

# BIOCH4NGE®

CHANGE HAS ARRIVED  
FOR RNG WITH BIOCH4NGE®.







CHANGE HAS ARRIVED.

For nearly 40 years, AB has dedicated expertise and technology to support companies looking to sharpen their competitive edge through clean energy savings and reducing environmental emissions.

Our journey is distinguished by continuous innovation, which has enabled us to become the global leader in the entire construction life cycle of biogas & methane cogeneration and energy plants. Applying our experience

and expertise, we are now pleased to offer similar turnkey solutions for the production of RNG.

BIOCH4NGE® is AB's commitment to ensuring that sustainability and the advancement of clean energies remain among our top priorities. We believe wholeheartedly in improving the present for a better future. With BIOCH4NGE®, that tomorrow is now here.



**AB: EXPERTS AND INDUSTRY LEADERS IN  
ON-SITE ENERGY SOLUTIONS, ENGAGED IN THE  
DEVELOPMENT AND MANUFACTURING OF SYSTEMS  
TO ACHIEVE CLEAN ENERGY SUSTAINABILITY**



Over 1,550 AB biogas, RNG and energy plants around the world provide reliable, clean and efficient energy. A global leader in energy sustainability solutions with a rich heritage in outstanding and specialized know-how - ranging from CHP, emission treatment, biogas cleaning to RNG production technologies - AB has the experience in design, production, installation and continued service to provide our partners with exceptional solutions and excellence.

## AB SERVICES FOR RNG

### SOLUTION OPTIMIZATION

AB assists in assessing site and biogas conditions to design the optimal RNG upgrading solution. Our flange-to-flange installations ensure all relevant specifications are reliably achieved.

### DESIGN

140 specialized technicians | Electrical engineering | Mechanical engineering | Process engineering.

### AUTHORIZATION SUPPORT

Assistance with critical system specifications and gas quality information for project approvals.

### PRODUCTION

Total area of 366,000 ft<sup>2</sup> (34,000 m<sup>2</sup>) | Automized warehouse | Water-based painting technology | Standardization of processes.

### INSTALLATION

Complete on-site hydraulic, mechanical and electrical installation of BIOCH4NGE® for flange-to-flange provision | Rapid installation and site start-up assistance.

### BIOGAS QUALITY ANALYSIS

Continuous monitoring of gas quality ensures only grid-compliant RNG is delivered. Actuated valve control automatically reacts to gas quality inputs.

### CONTROL SOFTWARE

Choice of service structures | Monitoring of operational conditions | 24/7 monitoring | Remote connection via data network / Internet.

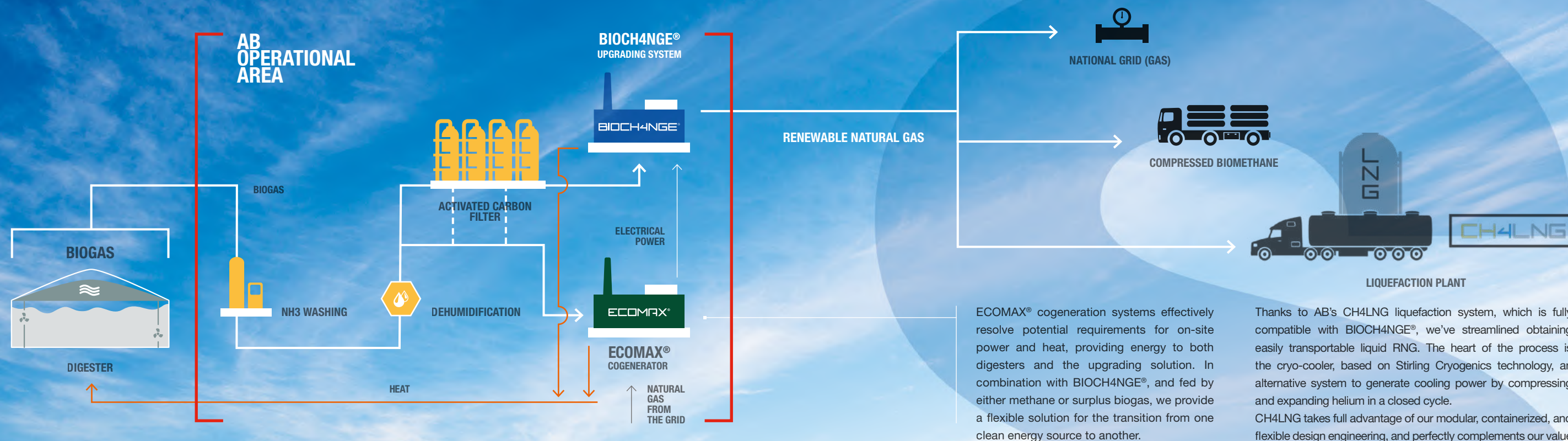
### SERVICE

Wide geographical coverage | Availability 365 days a year | AB Service Competence Center





## BIOGAS AND RNG: SUSTAINABLE, EFFICIENT, PROFITABLE AND CONTINUOUSLY AVAILABLE ENERGY



ECOMAX® cogeneration systems effectively resolve potential requirements for on-site power and heat, providing energy to both digesters and the upgrading solution. In combination with BIOCH4NGE®, and fed by either methane or surplus biogas, we provide a flexible solution for the transition from one clean energy source to another.

Thanks to AB's CH4LNG liquefaction system, which is fully compatible with BIOCH4NGE®, we've streamlined obtaining easily transportable liquid RNG. The heart of the process is the cryo-cooler, based on Stirling Cryogenics technology, an alternative system to generate cooling power by compressing and expanding helium in a closed cycle. CH4LNG takes full advantage of our modular, containerized, and flexible design engineering, and perfectly complements our value chain of ECOMAX® and BIOCH4NGE® for your clean energy needs. Also available for small sizes, with competitive CAPEX and OPEX even for small-size RNG plants, CH4LNG offers ease-of-install with quick, plug-in operations and no N2 consumption.

### SOURCES



SLURRY AND MANURE FROM COWS AND PIGS



OFMSW - SEPARATE COLLECTION OF ORGANIC WASTE



SEWAGE SLUDGE



CHICKEN MANURE



SUGAR CANE



SLUDGE AND WASTE FROM PAPER MILLS



WASTE FROM SLAUGHTERHOUSES AND THE MEAT PROCESSING INDUSTRY



WASTE FROM AGRO-FOOD INDUSTRIAL PROCESSES



LIGNOCELLULOSE BIOMASS



STRAW FROM RICE, CORN AND WHEAT



## BIOCH4NGE®: OUR SOLUTION.

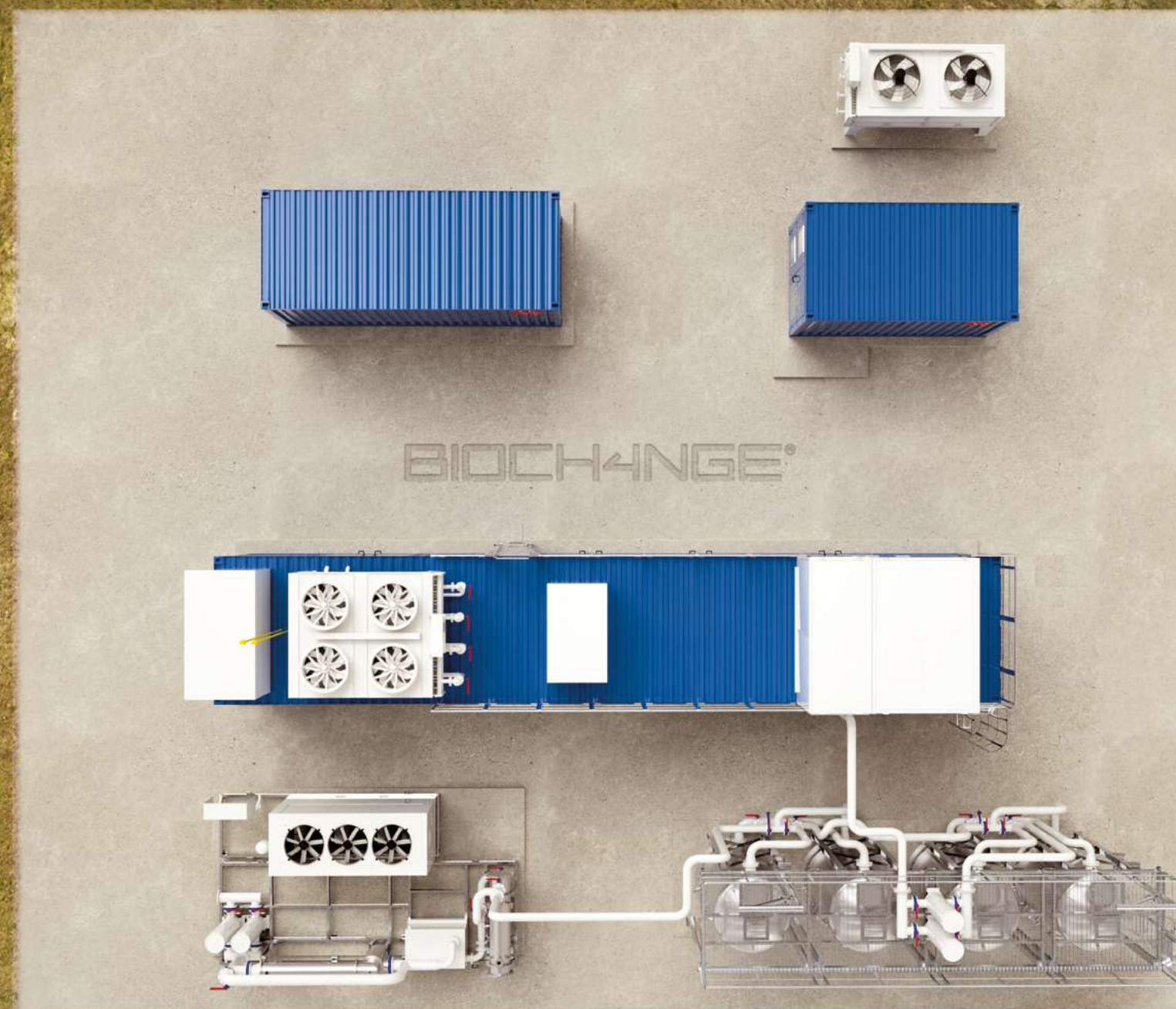
DRY COOLER  
FOR COMPRESSORSVENTILATION  
SYSTEMACTIVATED  
CARBON FILTERSMEMBRANE  
SKIDINTERSTAGE  
COMPRESSORPRE-TREATMENT  
SKIDCONTROL  
ROOMMAIN  
COMPRESSOR

BIOCH4NGE®

DISCOVER ALL PRODUCT  
DETAILS IN A 3D VIDEO RENDERING



## AN EFFICIENT SYSTEM FOR RNG PRODUCTION.



As a clean and renewable energy source, biogas produced through anaerobic digestions is full of water and other pollutants that will need to be removed before upgrading to grid-suitable RNG. The first step in our process is to remove the water through a purpose-designed chilled water exchanger. The dehumidified gas is further compressed and cooled by a secondary exchanger and sent to the next treatment stage.

The gas is passed through the exchangeable filtration media under optimal pressure and temperature conditions, further removing pollutants such as H<sub>2</sub>S and VOCs. Our lead-lag

configuration provides maximum flexibility through a series of valves enabling inverted flows and bypass structures, which ensures a reliable continuity of service and a stable provision of pre-treated gas for the membrane module.

The gas is further compressed to 8-9 PSI, enabling it to pass through several stages of membranes separating the CO<sub>2</sub> from the CH<sub>4</sub>. This process takes advantage of an optimized energy demand design with low power consumption requirements, allowing for maximum efficiency in recovering CH<sub>4</sub> from the biogas.



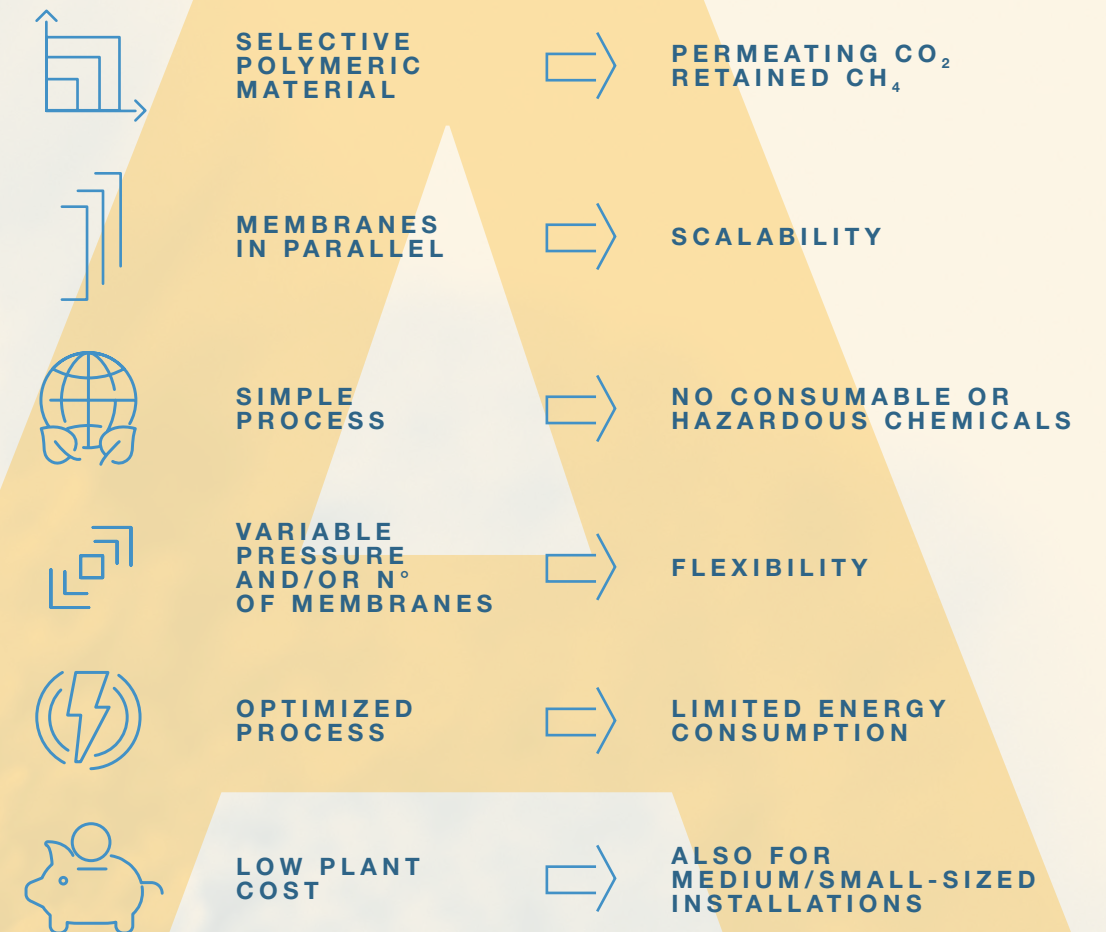


## RNG BY AGRO-INDUSTRIAL SECTOR / OFMSW / WWT.

AB's flexible membrane design and low power consumption requirements stand out in providing grid-compliant RNG and maintaining economical suitability. BIOCH4NGE® utilizes multi-stage membranes consisting of special polymeric materials with a selective permeability that effectively separate methane from CO<sub>2</sub>. Amongst its many attributes, BIOCH4NGE® has no need for external heat, nor does it require additional resources such as water, chemicals or substantial energy input. In fact, heat recovered from BIOCH4NGE® can be recycled back to the digester and improve the functionality of the overall plant.

In cases where economically viable, BIOCH4NGE® is capable of capturing and utilizing the CO<sub>2</sub> for industrial or food-grade purposes, enhancing the resource recovery potential. The specialized membrane configuration not only ensures grid-compliant RNG production, but also addresses the necessity of limiting emissions to the atmosphere. A very high rate of CH<sub>4</sub> recovery and extremely low off-gas contaminants further secure an environmentally friendly approach. BIOCH4NGE® is a modular, flexible and highly scalable RNG-upgrading plant with tomorrow's requirements already in mind today.

## SUMMARY OF ADVANTAGES



## PRODUCT RANGE AIMED AT THIS TARGET

BIOCH4NGE®	GLOBAL		USA
	Nm3/h		scfm
	For input gas flows of:		
BIOCH4NGE	1.5 - 100	150	100
BIOCH4NGE	2.5 - 150	250	150
BIOCH4NGE	3.5 - 225	350	225
BIOCH4NGE	5 - 300	500	300
BIOCH4NGE	7.5 - 450	750	450
BIOCH4NGE	10 - 600	1000	600
BIOCH4NGE	12.5 - 750	1250	750
BIOCH4NGE	15 - 900	1500	900



## 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 its life. 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

**+1,300**

Plants supported and monitored

**H24**

Active 24 hours a day, 365 days a year

### THE MAINTENANCE CYCLE

**01**

#### Maintenance contracts

Custom contracts meet every individual need, ensuring high availability and yields throughout the working life of a plant and outstanding performance.

**02**

#### Implementation

AB specialists ensure qualified plant installation and start-up in line with requirements.

**03**

#### Training and refresher courses

AB provides immediate support for the customer's own technicians through ad hoc training to ensure the maximum operational and functional efficiency of the plant.

**04**

#### Remote monitoring and online diagnosis

Facility operational 24 hours a day, 365 days a year. Plants are continuously monitored by activating the remote Control Room diagnostic and assistance service.

**05**

#### On-site assistance

Thanks to the wide geographical reach of our service, AB Service technicians guarantee punctual and rapid assistance, in close liaison with customer personnel.

**06**

#### Original spare parts

AB Service only uses original spare parts for all plant components, ensuring maximum durability and reliability.



A BIOCH4NGE® RNG plant is able to offer multiple advantages to customers who choose to entrust AB with its design, construction, implementation and assistance.



#### Industrial product

BIOCH4NGE® is designed and manufactured completely in-house by AB. It is pre-assembled at our Orzinuovi production facility for testing and functionality assurance prior to shipping to the installation site.



#### Modular outdoor solution

BIOCH4NGE® is suitable for a wide range of environmental conditions. With a containerized outdoor design and a range of sizes, it guarantees the highest flexibility in applications.



#### Compactness & Flexible

Engineered with a modular and compact system design, BIOCH4NGE® is flexible in its sizing and can easily scale for future expansions.



#### Plug & play

With AB's factory pre-assembly process, installation is quick with no on-site fabrication required.



#### Sustainability

BIOCH4NGE® is a flexible solution, both in terms of the quality requirements of the gas produced and the residual gas emitted into the atmosphere; in combination with secondary AB systems it ensures significant elimination of CH4 emissions to the atmosphere.



#### Remote control

BIOCH4NGE® is equipped with a centralized monitoring and supervision system, manufactured and managed by AB, which enables remote access of all system parameters and related production processes.



#### Full service "Protection Plan"

AB provides 24/7 assistance, 365 days a year through our always present control center. Our full service "Protection Plan" allows for remote monitoring and provides access to a global network of highly experienced technicians, as well as a worldwide network of warehouses for original spare parts.

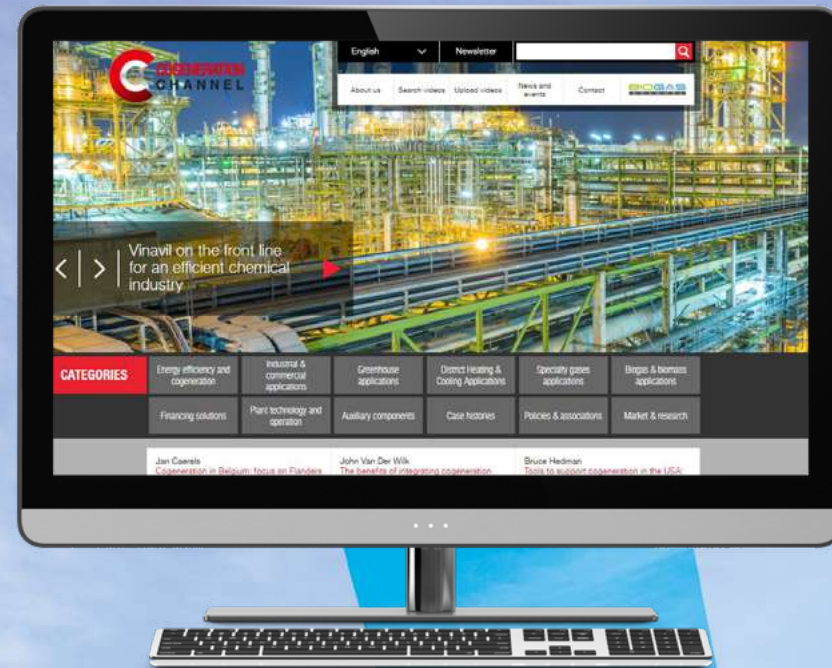


#### BIOCH4NGE® + ECOMAX®

BIOCH4NGE® easily integrates with ECOMAX® cogeneration plants to provide a fully sustainable clean energy plant.

ALL THE ADVANTAGES  
OF THE AB BIOCH4NGE®  
SOLUTION.





[www.cogenerationchannel.com](http://www.cogenerationchannel.com)

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[www.biogaschannel.com](http://www.biogaschannel.com)

The first and only web-based video channel entirely dedicated to the world of BIOGAS in all its applications.

**CASE HISTORIES AND BEST PRATICES FROM ALL AROUND THE WORLD  
MORE THAN 1,200 VIDEOS AVAILABLE**



**BIOCH4NGE®**  
rng.na.sales@gruppoab.com



**AB ENERGY USA, LLC**  
26, Chapin Road Unit 1108  
Pine Brook NJ 07058 (United States)  
8910 University Center Lane,  
Suite 400 San Diego CA 92122  
[us.bioch4nge.com](http://us.bioch4nge.com)

**AB ENERGY CANADA Ltd.**  
30 Fair Road Unit 2 - N1K-0A1  
Guelph, Ontario (Canada)  
[ca.bioch4nge.com](http://ca.bioch4nge.com)

