ECOMAX®

Simply the best modular CHP and On-Site Power solution in the world.

Cogeneration: a strategic choice.

NATURAL GAS
BIOGAS
GREENHOUSE
LANDFILL GAS
SPECIAL GAS

CANADA

ABetter Way

Cogeneration: The simultaneous production of electrical and thermal energy from one fuel source.

Used in a wide range of industrial, commercial and agricultural sectors, cogeneration is particularly well suited for the needs of “energy intensive” companies characterised by high heat and electricity consumption.

By producing power and heat from a single fuel source, cogeneration dramatically increases fuel efficiency when compared to the separate production of electricity and thermal energy. This increased efficiency results in lower energy costs while minimizing CO_2 emissions. ECOMAX® modular cogeneration systems are available in a wide size range to suit almost any commercial or industrial facility with a substantial energy need.

COGENERATION PRODUCTION

THERMAL ENERGY	44
100 → LOSSES	15
ELECTRICAL ENERGY	41
PRIMARY ENERGY USED	100

SEPARATE PRODUCTION

THERMAL ENERGY	
52	44
LOSSES	8
ELECTRICAL ENERGY	
102	41
LOSSES	61
PRIMARY ENERGY USED	52+102=154

AB: the experienced, leading manufacturer of modular, on-site power and cogeneration plants, committed to the ongoing development of sustainable biofuel and emission control technologies.

Un-matched design know-how and manufacturing capabilities.

1981

Year founded

366,000

square feet where the production facility, engineering offices, service centre and management are located

Since 1981, AB has tackled the challenges posed by energy sustainability, working alongside our customers to improve their competitiveness while saving energy and reducing emissions.

From our earliest days, we have focused on innovation to develop world-class technologies and processes dedicated to transforming the world of energy.
Our objective? To ensure our customers benefit from the best energy sustainability solutions available anywhere.
How? By dedicating our expertise, production capacity and excellent service capabilities to the problems at hand.

In the cogeneration sector, AB's leadership team has expanded our company's reach to encompass biofuels. We have developed advanced purification and liquefaction processes for biomethane, coupled with highly effective emissions treatment.

We take pride in the "Made in Italy" level of excellence we offer. The AB Group now boasts over 1,000 employees in 20 countries throughout Europe, Russia and North and South America, with primary production and engineering centralized in a state-of-the-art industrial complex located in Orzinuovi, Province of Brescia, Italy.

Our customers rely on us to develop the "Better way" to support them with the skills, technologies and processes, so they perform at their best. Together, we are helping build a better world.

A global organization with an expanding portfolio of products and services.

Market coverage through a global service network.

Its extensive experience and expertise in the field of cogeneration has allowed AB to become the industry leader. AB's global expansion started in 2007 with the opening of the first subsidiary in Spain.
Today, **the Group has offices in 20 countries**: a widespread network dedicated to providing comprehensive sales and service activities tailored to each local market.
Building on an extensive cogeneration experience, AB complements its global organization with several dedicated business units.
AB FIN SOLUTION focuses on the **operating lease of machinery and offers users in every sector options on leasing an AB cogeneration plant.**
Research and development in the field of alternative energy use is entrusted to **AB GRADE**, a true centre of excellence which employees dedicated engineers who study and develop the most innovative solutions in the market.

AB has further strengthened its commitment to applied research with the creation of the new **DOABLE technological centre dedicated to the digitisation of processes**.
AB AMBIENTE is **an agricultural company** based in Orzinuovi (Italy) **where biogas and biomethane production plants are in operation**. The company serves as a privileged environment for directly experimenting and testing the latest innovations made available by the Group's R&D centre.
AB's unwavering commitment to a sustainable future has lead to the acquisition of a company specialized in the design, manufacturing and installation of **emission control solutions**. The Group is completed with **AB SERVICE**, a company specialised in the **aftersales support and maintenance of AB plants around the world**, which relies on advanced solutions including the latest Industry 4.0 technologies.

+1,550
Designed and installed systems

+1,750
MW installed

95%
Average plants availability

FROM 300 kW TO 4,4 MW
Product range for a single module

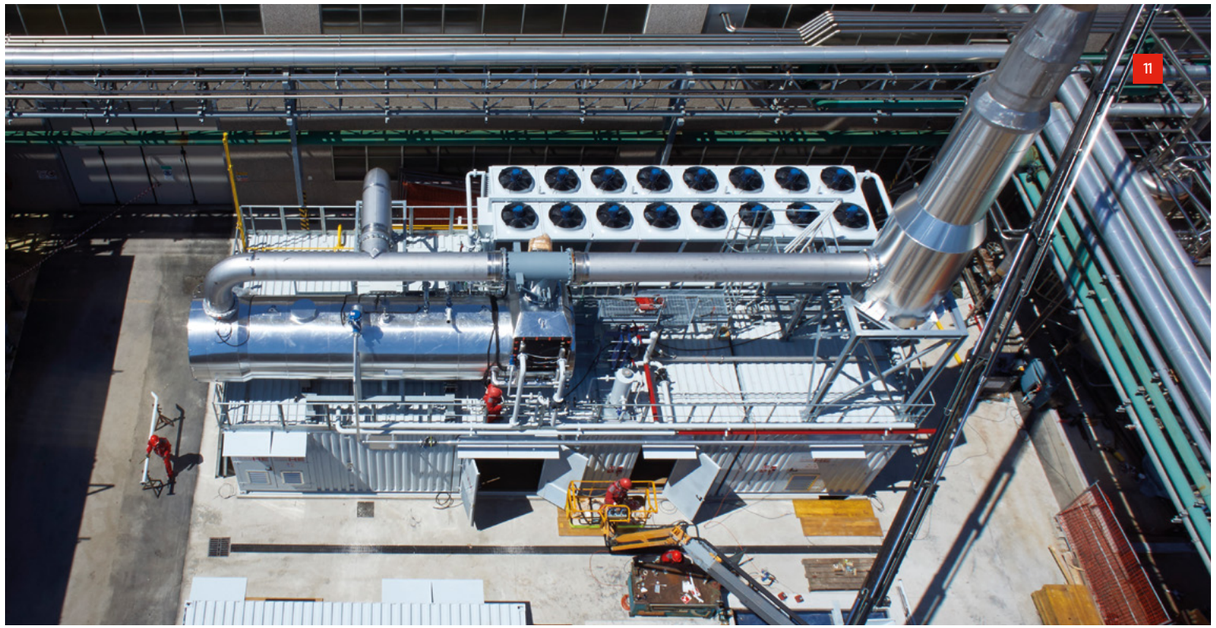
ECOMAX®

We deliver to our Customers maximum competitiveness through best-in-class On-Site Power and Cogeneration solutions.

Over 1,200 customers in every energy demanding sector have chosen AB.

ECOMAX®: simply the best modular CHP and On-Site Power solution in the world.

ECOMAX®



An industrial product ready for installation.

Compactness and versatility, combined with best-in-class performance make ECOMAX® the most innovative modular cogeneration solution.

ECOMAX® is an idea conceived and developed entirely by AB that has evolved across 5 product lines and a wide range of applications. ECOMAX® has become the global technological and commercial point of reference for the cogeneration sector.

- AN INDUSTRIAL PRODUCT READY TO PLUG-IN
- NO BUILDING PERMIT NECESSARY
- REDUCTION IN COSTS, RISKS, INSTALLATION AND START-UP TIME
- RELOCATABLE
- SCALABLE

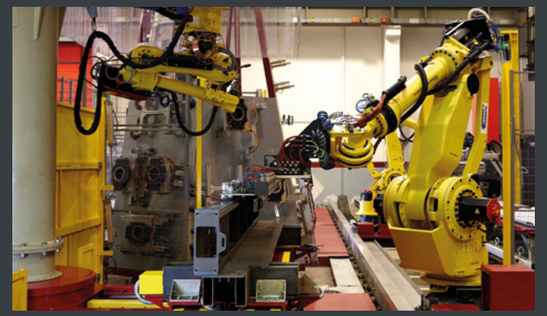
VIDEO ECOMAX®

CLICK HERE

The assurance of having a single point of contact throughout the entire design and production cycle.

01

ECOMAX® plants are designed in the **engineering hub,** where a team of over 140 engineers work. Here, the plant construction activities are planned in detail.



02

Bending, cutting and welding of the external structure of the module are handled by **robotic lines** able to guarantee precision and speed of execution.

03

As a function of the production plant, the **automated warehouse** ensures increased efficiency of the industrialized process: it supplies the components necessary for the implementation of the various orders.

04

The semi-finished parts are assembled, giving shape to the **manufactured product** that will later become the mechanical, hydraulic, and electrical components of the plant.

05

Each plant is **pre-assembled in the factory**. This permits verification that all elements of the plant correspond exactly to the design expectations, minimizing installation times.

06

Once construction of the external package is complete, the module is ready.

07

The reciprocating engine is located inside the module. The ECOMAX® preparations are completed with the **installation of the electrical, mechanical and hydraulic components**.

08

ECOMAX® is designed to allow for full accessibility in all aspects of plant operation and maintenance, including the **electrical panels**. All designed and manufactured by AB.

09

The modular ECOMAX® plant is quickly **re-assembled** at a customer site.

10

Through the **Control Room**, AB is able to remotely monitor the operation of the plants around the clock and to plan preventive and corrective maintenance interventions in a timely manner.

The layout

External

ECOMAX® 33 NATURAL GAS

EXHAUST STACK

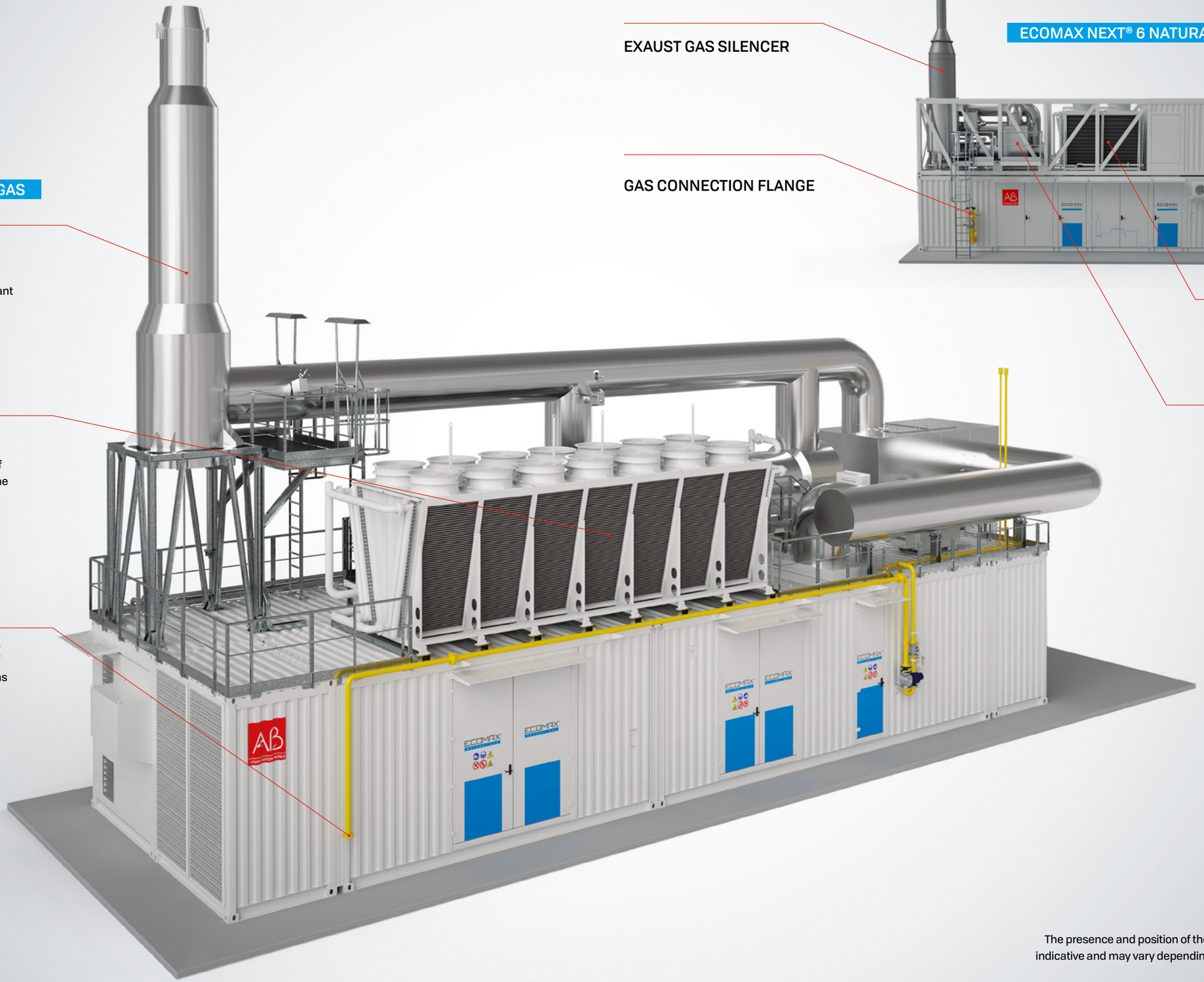
Free-standing exhaust stack with integrated dual-stage silencer (resonant and absorbent).

DRY COOLER

Device that facilitates the continuity of operation of the engine, including in the event of partial or zero recovery of the thermal power by the customer.

GAS CONNECTION FLANGE

Connection point to the customer's gas line.



ECOMAX NEXT® 6 NATURAL GAS

EXAUST GAS SILENCER

GAS CONNECTION FLANGE

DRY COOLER

OXY CATALYST

The presence and position of the various components are only indicative and may vary depending on the chosen configuration.

The layout

Internal

ECOMAX® 33 NATURAL GAS

ENGINE

The otto cycle engines are designed for use with a wide variety of gaseous fuels (natural gas, biogas, APG, mine gas, syngas).

MEDIUM VOLTAGE PANELS

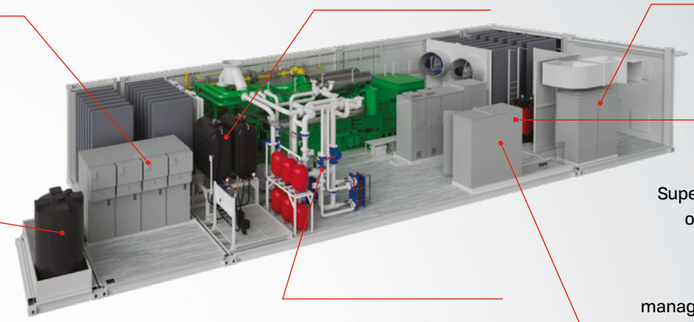
Electrical panels to connect the alternator to the power grid.

OIL TANKS

2 tanks for the storage of lubricating oil (fresh and spent).

SURGE ARRESTER PANEL

Electrical panel for the protection of the alternator against power surges.



UREA TANKS

Tank for the storage of urea used by the SCR system.

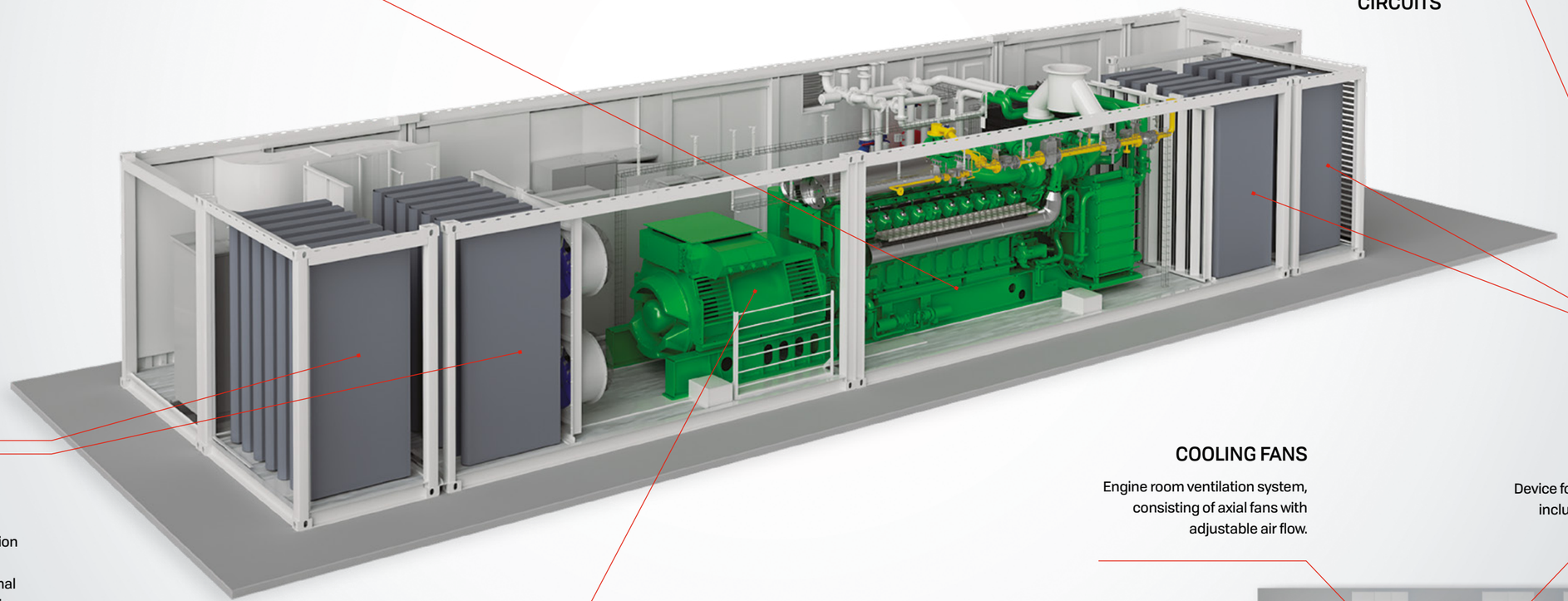
SCADA SYSTEM

Supervision and control system of all ECOMAX® subsystems.

Developed by AB to ensure an optimal and efficient management of the cogeneration system, its diagnosis and its maintenance.

Connected to the AB CONTROL ROOM via Internet.

DISSIPATION AND RECOVERY HYDRAULIC CIRCUITS



LW CONTROL PANELS

Electrical panels for the power supply and control of auxiliary cogeneration system components.

AIR OUTLET SILENCER

AIR INLET SILENCER

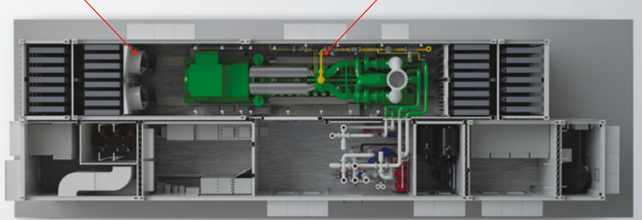
Series of sound absorbing panels designed to obtain a high attenuation of the noise generated by the cogeneration module and an optimal flow of the combustion/cooling air in the engine room.

COOLING FANS

Engine room ventilation system, consisting of axial fans with adjustable air flow.

GAS TRAIN

Device for the supply of gas to the motor, including measurement, control and regulation instrumentation.



GENERATOR

Alternator coupled to the crankshaft for the conversion of the mechanical power into electric power.

The ECOMAX® range includes market specific solutions covered by five product lines:

ECOMAX® NATURAL GAS

ECOMAX® NEXT NATURAL GAS

MANUFACTURING
- Food and Beverage
- Paper
- Ceramics and stone
- Chemical
- Pharmaceutical
- Mechanical
- Packaging
- Leather
- Plastic
- Textiles

COMMERCIAL AND MUSH SECTORS
- Data processing centres
- Shopping centres
- Hospitals
- Hotels
- Universities
- Airports
- District heating
- District cooling

ECOMAX® BIOGAS

ECOMAX® NEXT BIOGAS

- Agriculture
- Agro-industrial waste
- WWT (Waste Water Treatment)

ECOMAX® LANDFILL GAS

ECOMAX® NEXT LANDFILL GAS

- Landfill/OFMSW

ECOMAX® GREENHOUSE

- Fruits and vegetables and floriculture
- Cannabis

ECOMAX® SPECIAL GAS

ECOMAX® NEXT SPECIAL GAS

- Flare gas
- Oil extraction and production (APG)
- Coal mining

ECOMAX® NATURAL GAS

ECOMAX® NEXT NATURAL GAS

The most competitive and tested solution to efficiently meet the energy needs throughout the industrial and commercial sectors.

Significant savings and site resiliency can be realized within the industrial and commercial sectors by producing electricity and thermal energy through a stable, reliable, and cost-effective fuel source such as natural gas. A wide range of ECOMAX® system sizes allows AB's customers to take full advantage of these benefits in a compact, versatile, and reliable system.
The ECOMAX® Natural Gas solutions can be configured for installations within buildings. AB also proposes solutions dedicated to tailor-made installations inside buildings without the need of the module.

			AVAILABLE HEAT RECOVERY **						OR ALTERNATIVELY FROM EXHAUST:	OR:
ECOMAX®	Energy Input [kW]	Electrical Output [kW] *	Thermal Output from Engine Circuit [kW]	Thermal Output from Exhaust - as hot water [kW]	Total Heat Recovery - as hot water [kW]		Electrical Efficiency [%]	Thermal Efficiency - as hot water [%]	Total Efficiency [%]	Steam at 8 bar - feedwater 90°C [kW]	Thermal oil (from 180°C to 200°C) [kW]
ECOMAX® 3 NGS	900	336	188	229	417		37.3	46.0	83.3	207	159
ECOMAX NEXT® 6 NGS	1,617	633	407	389	796		39.1	49.0	88.2	348	263
ECOMAX NEXT® 8 NGS	2,156	847	543	518	1,061		39.3	49.0	88.3	465	351
ECOMAX NEXT® 9 NGS	2,066	851	526	433	959		41.4	46.0	87.2	379	263
ECOMAX NEXT® 10 NGS	2,696	1,062	679	648	1,372		39.4	49.0	88.4	581	439
ECOMAX NEXT® 12 NGS	2,754	1,141	701	578	1,279		41.4	46.0	87.4	505	350
ECOMAX NEXT® 15 NGS	3,443	1,429	876	722	1,598		41.5	46.0	87.5	631	438
ECOMAX® 20 NGS	4,454	1,980	1,050	841	1,891		44.5	42.0	86.5	709	429
ECOMAX® 27 NGS	5,886	2,656	1,373	1,107	2,480		45.1	42.0	87.1	933	563
ECOMAX® 33 NGS	7,373	3,334	1,780	1,387	3,167		45.2	43.0	88.2	1,169	705
ECOMAX® 44 NGS	9,442	4,376	2,475	1,598	4,073		46.3	43.0	89.3	1,324	742

All data are based on engine versions with NOx emissions level at 500 mg/Nm³ (5% O_2).
Engine versions with 250 mg/Nm³ (5% O_2) NOx available.
Lower emissions achievable by installing an SCR system.
*Customised Electrical Output upon request.
**Customised Thermal Configurations upon request.

ECOMAX® BIOGAS

ECOMAX® NEXT BIOGAS

With biogas cogeneration, revenue opportunities are increasing for the agricultural world and for multi-utilities.

Through cogeneration using biogas, electrical and thermal energy is produced using agricultural/livestock or industrial waste, or organic fraction of municipal solid waste, or even waste water.
Cogeneration using biogas permits public and private companies, including agricultural/livestock businesses, the opportunity to turn waste products into an environmentally sustainable and highly efficient energy source.
AB offers its expertise from over 1,250 plants manufactured using technologies and solutions, which represent the heart of the entire system: the conversion of biogas into energy, ensuring the highest levels of performance while maintaining maximum reliability.
The **ECOMAX® Biogas** line is the performance benchmark for any organization wishing to take advantage of this opportunity in a size range from 300 kW up to 1.5 MW.

			AVAILABLE HEAT RECOVERY **					
ECOMAX®	Energy input [kW]	Electrical output [kW] *	Thermal Output from Engine Circuit [kW]	Thermal Output from Exhaust as hot water [kW] ***		Total heat recovery as hot water [kW]	Electrical efficiency [%]	Thermal efficiency as hot water [%]	Total efficiency [%]
ECOMAX® 3 BIOGAS	924	336	194	199		393	36.4	43.0	79.4
ECOMAX NEXT® 6 BIOGAS	1,617	633	385	338		723	39.1	45.0	84.2
ECOMAX NEXT® 8 BIOGAS	2,156	847	514	451		965	39.3	45.0	84.3
ECOMAX NEXT® 9 BIOGAS	2,117	851	530	377		907	40.2	43.0	83.2
ECOMAX NEXT® 10 BIOGAS	2,696	1,062	642	563		1,205	39.4	45.0	84.4
ECOMAX NEXT® 12 BIOGAS	2,823	1,141	706	503		1,209	40.4	43.0	83.4
ECOMAX NEXT® 15 BIOGAS	3,529	1,429	884	629		1,513	40.5	43.0	83.5

All data are based on engine versions with NOx emissions level at 500 mg/Nm³ (5% O_2).
*Customised Electrical Output upon request.
**Customised Thermal Configurations upon request.
***Exhaust gas cooled at 200°C.

ECOMAX® LANDFILL GAS

ECOMAX® NEXT LANDFILL GAS

From waste stored in landfills, a renewable energy source for cogeneration plants.

With an average calorific energy content of between 350-500 btu/ft3, landfill gas constitutes a good fuel source for endothermic engines and may therefore be used to efficiently power cogeneration plants. Over the average lifetime of a landfill site, a million tonnes of waste may produce from 1.7 to 2.5 million m^3 of methane. Through the **ECOMAX® Landfill Gas** product line, energy stored in landfill waste can be converted into useful electricity and thermal energy which can be self-consumed by the facility or exported to the electric grid.

ECOMAX®	Energy input [kW]	Electrical output [kW] *	AVAILABLE HEAT RECOVERY ** Thermal Output from Engine Circuit [kW]	Thermal Output from Exhaust as hot water [kW] ***		Total heat recovery as hot water [kW]	Electrical efficiency [%]	Thermal efficiency as hot water [%]	Total efficiency [%]
ECOMAX® 3 LANDFILL	924	336	194	199		393	36.4	43.0	79.4
ECOMAX NEXT® 6 LANDFILL	1,617	633	385	338		723	39.1	45.0	84.2
ECOMAX NEXT® 8 LANDFILL	2,156	847	514	451		965	39.3	45.0	84.3
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ECOMAX NEXT® 15 LANDFILL	3,529	1,429	884	629		1,513	40.5	43.0	83.5

All data are based on engine versions with NOx emissions level at 500 mg/Nm^3 (5% O_2).
*Customised Electrical Output upon request.
**Customised Thermal Configurations upon request.
***Exhaust gas cooled at 200°C.

ECOMAX® GREENHOUSE

Cogeneration for greenhouses helps to ensure efficient operations of the entire facility.

The **ECOMAX® Greenhouse** product line offers a comprehensive solution for greenhouses. The ECOMAX® not only offers facilities an efficient, flexible, and reliable source of electrical power but the recovery of heat from engine and exhaust, combined with exhaust purification for CO_2 fertilization ensures the highest efficiencies are achieved while producing the lowest possible emissions. Heat recovery can be in the form of hot water, steam or even be utilized for absorption cooling. Furthermore, CO_2 present in the exhaust gases can be dosed into the facility encouraging plants growth after being cooled and purified.

			AVAILABLE HEAT RECOVERY **					
ECOMAX®	Energy input [kW]	Electrical output [kW] *	Thermal Output from Engine Circuit [kW]	Thermal Output from Exhaust as hot water [kW]		Thermal Output from 2nd stage intercooler as hot water [kW]	Thermal Output from Condenser as hot water [kW]	Total Heat Recovery as hot water [kW]
ECOMAX® 10 GH	2,696	1,062	679	648		70	121	1,518
ECOMAX® 12 GH	2,754	1,141	701	578		80	130	1,489
ECOMAX® 15 GH	3,443	1,429	876	722		99	163	1,860
ECOMAX® 20 GH	4,454	1,980	1,050	841		159	235	2,285
ECOMAX® 27 GH	5,886	2,656	1,373	1,107		204	310	2,994
ECOMAX® 33 GH	7,373	3,334	1,780	1,387		201	389	3,757
ECOMAX® 44 GH	9,442	4,376	2,475	1,598		242	500	4,815

All data are based on engine versions with NOx emissions level at 500 mg/Nm³ (5% O_2).
*Customised Electrical Output upon request.
**Customised Thermal Configurations upon request.

ECOMAX® SPECIAL GAS

ECOMAX® NEXT SPECIAL GAS

The point of reference for plants which use gas recovered during oil extraction or from processes using coal.

Oil wells are characterized by the natural presence of gases, methane in particular (APG), which are in a liquid state when mixed with petroleum, becoming gaseous when approaching the surface. APG represents a problem during the extraction of petroleum for the environment, as the escaped pressurized gasses saturate the area around the point of extraction, To eliminate the gas, it is often wasted by flaring. To eliminate the gas, it is often burned in a flare. This flare gas represents a great opportunity to fuel cogeneration plants. Methane gas even develops during the extraction of mineral carbon, which must be removed for reasons of safety. This represents an advantageous economic opportunity to use the gas in cogeneration. Likewise, methane is present in coal mines, both as a free gas or as gas absorbed on the inner surface of the shale rock and surrounding rocks. The **ECOMAX® Special Gas** product line provides a range of proven benefits. Both the heat and the electricity produced can be used to meet the needs of the extraction sites, while excess electricity can be exported to the electric grid.

Service: a global network of specialized technicians dedicated to the service and maintenance of AB installations around the world.

Through a global network of specialized technicians AB ensures each plant achieves maximum reliability throughout the entire life of a plant. The advantages offered by AB Service begin with the installation of the plant:

- A single partner for the entire plant
- 24/7 Remote monitoring and online diagnosis
- Availability and supply of original spare parts
- Presence of qualified service technicians near installation sites
- Network of strategically placed spare parts warehouses
- Quick turnaround for repairs, updates and overhauls

ECOMAX®

+1,300
Plants supported and monitored

+1,750
MW installed

H24
24 hour assistance 365 days a year

The maintenance cycle

01 Maintenance contracts
Tailor-made contracts ensure maximum plant performance for maximum return on investment without costly surprises throughout the contract term.

02 Commissioning
AB specialists ensure the system is properly installed and ready for startup.

03 Training courses and updates
AB conducts on-site customer training of the ECOMAX® to ensure the safe and efficient operation of the system.

04 Remote monitoring and online diagnostics
AB has a dedicated Control Room, active 24/7 and 365 days a year, providing our customers unparalleled remote assistance and diagnostics.

05 On-site assistance
Timely and decisive on-site assistance from our dedicated service technicians.

06 Original parts
AB uses only original parts for all plant components (from the engine to the auxiliaries), ensuring maximum life and reliability.

07 Repair, upgrade and overhaul
Our specialized technicians are trained to safely perform all routine overhauls as well as systems upgrades and repairs in a timely manner, ensuring the ECOMAX is operating safely and efficiently.

VIDEO SERVICE
CLICK HERE

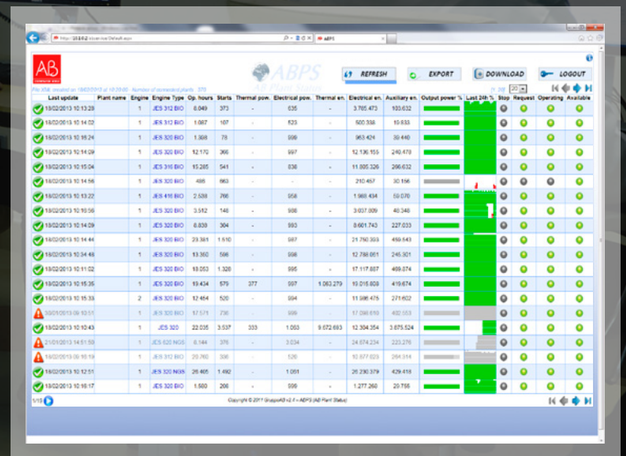
AB monitoring system: supervision and control.

The supervision and monitoring system provides customers with a central point of management, not only for the cogeneration plant, but also for production processes closely associated with the installation.
The remote monitoring systems allow the user to:

- choose the best operating set-up
- verify the operating conditions
- remotely connect via PC, laptop or even mobile devices

All ECOMAX® systems are connected to our dedicated Control Room to ensure the most prompt, reliable, and successful remote assistance available. With the addition of an AB Protection Plan, our customers have 24 hr access to our specialized technicians within the Control Room for remote assistance.

AB Plant Status
Online plant performance monitoring



AB Scada System
with remote control

ECOMAX®


01


02


03


04


05


06


07


08

AB INSTALLATIONS AROUND THE WORLD

01 | **POLYCON** / plastic sector
NATURAL GAS
Canada - 8 MW

02 | **ARIA HOSPITAL** / hospital
NATURAL GAS
USA - 1,137 kW

03 | **ACQUA VERA** / mineral water
NATURAL GAS
Italy - 2,679 kW

04 | **VISCOLUBE** / regeneration of used oil
NATURAL GAS
Italy - 2,004 kW

05 | **POLYNT** / chemical sector
NATURAL GAS
Italy - 8 MW

06 | **GRUPPO SOLVÌ**
LANDFILL GAS
Brasil - 29.5 MW

07 | **FOOTHILL**
GREENHOUSE
Canada - 3,332 kW

08 | **NOVA IGUAÇU ENERGIA E GAS RENOVÁVEL**
LANDFILL GAS
Brasil - 17 MW

09


10

11

12


13

14


© HITACHI ZOSEN INOVA AG.
15

16

AB INSTALLATIONS AROUND THE WORLD

09 | **PETROM**
SPECIAL GAS (APG)
Romania - 2,260 kW

10 | **CONESTOGA COLD STORAGE**
NATURAL GAS
Canada – 3,332 Kw

11 | **MOUNT ROYAL UNIVERSITY**
NATURAL GAS
Canada – 850 kW

12 | **ST. VINCENT HOSPITAL**
NATURAL GAS
Canada – 635 kW

13 | **RAVENSEBERGEN**
GREENHOUSE (Flowers)
Canada – 2,679 kW

14 | **DLV**
GREENHOUSE
Russia - 18 MW

15 | **HITACHI ZOSEN INOVA AG.**
BIOGAS from organic solid waste
USA - 853 kW

16 | **ECOMAX® for building solutions**
ECOMAX® solutions may even be configured for installations within buildings through integrations with site installations or with the implementation of a completely new technological layout. AB has the skills and solutions dedicated to tailor-made installations inside buildings without the need of the module.

The design and realization of these plants demonstrates the engineering know-how of AB by determining the optimum configurations in the space available.

These skills are complemented by the professionalism and ability of managing the installation details even in the most complex conditions.

WEB Channels

COGENERATION CHANNEL

www.cogenerationchannel.com

The first and only web channel entirely dedicated to cogeneration and all its applications

CASE HISTORY AND BEST PRACTICE FROM AROUND THE WORLD
1,000 VIDEO

BIOGAS CHANNEL

www.biogaschannel.com

The first and only web channel entirely dedicated to biogas and all its applications

CASE HISTORY AND BEST PRACTICE FROM AROUND THE WORLD
1,200 VIDEO

welcome.abv.it

ABetter Way

AB ENERGY CANADA, LTD.
30 Fair Road Unit 2
Guelph, Ontario N1K 0A1
T +1 (519) 846 9369
abenergycanada@gruppoab.com
www.gruppoab.com

FSC www.fsc.org FSC® C001810

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