan - by providing expertise and up-to-date information and by campaigning on their behalf for internationally aligned legislation. The EUROMOT member companies employ all over the world about 200,000 thoroughly skilled and highly motivated men and women. The European market turnover for the business represented exceeds 25 bn euros. Our **EU Transparency Register** identification number is **6284937371-73.**

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