

Alexandru SOARE

From: Dave Clark [dave.clark@microgen-engine.com]
Sent: Friday, November 11, 2016 2:13 PM
To: coduri_acces_retea@anre.ro
Subject: MEC RFG Emerging Technology Application - Romania
Importance: High

Dear sir/madam,

Please find attached your application form and supporting information from Microgen Engine Corporation for Emerging Technology status as part of the Requirements for Generators network code.

Apologies my information is in English.

Kind regards,

Dave

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11/11/2016

**Application model for classification of power-generating modules
as emerging technologies Romania**

1. Contact data		
<u>Manufacturer name</u> Microgen Engine Corporation	<u>Date of application (dd/mm/yyyy)</u> 11/11/2016	
<u>Manufacturer address</u> Microgen Engine Corporation Fabrieksstraat 32 7005AR Doetinchem The Netherlands		
<u>Contact Person:</u>		
<u>No.1 phone</u> +44(0)1733 393000	<u>No.2 phone</u> +31 (0)85 489 1390	<u>E-mail address</u> Dave.clark@microgen-engine.com
2. Description of power-generating module technology		
<u>Technology type used by power-generating module</u> MEC 1kW Linear Free Piston Stirling Engine Generators and CHP systems.		
<u>Description of power-generating module technology</u> <i>(including innovative elements and if possible an evaluation of the possibility of applying the Regulation (UE) 2016/631 requirements on the power-generating technology and an assessment of implementation costs)</i> Domestic micro-CHP and small generators incorporating the Microgen Engine Corporation, (MEC), Linear Free Piston Stirling Engine Generator Technology. PGM fuel variants include: Gas fired, solar, pellet wood log and waste heat fired Generators and CHP systems.		
<u>Identification number of the power-generating module using technology</u> <i>(to be specified: if any, the power-generating module identification number in the manufacturer's catalogue or given by the manufacturer)</i> MEC OEM customer products include: BDR Thermea Ecogen and Evita, Viessmann Vitotwin and KD Navien Hygrigen gas fired mCHP. Okofen Pellematic Smart_e (wood pellet), Innova Trinium (solar). New MEC only products include: MEC Engine Only mCHP, MEC Wood log/coal mCHP using the new MEC 2 kW Linear free piston Stirling Engine Generator.		

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3. Criteria provement of power-gerating module as emerging technology

0.8 kW ≤ Maximum capacity of power-generating module which are using the proposed technology like emerging technology < 1 MW
(PGM maximum capacity must be specified)

Max electrical output 2kW.

It is commercially available power-generating module technology?

(to be provided: data/information/proof that eligible technology is present on the market and is marketable)

The following documents are enclosed as evidence with this application; MEC Engine specifications, Engine Only mCHP and Woodlog mCHP information. Also see MEC OEM customer applications and web sites:

<http://www.remeha.com/products/micro-chp/>

http://www.baxi.co.uk/documents/Baxi_Ecogen_Range_Guide.pdf

http://www.viessmann.com/vires/product_documents/5600719VSA00003_1.PDF

http://www.okofen-e.com/en/pellet_boiler/

http://en.kdnaviem.com/product/product_view?SchCatCd1=AC&Seq=68

<http://www.microgen-engine.com/>

Communication the accumulated sales of the power-generating module within Continental Europe synchronous area at the time of application, expressed in MW

(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, i.e. 97.775 MW, and has to be less than 9.4105MW, i.e. the maximum level for Romania)

MEC has directly installed 0 kW (no units) to-date in Romania.

MEC has shipped about 8MW (8000 engines) to our OEM partners for continental Europe installations to-date.

4. Establishment of technology impact

Please explain why you are applying for your PGM to be classified as an emerging technology:

The application for Emerging Technology classification is based on the following technical and commercial reasons:

a) Technical

The Network Code requires Type A PGM, which include micro-CHP units, to be capable of

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operating within a frequency range from 47 Hz to 52 Hz. The directly coupled synchronous Linear Free Piston Stirling Engine, is a technology based on tuned spring mass systems and designed for operation at a fundamental frequency of 50 Hz. To reach the necessary high efficiency and reliable operation, a restricted operating frequency range from 49.5 Hz to 50.5 Hz, is required, which does not comply with the requirements of the NC RfG, Article 13.

The contribution to the active power reduction above 50,2 Hz is achieved by performing randomized disconnection within its range of frequency operation based on the MEC Stirling quantities sold. Due to the randomized disconnection capability, a very fast reaction to Limited Frequency System Mode response for Over-frequency (LFSM-O) is possible, which contributes additionally to grid stability.

b) Commercial

Micro-CHP is a domestic appliance or household product; its manufacturing and marketing approach are fundamentally similar to the boiler market. Compliance with the NC RfG would add 10-20% to the product cost, with a development time of 6 years or more. Development cost estimates for a new Stirling engine range between € 9 - € 11 million. Achieving Emerging Technology classification will allow us the time to grow volume and revenue to deliver the investment required to ensure this technology meets the Network Code in future years.

Other technologies in this market utilise inverter technology and have the ability to meet the requirement of the Network Code with software setting changes as opposed to a fundamental design change that would be required for Stirling Engine technology. Without emerging technology classification Stirling Engine CHP would be at a disadvantage with the competition.

These low electrical output domestic CHP products are not concentrated in only one geographical area but spread out across the whole of Continental Europe. With the limited capacity of 0.1 % they do not present any threat to grid security.

The reaction on LFSM-O with randomized disconnection will progressively turn off domestic CHP units and contribute to grid stability due to its fast reaction time.

Domestic CHP appliances mainly operate during peak household power demand periods (in the winter where at least PV does not produce very much of active power), thereby enhancing grid stability and security.

Importantly, micro-CHP installations contribute to Green House Gas emission reductions and energy efficiency improvements in the built environment. Biomass, waste heat and solar units offer wider and additional CO2 reduction benefits

5. Additional information

Any additional information not requested above and deemed useful to support the application for classification of power-generating modules as emerging technologies

www.microgen-engine.com, MEC Engine Specification, MEC Engine Only mCHP, MEC Wood Log mCHP.

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NOTE : ANRE reserves the right to request additional information from the applicant where it considers the information provided is insufficient to reach a decision regarding the application.