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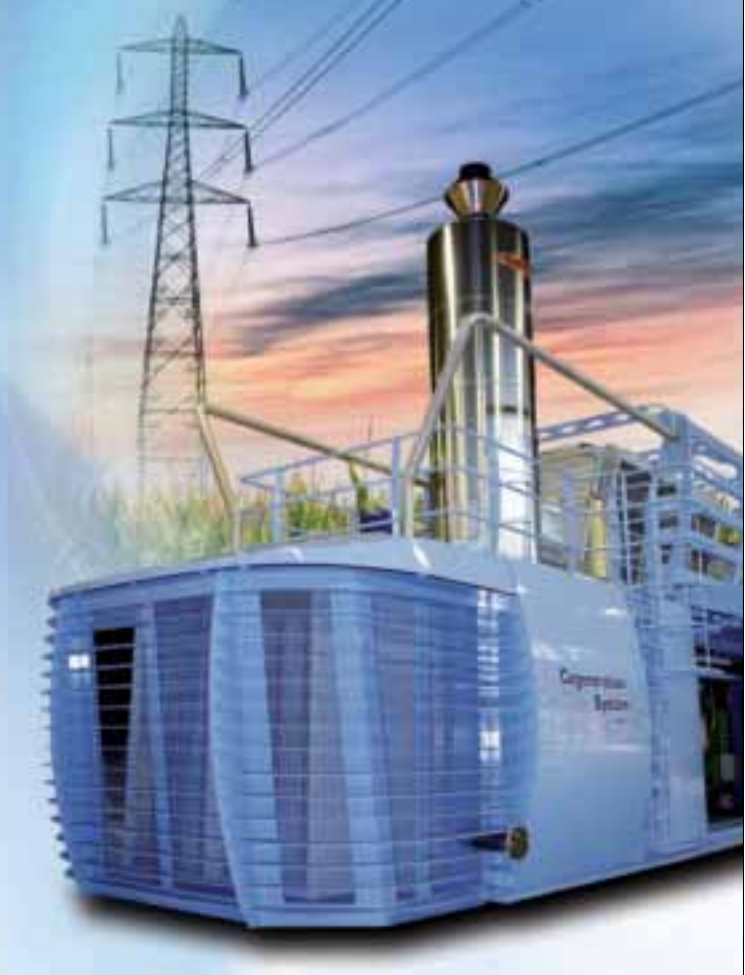
ALTERNATIVE ENERGY DIVISION



HIGH PERFORMANCE COGENERATION SYSTEMS FOR AGRICULTURE AND INDUSTRY

Innovation, Specialisation, Quality and Internationality: the ingredients of a successful company that continues to go from strength to strength

SEKO has always passionately believed in ongoing improvement in order to guarantee full customer satisfaction and this has constantly been one of its main objectives, enabling it to become a world leader in the agricultural mechanisation sector.

In the course of its experience in the sector, SEKO has acquired in-depth knowledge of the many different agricultural scenarios at both national and international level; this, together with close interaction with its customers, makes it a competent dependable partner and a professional consultant with a realistic and direct approach to the development of modern profitable agriculture in perfect harmony with nature.

Located in Veneto, one of the most industrialised regions of Northern Italy, the company's operating facilities, where the entire product range is designed and developed, occupy an area of 60,000 m^2.

Over 1000 machine units featuring "Made in Italy" technology and design are produced every year at the new SEKO plant and 90% of its products are exported all over the world, concrete proof of their extraordinary quality and performance.

SEKO is a company based on solid foundations of tradition and quality, with a strong international bias; its constantly increasing turnover and growing production capacity are reflected in its positive performance trend.

Quality

SEKO has obtained the ISO: 9001:2008 Quality Management System certification which guarantees the technological excellence achieved in its new modern production departments, enabling it to offer its customers the most efficient and reliable solutions in the sector.

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A division of Seko SpA group

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COGENERATION AND BIOGAS: A WINNING CHOICE

Choosing to invest in renewable energy sources represents a new opportunity for farmers, offering profitability in both economic and environmental terms and maintaining the agricultural nature of their business.

The use of cogeneration allows agro-energy products such as biogas (or landfill gas) to be exploited with maximum efficiency. Very high efficiencies in the production of electricity and heat, starting from the primary energy, can result in energy savings of up to 30%.

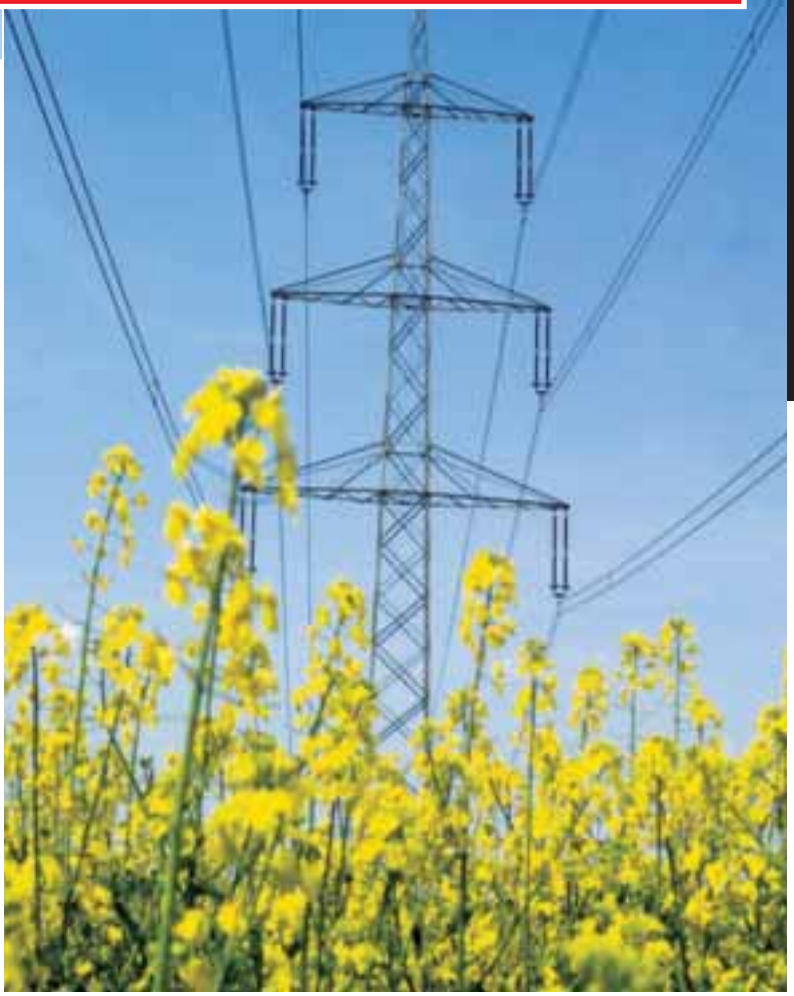
The Agripower Division, a company in the SEKO SpA group, produces cutting edge biogas plants and cogeneration systems offering maximum dependability and efficiency, which can significantly improve the energy output of renewable sources to ensure high profitability.

A team of professional experts in the field of environmental, energy and engineering technologies develop the best solutions, from the quality of the design and the feasibility and profitability study right through to start-up and running of the plants.

Competence and Professionalism ensure the best results

With a strong tradition in the plant engineering sector and longstanding experience in the production of machinery for the treatment of biomasses and livestock waste, after years of in-depth research and study in the agro-energy sector, SEKO now produces, via its Agripower Division, plants for the production of biogas and cogeneration systems with highly innovative technology to obtain maximum energy efficiency.

In addition, via our team of agronomists we offer specialist consulting also for ordinary crops, working closely with our customers to select and develop the best ones, also via special fertilisation and irrigation systems.



To ensure ongoing, effective and profitable operation of our plants, we provide a complete package of services comprising the following activities:

- **Feasibility study using the best technological solutions**
- **Production of turnkey plants**
- **Consulting and training for plant operators**
- **Routine and extraordinary maintenance service**
- **24 hour remote monitoring of operation**

Cogeneration Systems

Challenger One

The cogeneration plant is an integrated system consisting of an internal combustion engine powered by a primary energy source, a current generator for the production of electricity and a transformation unit for recovery of the thermal energy produced by the combustion process within the engine.

In a plant of this type, the electricity produced is released, and the heat recovered from the engine can also be released for the production of hot water and steam for private or domestic use.

The Agripower Divison produces a complete range of cogeneration plants, from 75 to 2000 kWe with solutions offering maximum energy efficiency.

They are equipped with powerful robust engines with optimal combustion, making them ultra-efficient, and particularly low exhaust emissions.

The exclusive container, with patented design, has been studied to ensure perfect functional housing of all the components, with easy access for checking and servicing operations.

The new *Challenger One* cogeneration systems: at the height of global technology

COGENERATION FULLY EXPLOITS PRIMARY ENERGY SOURCES

Cogeneration is the production of forms of secondary energy (mainly electricity and heat) developed from one single primary source which can be renewable (biogas, vegetable oil etc.) or a fossil source.
The main advantage of cogeneration is obviously economic: a correctly sized cogeneration unit will provide high energy savings up to 25-40%.
The process also limits emissions of greenhouse gases and other gases harmful for the environment.

The cogeneration units produced by the Agripower Division meet the most stringent requirements for efficient electricity and heat production due to the wide range of models available, offering very high quality and global efficiency and full exploitation of the agro-energy used with particular focus on the cogeneration of:
- Biogas from agricultural biomasses
- Vegetable oils

The Agripower Division high efficiency cogeneration systems are the flagships of our biogas production plants and represent a dependable guaranteed solution.
They are designed and built entirely at our works to high quality standards, using the best internal combustion engines and the best components on the market to ensure maximum performance.
The plant is of extremely high quality and programmed maintenance is required much less frequently than in other cogenerators.
The electrical efficiency varies from 40% to 43% depending on the power of the engines, while the thermal efficiency is approximately 50%.
Considering the high quality of the biogas obtained via the Agripower plants, with high concentration of methane and very lower sulphur content, our cogeneration units feature low maintenance and improved oil change intervals; in some cases the oil can be used for twice as long as usual.

Cogeneration
System

All the main aspects of construction are optimised, using the best raw materials and applying the most advanced technological solutions to ensure maximum dependability, high performance and extreme safety.
Ongoing investment in development of the production processes is a guarantee of first rate construction standards and high production capacity.

The Challenger One cogeneration units are produced entirely at our works, from the containment structure right through to the main components, via an industrial production process of the highest quality.

The ample space available inside the plant has been purposely designed to ensure maximum practicality and rapidity in checking and servicing of the machinery.
All parts can be reached by the operator with the greatest of ease, also with any control and operating instruments required.

The patented sliding system for extraction of the combustion engine unit during programmed maintenance operations allows optimisation of maintenance times and reduction of machine standstills.

With their ample spaces for recirculation of the air inside the structure and generous heat dissipation cells, the Challenger One cogeneration units are the most suitable for operating in any climatic condition, also with high temperatures, and offer the best soundproofing currently available on the market.

All the operating tests on the mechanical, hydraulic and electrical sections are performed during pre-assembly in our production departments; only the last components are assembled on site, thus ensuring rapid installation.

The control software

This supervision system, developed via software purposely studied and designed by the Agripower Division, represents a central control point which can automatically start re-set procedures or send emergency signals to the plant operator if variations in the optimal operating parameters are detected.
The software is a precious ally in improving the utilisation of renewable energy sources, offering a dependable complete control system which allows the user to adjust all the working parameters, verify the operating conditions, check plant efficiency on a daily basis and connect up in remote mode via password from any PC with an Internet connection.

The command and control panel with automatic control software allows constant monitoring of the cogeneration plant operation and related production processes.

Technical Consulting, Support and Maintenance

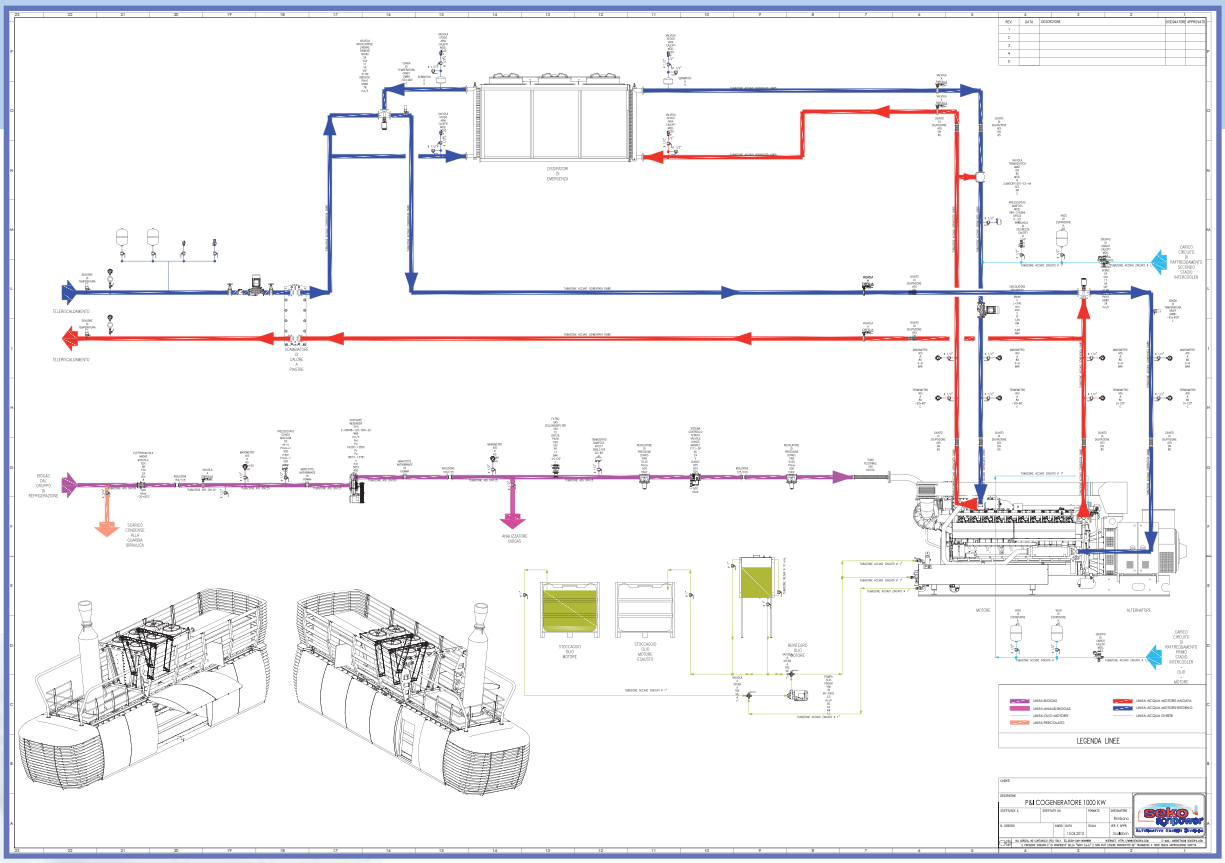
The Agripower Division offers a complete service, working closely with the customer to pinpoint the ideal solution right from the initial design phases through to final installation, providing a turnkey offer, and then throughout the working life of the plant, proposing maintenance contracts configured according to customer needs to guarantee dependable and economic plant operation.

It also ensures a rapid reliable support and maintenance service with highly specialised personnel and constant availability of original spare parts from its warehouses.

THE *Challenger One* COGENERATION SYSTEMS ARE EQUIPPED WITH:

- Insulated Challenger One container, complete with ventilation system and soundproofing 65 dB(A) at 10 m
- Electricity generating set consisting of gas engine with heat recovery from: first stage intercooler; oil; engine cooling water (optional fume heat recovery)
- Gas train complete with dedicated blower
- Silencer in stainless steel 65 dB(A) at 10 m complete with catalyst
- Gas leak supervision system
- Fume development supervision system
- Emergency electric radiator for engine block cooling
- Heat exchanger for use of heat inside the plant (85°C)
- Lubricating oil top-up auxiliary tank complete with electropump for quick oil change
- Biogas cooling and dehumidification system
- Synchronous alternator complete with power board with UTF counter and network protection
- Control and command panel complete with automatic synchronisation system

Cogeneration and District Heating



In addition to the generation of electricity, according to the specific needs of each operator, the Agripower Division also designs and produces district heating lines for civil or industrial use both on site and nearby, via recovery of the heat generated by operation of the engine.

The Agripower Division offers a complete range of cogeneration systems featuring exclusive technological solutions to guarantee perfect operation and maximum energy efficiency.

Challenger One BPA 1050

MODEL	Biogas power intake [kW]	Electrical power [kWe]	Electrical efficiency	Thermal power obtainable from cogenerator radiator [kW]	Thermal power obtainable using a further heat exchanger on fume exhaust 180° [kW]	Total efficiency	Generator voltage [V]
75	187	75	40%	70	-	77,5%	400
100	247	99	40.5%	246	-	79,5%	400
170	366	150	41%	140	-	79%	400
250	637	249	39,1%	134	129	85.4%	400
330	851	330	38,8%	149	190	85,7%	400
400	941	400	42,5%	201	197	84,8%	400
530	1302	526	40,4%	313	243	83,3%	400
600	1412	600	42,5%	305	303	85,5%	400
640	1589	635	40,0%	389	292	83,6%	400
700	1735	703	40,5%	421	323	83,4%	400
800	1882	800	42,5%	408	402	85,5%	400
850	2016	844	41,9%	497	348	83,7%	400
999A	2462	999	40,6%	586	463	82,5%	400
999B	2406	999	41,6%	581	428	83,5%	400
1050	2606	1063	40,8%	626	479	82,5%	400
1570	3741	1560	41,7%	840	815	85,9%	400
2000	4762	2000	42,0%	1050	1035	85,8%	400

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