

INMESOL GENSETS AT THE EUROPEAN SPACE CENTRE IN KOUROU

FOR THE CONSTRUCTION OF THE ARIANE 6 ROCKET LAUNCHING PAD



440 kVA LTP genset at the concrete plat located in the Guiana Space Centre

An INMESOL genset model IV-440 has been installed at the concrete plant used in the construction of the Ariane 6 new launching pad, located at the Guiana Space Centre in Kourou, French Guyana.

This is a powerful **stand-by** generator set that **ensures power supply** in case of **mains failure**, preventing the potential interruption of the construction work for the **new pad** from where the **Ariane 6** European space rocket will be **launched**. This **first launch** is planned for **2020**.

The **Ariane 6** space shuttle, developed by the **European Space Agency (ESA)**, is being manufactured in **Paris** and will be transported by ship from there to the **European Space Centre in Kourou**. Once the manufacturing is completed, it will become the newest member of the **Ariane** launch vehicles family. Its final design was selected at the ESA meeting at a ministerial level, in December 2014.

The **Ariane 6** is expected to provide **guaranteed access to space for Europe** at a **more competitive price** than its predecessors through this new project. To accomplish this, the **launch cost** has been **cut in half**, and the **technology from the reliable Ariane 5 engines** has

been reused in the construction process.

With a surface of 850 km², the **European Space Centre in Kourou** or **Guiana Space Centre** is the centre used by the **European Space Agency** for launching its space rockets.

Located 500 km from the equator and at a 5°3' latitude, it is a **perfect spot** for this kind of operations as Earth's rotation **provides** a high **inertial speed to the rocket** when the trajectory is directed to the east, translating into **less fuel** requirements for putting it in orbit than if the launch is carried out from other enclaves.

The centre has 4 launching pads:

- › **Vega Launching Pad (B)**: Previously known as **ELA-1**, it was the first launching pad for the Ariane rocket (The Ariane 1, Ariane 2, and Ariane 3 models, dismantled on 1989, were used). The pad is being adapted for use with the **Vega** launchers.
- › **ZL2 (C)**: Previously known as **ELA-2**, it was used to launch the **Ariane 4** up to (Dismantled on 2011).
- › **Ariane Launching Pad (D)**: Previously known as **ELA-3**, it is still active for the **Ariane 5**.
- › **Soyuz Launching Pad (F)**: Also known as **ELS** (Ensemble de Lancement Soyouz). This facility is used for launching Russian Soyuz-ST rockets since October 2011.



INMESOL genset next to Ariane 6 rocket.



Image copyrighted to the European Union. Berlaymont building aerial view

INMESOL POWER AT THE EUROPEAN COMMISSION'S HEADQUARTERS - BERLAYMONT, BRUSSELS

The European Commission has chosen an INMESOL stand-by genset, model II-110, equipped with particular technical specifications to supply emergency power to the iconic government building located in Brussels in the event of mains failure.

This 110 KVA LTP power soundproof genset, with DSE 7410 technology, is enabled for **simultaneous** remote control through two different communication channels (RS 232 and RS 485). Additionally, this DSE 7410 module controls the parameters and alarms of the engine and the alternator.

The **power output** is enabled for independent connection with the **load** that supplies the genset, and it also includes an external **load bank** for the usual power tests performed **regularly** on emergency or backup equipment.

The **network monitoring** feature is carried out by an **ATS** panel with a **DSE 335** control unit that detects when a **mains failure** occurs and sends a **start-up signal** to the **engine** of the genset. Once the equipment is on and ready, the DSE335 control unit makes it possible to **switch the power supply** (which feeds the ins-



INMESOL stand-by generator set, model II-110, being lifted to the Berlaymont's roof

tallation) between the mains and the generator set, and **vice versa, when the mains are restored.**

This generator set is a very good option for supplying installations related to a **building's security systems**, fire and temperature alarms, surveillance cameras, automatic doors, emergency lighting, etc. due to its power, devices set-up, and components for communication with external systems.

The genset has been installed on the building's roof.

The **Berlaymont** building is located at **Schuman square**, known as the "**European neighbourhood**," and was **built in the 60s** to be the **European Commission's headquarters**. It was vacated in 1994 to be rebuilt, due to the presence of **asbestos** in its original construction. It **became operational again in 2004** for the European Commission.

It is an impressive **14-floor** building with an asymmetric fan shape. It serves as the **headquarters of the European Commission president and commissioners**, several departments and **offices** also from the European Commission, **press and television rooms**, **meeting rooms**, an numerous quarters for different purposes, including a restaurant.

The European Commission is an institution that represents and defends the **European Union interests** as a whole. Consisting of 28 commissioners, one for each member state, and a president, position being currently held by the former Prime Minister of Luxemburg **Jean-Claude Juncker**, the Commission mainly takes care of:

- › **Proposing** laws to the Parliament and the Council.
- › **Managing and applying** EU policies and budget.
- › **Ensuring** the compliance with European law (along with the Court of Law).
- › **Representing** the EU internationally.

INMESOL GENERATOR SET AT A SEWAGE PUMPING STATION IN NEW ZEALAND

PUMPING STATION AT THE PORIRUA SEWAGE TREATMENT PLANT

An INMESOL genset, model IT-1115, has been servicing the sewage pumping station for the treatment plant managed by the council of Porirua, in New Zealand, for several months.

This heavy range 1110 KVA LTP power generator set operates in **stand-by mode and ensures power supply** in case of **mains failure**, preventing the pumping works interruption and the environmental impact caused by the possible overflowing of sewage in the plant, in the event of a power outage.

The genset is setup up in stand-by with the mains, supplying power to **three 290 kW pumps** with a **1200 l/s** pumping capacity connected to the treatment plant, where a second generator set with the same features is installed, also in stand-by mode.

Any **waste water purification system** has three essential components:

- › **Sewage water collection and transport** of the collected water to the treatment station.

- › **Treatment** of waste water per se.
- › **Disposal of the resulting products.**

The collection and transport of waste water is carried out through a complex **network of pipes and collection systems** starting at the residences or waste water generation sites (sewage system, collectors...) and ending at the pumping stations and their treatment plants.



Porirua waste water treatment plant facilities. Image taken from the Porirua Council website



Genset model IT-1115 being placed at the pumping station facility

These **pumping stations** are usually located at the **lowest areas** in towns or cities as, thanks to **gravity**, all water courses will end there. These waste waters are commonly **pumped to higher areas**, where they will be treated or **disposed of during the final purification stage**.

The **treatment process** has different **stages**, depending on the **type of plant**, the intended **purification level**, and the **specific environmental conditions** of the area where the purified water will be discharged.

The main **objective** of a waste water treatment plant is to **return it to the environment** with a **minimum pollution level** but, if the plant has the right processes available, **fertilisers** for the **agricultural industry** may be obtained by **dehydrating the muds** involved in the process.

An **efficient waste water treatment** makes it possible to return the liquid to the natural environment and **reduce the impact and pollution** caused by water consumption, both at the domestic and industrial levels, to **obtain agricultural fertilisers**, and even to **generate electricity**.



IK-033 model stand-by genset at the back of a pharmacy in Santiago de Chile

STAND-BY ENERGY BY INMESOL DURING THE BIGGEST SNOWFALL IN THE PAST 10 YEARS IN SANTIAGO DE CHILE

MORE THAN 300,000 HOMES WERE AFFECTED BY A POWER OUTAGE

Several **hundred INMESOL** generator sets are providing service across Chile. Most of this equipment are operating in **stand-by mode and ensure power supply** in case of **mains failure**, as it happened this past Saturday after the **heaviest snowfall** ever reported that affected the **high areas** in the **city of Santiago**.

Snowfalls in **Santiago de Chile** are uncommon. However, due to a cold snap this past weekend, specifically, during the early hours of Saturday 15th, there was a **snow storm** so intense that caused **fallen power lines**,

falling of trees, traffic jams, and some road accidents across the city.

Many **companies and homes** were able to be powered by these stand-by generator sets, and barely noticed the consequences of the **fallen power lines** and the resulting lack of electrical supply, so necessary in situations where temperatures are extremely low (so far, this was the coldest weekend of the year in the country).



Grupo electrógeno en emergencia INMESOL modelo IVR-440

INMESOL BACKUP GENSETS WORKING AT THE OUARZAZATE THERMOSOLAR PLANT

THE LARGEST SOLAR PLANT IN MOROCCO, AFRICA, AND ONE OF THE LARGEST IN THE WORLD

Several INMESOL generator sets are being used as backup at the OUARZAZATE, Morocco solar power plant.

These are 440 kVA and 275 kVA LTP power soundproofed backup generator sets from the Rental range.

They are used to supply electric power to essential loads of the thermoelectric plant that are needed to restore the plant's power generation during an unexpected downtime caused by any reasons or due to maintenance tasks.

Other essential loads for the proper operation of the plant are also connected to these generator sets: the engines that move the collectors, the thermal fluids circulation pumps, as well as other control and operation systems.

The solar thermoelectric power complex located south of Morocco, in Ouarzazate, has three phases:



Noor 3 PHASE

Noor 1, with parabolic cylindrical collectors' technology and a 160 MWe installed capacity.

The Noor 1 phase has 500,000 parabolic mirrors that receive the maximum amount of solar radiation as they move throughout the day. These 12 m high mirrors heat the pipes through which the synthetic thermal oil flows, reaching very high temperatures. At a generation plant, this heat is exchanged with water, creating steam that causes the turbines to start spinning, producing the

electricity that will be sent to the national grid for use in Moroccan homes and businesses.

Noor 2: With a more advanced generation of collectors that translates into cost savings and an improvement in efficiency, it will have a 200 MWe capacity.

Noor 3: It consists of a plant with a central tower that uses adjustable mirrors (heliostats) that direct sun rays to a receiver located in a tower. It has a 150 MWe installed capacity.



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Inmesol, S.L. company with ISO 9001 quality management system certificate and ISO 14001 Environmental Management System Certificate for the: "Design, manufacture, marketing and technical assistance of power generators, lighting towers, welding generators, tractor with PTO generator and hybrid generation systems."



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