

## EXPOBIOGAZ 2015 : SDMO® biogas generating sets - solutions to produce power and heat from biogas



doc. SDMO®

**SDMO® Industries**, a major player in the global market for generating sets and power generating facilities, is constantly enhancing its portfolio of energy management solutions thanks to product and service innovations which are always in line with the latest developments. Building on its pioneering role, **SDMO® Industries** is launching a biological process onto the methanisation market which makes use of the organic materials favoured today in renewable energy generation. The energy specialist has deployed its expertise in the fields of agriculture and cogeneration to develop a highly efficient solution for making use of biogas: the **SDMO®** biogas generating sets.

Lot of complete and high-performance solutions, to be unveil at the **EXPOBIOGAZ** exhibition in Paris Expo - Porte de Versailles, from **June 16th to 18th 2015** on the **SDMO®** stand (Hall 2.2 - B26).

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# Methanisation - a renewable energy generation process much favoured in the current situation and supported by SDMO®

Methanisation is a natural biological process which enables organic materials to be maximised (animal manure, green waste, fats etc.) by utilising them to produce energy. This technology, also known as anaerobic digestion, involves the degradation of micro-organisms of organic substances in an oxygen-free environment, resulting in the production of a biogas - a gaseous mixture constituting a renewable energy and a digestate which is then used as a fertilizer.

In the present situation, where great importance is attached to the production of renewable energies, energy efficiency and maximising organic waste, methanisation is emerging as a relevant solution. It is being encouraged by an increasingly extensive regulatory framework: attractive feed-in conditions for electricity produced from biogas in 2011, various financial subsidies (at government, regional and administrative district level) and a "hydrogen autonomy methanisation energy plan" in March 2013 which aims to achieve the installation of 1,500 methanisation systems in France by 2020. Methanisation also represents a new high-growth market, enables the production of renewable energy and offers many benefits, particularly in the agricultural sector.

In light of this situation, **SDMO®** has put the experience and expertise of its engineering department at the disposal of this beneficial process. Traditionally close to the agricultural sector and a specialist in cogeneration technology, **SDMO®** is combining these two areas of expertise to provide high-performance solutions to generate power and heat from biogas.



*Generating sets BL140*





## A high-performance solution geared to the requirements of the agricultural sector: the SDMO® methanisation system

### The principle of SDMO® technology – a completely mastered process

The **SDMO®** biogas generating sets are a complete solution for effectively utilizing biogas, ranging from the treatment of the gas to feed-in to the grid, thus enabling the ideal compatibility of equipment and restricting the number of parties involved. The **SDMO®** process produces electricity and heat simultaneously thanks to its cogeneration system.

**1/ Energy production.** Once the organic waste and vegetal matter has been treated in the digester (tanks), **SDMO®** steps in to process the gas produced in this procedure. This is then mixed with filtered air. This combination of air and gas is then injected into the motor to trigger combustion, thus generating mechanical energy. The motor, coupled with an alternator, transforms the mechanical energy into electrical energy. 30 to 35% of this energy can be sold directly (EDF) and 2 to 5% is consumed by the engine auxiliary units. This gas transformation process is an innovative means of generating electricity which utilizes the methanogenic potential of the materials: 1 tonne of manure and 16 m<sup>3</sup> of biogas produce 30 kWh of electricity and 1 tonne of straw and 220 m<sup>3</sup> of biogas produce 350 kWh of electricity.

**2/ Heat production.** The heat emitted during the process is recuperated by the motor cooling system, the intercooler and the heat exchanger: 10 to 15% of this heat enables the temperature of the digester to be maintained and the remainder is made available to the customer by means of an interface exchanger for use on site (heating of greenhouses, drying of wood) or in a heating system. In order to cool down the cogeneration motor, the temperature of the circuit return has to be 70° (otherwise the heat is lost in the balanced circuit).

### A key solution with various installation possibilities

To ensure perfect adaptation to all requirements, the **SDMO®** biogas generating sets are available as three installation solutions: in a building, in a concrete container or in a steel container, each offering highly attractive benefits. Installation in a building enables equipment

to be installed in accordance with the site's requirements, ensures the longevity of the material and efficient processing in terms of noise levels. The concrete container is quick to install and highly resistant. The steel container is also quick to install with a complete, factory-tested system; it enables the cost of civil engineering work to be reduced and ensures the interchangeability of materials. The three options are eco-friendly, with thermal and sound insulation. For greater convenience, maintenance work is carried out under cover thanks to these various installation solutions.

### 3 different types of installation

Building Concrete container Steel container



### An extensive methanisation range

**SDMO® Industries** is providing a wide range of generating sets from 140 to 500 kW fitted with LIEBHERR motors. These models offer thermal and electrical efficiency of around 40% to produce overall efficiency of over 80%.

	BL140	BL160	BL210	BL240	BL330	BL500
Consumption (kWh PCI)	334	380	506	577	806	1 180
Electrical output (kWe)	138	156	207	236	332	498
Thermal output (kW)	142	157	206	235	327	491
Electrical efficiency (%)	41.3	41.2	41.0	41.0	41.2	42.2
Thermal efficiency (%)	42.5	41.2	40.7	40.7	40.6	41.6
Overall efficiency (%)	83.8	82.4	81.7	81.7	81.8	83.8

### Example of a 170 kWe system

On the basis of a 170 kWe system (1,600 m<sup>3</sup> digester and 4,000 m<sup>3</sup> storage tank), the energy balance would be as follows: 6,500 tonnes of material processed a year producing 1,300 MWe/year of renewable electricity. This could supply around 450 homes with power and produce 1,000 MWth (heat available outside of the process: 20 to 30% used for the heating of the digester). This heat could also be used for greenhouses, mushroom farms, processing plants, heating of animal husbandry buildings or the drying of fodder,

crops, wood etc. The digestate can also be used as a fertiliser to distribute on farmland. The biogas system increases the amounts available by 19%.

### SDMO®: a national network for outstanding service

As usual at **SDMO®**, the concept of service and customer proximity represents a competitive advantage vis-à-vis other international companies. **SDMO®** effectively relies upon the expertise, responsiveness and professionalism of a sister company to ensure the high quality standards of a maintenance-providing manufacturer. Having had a nationwide presence for 30 years with a local network, this exclusive partnership structure enables follow-up measures and the maintenance of **SDMO®** systems to be provided.

Launched in 2013, this range of **SDMO®** biogas generating sets was extremely well received at the Biogaz Europe trade fair held in Saint-Brieuc during the first quarter of 2014, resulting in the signature of a first order. Encouraged by this success, **SDMO®** is continuing to participate in events focusing on this application. The company will present its new biogas solution at the EXPOBIOGAZ 2015, to be held in Paris, Porte de Versailles, from June 16th to 18th 2015 (Hall 2.2 - B26).

Established in 1966, **SDMO® Industries** is today the market leader in France and the third largest manufacturer of generating sets worldwide. The company designs, manufactures and markets a range of standard generating sets, ranging from 1 kVA to 3,000 kVA, which meet all power requirements and can be adapted to all applications. Thanks to the expertise of its design office and in response to highly specific requirements, **SDMO® Industries** also supplies customized power plants. The company manages all projects on an end-to-end basis from the design of the solution to its installation, even including on-site maintenance services. Its dynamic services policy also ensures the longevity of its systems throughout the world.

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