Generator Classification as an Emerging Technology - According to Requirements for Generators Network Code

Decision Paper

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Regulating Water, Energy and Energy Safety in the Public Interest
Executive Summary

Commission Regulation (EU) 2016/631 of 14 April 2016 (RfG) establishing a network code on requirements for grid connection of generators entered into force on 17 May 2016. The RfG establishes a network code which lays down the requirements regarding grid connection of power-generating facilities to the electricity network (at transmission or distribution level).

Compliance with the requirements of the RfG will apply to the connection of new power generating installations to national electricity networks. From 17 May 2019 the RfG will apply to all new power generating modules (PGM)\(^1\) over 800W connecting to a TSO or DSO network.

Within six months of the entry into force of the RfG, manufacturers of PGMs could submit a request to the CER for classification of their PGM technology as an emerging technology. To be eligible to apply to be classified as an emerging technology, the PGM must meet all three of following criteria.\(^2\)

a) The PGM must be of type A (800W to 0.1MW)\(^3\);  
b) The PGM technology must be commercially available; and  
c) The accumulated sales of the PGM technology within the synchronous area of Ireland at the time of application for classification as an emerging technology do not exceed 25% of the maximum level of cumulative maximum capacity established pursuant to Article 67(1).

The CER received four applications from manufacturers of type A PGMs wishing to be classified as an emerging technology, one of which was subsequently withdrawn.

Following consideration of the received applications the CER has decided to award emerging technology classification under the RfG to the following technologies:

1) Baxi Heating UK Ltd:  
   - Baxi Ecogen 24/1.0;  
   - Baxi Ecogen 24/1.0 LPG;  
   - Baxi Ecogen System.

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1 'power-generating module' means either a synchronous power-generating module or a power park module.  
2 Articles 66 to 68 of the RfG set out the criteria for a PGM technology to be classified as an emerging technology.  
3 Article 66 (2)(a) Emerging Technologies of the RfG
Every two months the manufacturer of a PGM classified as an emerging technology shall submit to the CER an update of the sales of the module in Ireland for the preceding two months.

A single classified technology continues to be classified as emerging technology until the amount of cumulative connected capacity of that PGM has reached 1.579MW in the synchronous area. After this cumulative threshold has been reached by a classified technology as emergency technology, the emerging technology classification will be withdrawn by the CER and an information note will be published on the CER’s website.

Also, after the cumulative maximum capacity of all PGMs classified as emerging technologies connected to the Irish network exceeds 4.572MW, all classifications of emerging technology will be withdrawn by the CER and an information note will be published on the CER’s website.

PGMs classified as emerging technologies and connected to the network prior to the date of withdrawal of that classification as an emerging technology will be considered as existing PGMs, therefore they will continue to be exempt from the majority of the requirements of RfG.
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**Glossary of Terms and Abbreviations**

<table>
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<tr>
<th>Abbreviation or Term</th>
<th>Definition or Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RfG</td>
<td>Commission Regulation (EU) 2016/631 of 14 April 2016 on Requirements for Generators</td>
</tr>
<tr>
<td>TSO</td>
<td>Transmission System Operator</td>
</tr>
<tr>
<td>DSO</td>
<td>Distribution System Operator</td>
</tr>
<tr>
<td>PGM</td>
<td>Power-generating modules</td>
</tr>
</tbody>
</table>
1. Introduction

1.1. Commission for Energy Regulation

The CER is Ireland’s independent energy and water regulator. The CER was established in 1999 and now has a wide range of economic, customer protection and safety responsibilities in energy. The CER is also the regulator of Ireland’s public water and wastewater system. At a high-level, the CER’s overall mission is to act in the interests of consumers is to ensure that:

- Energy and gas are supplied safely;
- The lights stay on,
- The gas continues to flow;
- There is a reliable supply of clean water and efficient treatment of wastewater;
- The prices charged are fair and reasonable;
- The environment is protected; and
- Regulation is best international practice.

Further information on the CER’s role and relevant legislation can be found [here](#).

1.2. Background

Regulation 2016/631 of 14 April 2016 (RfG) is one of a suite of European network codes and guidelines that have been developed as part of the implementation of the Third Package. These European network codes intend to deliver a harmonised set of rules for the operation of the gas and electricity sector in Europe.

The RfG entered into force on 17 May 2016. The RfG establishes a network code which lays down the requirements for grid connection of power-generating facilities wanting to connect to the electricity network (at transmission or distribution level).

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The RfG will apply to the majority of new generation connections (for any power generating module greater than 800W) and will not apply to existing generators.5

The RfG allows generator manufacturers to apply for their generator technology to be classified as an emerging technology. Generators classified as an emerging technology will not have to comply with the RfG requirements (except for Article 30 Operational Notification).

1.3. Legal Background

With the exception of Article 30, the requirements of the RfG shall not apply to PGMs classified as an emerging technology, in accordance with the procedures set out in Articles 66-70 of the RfG.

Pursuant to Article 69(1) of the RfG the CER has to decide which PGMs, if any, should be classified as an emerging technology.

“By 12 months of the entry into force of this Regulation, the relevant regulatory authority shall decide, in coordination with all the other regulatory authorities of a synchronous area, which power-generating modules, if any, should be classified as an emerging technology. Any regulatory authority of the relevant synchronous area may request a prior opinion from the Agency, which shall be issued within three months of receipt of the request. The decision of the relevant regulatory authority shall take into account the opinion of the Agency.”

Article 66(2) states:

“A power-generating module shall be eligible to be classified as an emerging technology pursuant to Article 69, provided that:

(a) it is of type A;
(b) it is a commercially available power-generating module technology; and
(c) the accumulated sales of the power-generating module technology within a synchronous area at the time of application for classification as an emerging technology do not exceed 25% of the maximum level of cumulative maximum capacity established pursuant to Article 67(1).”

5 Article 4 of the RfG states that the code will apply to existing PGMs if a PGM is modified.
Article 67(1) states:

“The maximum level of cumulative maximum capacity of power-generating modules classified as emerging technologies in a synchronous area shall be 0.1% of the annual maximum load in 2014 in that synchronous area.”

Article 70(1) states:

“From the date of the decision of the regulatory authorities pursuant to Article 69(1), the manufacturer of any power-generating module classified as an emerging technology shall submit to the regulatory authority every two months an update of the sales of the module per Member State for the past two months.”

Article 70(2) states:

“In the event that the cumulative maximum capacity of all power-generating modules classified as emerging technologies connected to networks exceeds the threshold established in Article 67, the classification as an emerging technology shall be withdrawn by the relevant regulatory authority.”

1.4. Purpose of this Paper

On 26 October 2016 the CER published an information paper on the Application Process for Generator Classification as an Emerging Technology - according to Requirements for Generators Network Code. The purpose of this paper is to outline the CER’s decision as per Article 69(1) of the RfG.

1.5. Applications Received

The CER received four applications from manufacturers of type A PGMs wishing to be classified as an emerging technology, one of which was subsequently withdrawn.

1) Microgen Engine Corporation;
2) Baxi Heating UK Ltd;
3) SenerTec GmbH;
4) ÖkoFEN Forschungs- und EntwicklungsgesmbH (ÖkoFEN).
1.6. Related documents

- Commission Regulation (EU) 2016/631 Requirements for Generators of 14 April 2016;
- CER/16/305: Application Process for Generator Classification as an Emerging Technology - according to Requirements for Generators Network Code.

1.7. Structure of this paper

This decision paper is structured as follows:

- **Section 1**, provides an introduction to the CER and provides background information to this decision paper.

- **Section 2**, summarises the eligibility.

- **Section 3**, provides an overview of the received applications from Manufacturers of Type A PGMs.

- **Section 4**, outlines the CER’s decision and the next steps with regards to the procedures set out in Articles 66-70 of the RfG.
2. Eligibility

2.1. Who was eligible to apply

To be eligible to apply to be classified as an emerging technology, manufacturers must meet all three of following criteria.\(^6\)

a) The PGM must be of type A (800W to 0.1MW);\(^7\)

b) The PGM technology must be commercially available; and

c) The accumulated sales of the PGM technology within the synchronous area of Ireland at the time of application for classification as an emerging technology do not exceed 25% of the maximum level of cumulative maximum capacity established pursuant to Article 67(1).

2.2. Threshold

Article 67 of the RfG directed the Member States to establish thresholds for classification as emerging technologies. Table 1 below explains the concept of the synchronous area of Ireland-Northern Ireland and the split between Ireland and Northern Ireland.

Table 1: Maximum total capacity of emerging technologies for the Ireland synchronous area\(^8\)

<table>
<thead>
<tr>
<th>Country</th>
<th>Load (MW)</th>
<th>Net generation (TWh)</th>
<th>Share of total net generation in 2014 (%)</th>
<th>0.1% of load (MW)</th>
<th>Max total capacity of emerging technologies (MW) (0.1% of total load *MS net generation/synchronous area net generation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE</td>
<td>4572</td>
<td>24,5</td>
<td>75.38</td>
<td>4.572</td>
<td>4.762(^9)</td>
</tr>
<tr>
<td>NI</td>
<td>1745</td>
<td>8,0</td>
<td>24.62</td>
<td>1.745</td>
<td>1.555</td>
</tr>
<tr>
<td>Total</td>
<td>6317</td>
<td>32,5</td>
<td>100.00</td>
<td>6.317</td>
<td>6.317</td>
</tr>
</tbody>
</table>

\(^6\) Articles 66 to 68 of the RfG set out the criteria for a PGM technology to be classified as an emerging technology.

\(^7\) The CER used the existing threshold for Type A as set out in the RfG when assessing the applications received.


\(^9\) Max total capacity of emerging technologies (IE) = (6317 × 0.1%) × (24,5 / 32,5)
The maximum level of cumulative maximum capacity of PGMs to be classified as emerging technologies in the synchronous area of Ireland-Northern Ireland (Article 67(1) of Commission Regulation (EU) 2016/631) is 6.317 MW.

A single classified technology continues to be classified as emerging technology until the amount of cumulative connected capacity of that PGM has reached 1.579MW in the synchronous area. After this cumulative threshold has been reached by a classified technology as emergency technology, the emerging technology classification will be withdrawn by the CER and an information note will be published on the CER’s website.

Also, after the cumulative maximum capacity of all PGMs classified as emerging technologies connected to the Irish network exceeds 4.572MW, all classifications of emerging technology will be withdrawn by the CER and an information note will be published on the CER’s website.

The total permitted capacity installations for Ireland are therefore set both on a cumulative and PGM specific basis. The permitted figures are:

<table>
<thead>
<tr>
<th>Country</th>
<th>Max total capacity of emerging technologies (all PGMs) (MW) (0.1% of total load *MS net generation/synchronous area net generation)</th>
<th>Total accumulated emerging technology sales per individual PGM permitted at time of application (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE</td>
<td>4.762\textsuperscript{10}</td>
<td>1.579\textsuperscript{11}</td>
</tr>
</tbody>
</table>

\textsuperscript{10} \text{Max total capacity of emerging technologies (IE) = (6317 \times 0.1\%) \times (24.5 / 32.5)}

\textsuperscript{11} \text{Total accumulated emerging technology sales per individual PGM permitted at time of application (IE) = (6.317 \times 25\%)}

\textsuperscript{12} The EirGrid Consultation Paper for Ireland is available to download on the EirGrid website \texttt{here.}

2.3. The PGM must be of Type A

Generator manufacturers who applied for emerging technology classification in Ireland must be Type A, which are defined as having unit generation capacity above 800W and under 100kW. EirGrid and SONI are currently consulting on the banding thresholds for each jurisdiction.\textsuperscript{12} The CER has therefore used the existing threshold for Type A as set out in the RfG when assessing the applications received.

Table 2 details the PGM classes for Ireland and Northern Ireland as set out in the RfG.

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\textsuperscript{10} Max total capacity of emerging technologies (IE) = (6317 \times 0.1\%) \times (24.5 / 32.5)

\textsuperscript{11} Total accumulated emerging technology sales per individual PGM permitted at time of application (IE) = (6.317 \times 25\%)

\textsuperscript{12} The EirGrid Consultation Paper for Ireland is available to download on the EirGrid website here.
Table 2: The maximum PGM thresholds for Ireland, as outlined in the RfG

<table>
<thead>
<tr>
<th>Type A</th>
<th>Type B</th>
<th>Type C</th>
<th>Type D</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8kw – 0.09·MW</td>
<td>0.1 – 4.99·MW</td>
<td>5 – 9.99·MW</td>
<td>10MW&lt;</td>
</tr>
</tbody>
</table>

2.4. The PGM technology must be commercially available

Generator manufacturers were required to provide evidence, in their application, to demonstrate that the PGM technology:

- Has the necessary safety, health, environmental and technical certifications and accreditations required to be bought, leased or licensed in Ireland (e.g. an EU Declaration of Conformity); and,

- Is commercially available for customers to buy, lease, or license in Ireland (e.g. evidence of sales, product listings or a product guide).

Manufacturers have discretion about the type of evidence that they use to prove that a PGM is commercially available.

2.5. The accumulated sales of the power-generating module technology

All applications the CER received from a generator manufacturer seeking emerging technology classification must contain evidence of the total number of sales of the PGM technology in the synchronous area of Ireland at the time of application.

A single classified technology continues to be classified as emerging technology until the amount of cumulative connected capacity of that PGM has reached 1.579MW in the synchronous area.

Also, the total cumulative maximum capacity of all PGMs classified as emerging technologies connected to the Irish network cannot exceed 4.572MW.
3. Applications Received & Assessment

3.1. Applications Received

The CER received four applications from manufacturers of type A PGMs wishing to be classified as an emerging technology, one of which was subsequently withdrawn. All the applicants use the MEC linear free piston sterling engine.

Submissions were received from the following PGMs:

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Type of Technology</th>
<th>PGM Technology Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microgen Engine Corporation</td>
<td>Micro - CHP</td>
<td>• MEC Engine Only mCHP;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MEC Wood log/coal mCHP.</td>
</tr>
<tr>
<td>Baxi Heating UK Ltd</td>
<td>Micro - CHP</td>
<td>• Baxi Ecogen 24/1.0;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Baxi Ecogen 24/1.0 LPG;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Baxi Ecogen System.</td>
</tr>
<tr>
<td>SenerTec GmbH</td>
<td>Micro - CHP</td>
<td>• Dachs Stirling SE Erdgas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dachs Stirling SE Flüssiggas</td>
</tr>
<tr>
<td>ÖkoFEN</td>
<td>Micro - CHP</td>
<td>• Pellematic Smart_e ST16</td>
</tr>
</tbody>
</table>

3.2. Assessment Against Emerging Technology Criteria Outlined in Articles 66-68 of the RfG

The CER’s assessment of whether each of the applications meets the emerging technology eligibility criteria is outlined below.

3.2.1 Microgen Engine Corporation

Microgen Engine Corporation has withdrawn its application for classification as an emerging technology under the RfG in Ireland for its both generator technologies. The CER therefore has not considered the Microgen Engine Corporation’s application further and accordingly has not classified these technologies as emerging technology under Article 66 of the RfG.
### 3.2.2. Baxi Heating UK Ltd

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>PGM</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baxi Heating UK Ltd</td>
<td>• Baxi Ecogen 24/1.0;</td>
<td>The PGM must be of type A</td>
<td>Baxi Heating UK Ltd demonstrated that its generator technologies have a maximum capacity of 2kW</td>
</tr>
<tr>
<td></td>
<td>• Baxi Ecogen 24/1.0 LPG;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Baxi Ecogen System.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The PGM technology must be commercially</td>
<td>Baxi Heating UK Ltd has provided a product guide, two EC Type Examination Certificates and a Microgeneration Certification Scheme certificate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>available</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The accumulated sales in Ireland must not</td>
<td>Baxi Heating UK Ltd has confirmed that the total accumulated sales (in kW) of its generator technologies in Ireland is 3kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exceed 1.579MW</td>
<td></td>
</tr>
</tbody>
</table>

Based on the information provided, the CER considers that the technologies applied for by Baxi Heating UK Ltd meets each of the criteria required to be eligible to be classified as an emerging technology.

### 3.2.3. SenerTec GmbH

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>PGM</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>SenerTec GmbH</td>
<td>• Dachs Stirling SE Erdgas</td>
<td>The PGM must be of type A</td>
<td>SenerTec GmbH demonstrated that its generator technologies have a maximum capacity of 2kW</td>
</tr>
<tr>
<td></td>
<td>• Dachs Stirling SE Flüssiggas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The PGM technology must be commercially</td>
<td>SenerTec GmbH has provided a certificate that states the Dachs Sterling SE is the same as Baxi’s Ecogen. Also, they submitted a Dach Sterling SE product catalogue and price list to demonstrate that the products are commercially available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>available</td>
<td></td>
</tr>
</tbody>
</table>
The accumulated sales in Ireland must not exceed 1.579 MW

SenerTec GmbH has confirmed that the total accumulated sales (in kW) of its generator technologies in Ireland is 0 kW.

Based on the information provided, the CER considers that the technologies applied for by SenerTec GmbH meets each of the criteria required to be eligible to be classified as an emerging technology.

### 3.2.4 ÖkoFEN

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>PGM</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>ÖkoFEN</td>
<td>• Pellematic Smart_e ST16</td>
<td>The PGM must be of type A</td>
<td>ÖkoFEN demonstrated that its generator technologies have a maximum capacity of 2 kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The PGM technology must be commercially available</td>
<td>ÖkoFEN has provided an installation guide which includes details of their EU Declaration of Conformity CE mark</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The accumulated sales in Ireland must not exceed 1.579 MW</td>
<td>ÖkoFEN has confirmed that the total accumulated sales (in kW) of its generator technologies in Ireland is 0 kW</td>
</tr>
</tbody>
</table>

Based on the information provided, the CER considers that the technology applied for by ÖkoFEN meets each of the criteria required to be eligible to be classified as an emerging technology.
4. Decision

Following consideration of the received applications the CER has decided to award emerging technology classification to the following technologies:

1) Baxi Heating UK Ltd:
   - Baxi Ecogen 24/1.0;
   - Baxi Ecogen 24/1.0 LPG; and
   - Baxi Ecogen System.

2) SenerTec GmbH:
   - Dachs Stirling SE Erdgas; and
   - Dachs Stirling SE Flüssiggas.

3) ÖkoFEN:
   - Pellematic Smart_e ST16.

All manufacturers of PGMs classified as an emerging technology are required to submit an update to the CER every two months on the total sales of the PGM in Ireland for the preceding two months, and demonstrate that the DSO has been informed of the installation of these PGMs.

All manufacturers of PGMs classified as an emerging technology should submit the update to rfg@cer.ie using the template outlined in Appendix 1.

The first update should be sent on 17 July 2017. The subsequent updates are due to be submitted to the CER on the following dates every year:

<table>
<thead>
<tr>
<th>Submission number</th>
<th>Submission date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17 July each year</td>
</tr>
<tr>
<td>2</td>
<td>17 September each year</td>
</tr>
<tr>
<td>3</td>
<td>17 November each year</td>
</tr>
<tr>
<td>4</td>
<td>17 January each year</td>
</tr>
<tr>
<td>5</td>
<td>17 March each year</td>
</tr>
<tr>
<td>6</td>
<td>17 May each year</td>
</tr>
</tbody>
</table>
All manufacturers of PGMs classified as an emerging technology are required to continue to update the CER on the total sales of PGMs classified as emerging technology in Ireland until the status has been withdrawn (as described below).

The CER is required to monitor the sales of the emerging technologies in Ireland and publish data on the cumulative maximum capacity of PGMs classified as emerging technologies.

The CER will publish a list of PGMs approved as emerging technologies and data on the cumulative maximum capacity of PGMs classified as emerging technologies in Ireland on its website. Data on the cumulative maximum capacity of PGMs classified as emerging technology will be updated every two months, once the CER has received the updated information from the manufacturers of PGMs classified as an emerging technology.

A single classified technology continues to be classified as emerging technology until the amount of cumulative connected capacity of that PGM has reached \textbf{1.579MW} in the synchronous area.

Also, in the event that the cumulative maximum capacity of all PGMs classified as emerging technologies connected to the Irish network exceeds \textbf{4.572MW}, the emerging technology classification will be withdrawn.

The CER will inform all manufacturers of any emerging technologies of this and a withdrawal decision will be published on the CER's website.

PGMs classified as emerging technologies and connected to the network prior to the date of withdrawal of that classification as an emerging technology will be considered as existing PGMs, therefore they will continue to be exempt from the majority of the requirements of RFG.\textsuperscript{13}

If a manufacturer of PGMs classified as an emerging technology fails to comply with the reporting requirements outlined above, the CER will withdraw the emerging technology classification for that specific PGM technology.

\textsuperscript{13} Only Articles 4(2) and 38 and 39 shall apply- which relate to any proposed application of the requirements of the RIG to existing generators and the requirements for a thorough CBA to be conducted to determine whether such retrospective application is warranted.
## 5. Appendix 1

<table>
<thead>
<tr>
<th><strong>Update on Emerging Technology from Manufacturers Template</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manufacturer:</strong></td>
</tr>
<tr>
<td><strong>Emerging Technology:</strong></td>
</tr>
<tr>
<td><strong>Submission Date:</strong></td>
</tr>
<tr>
<td><strong>Reporting Period:</strong></td>
</tr>
<tr>
<td>Cumulative capacity of sales of emerging technology in Ireland (in MW) during reporting period:</td>
</tr>
<tr>
<td>Cumulative total capacity of sales of emerging technology in Ireland (in MW):</td>
</tr>
<tr>
<td>Confirmation that the DSO has been informed</td>
</tr>
</tbody>
</table>