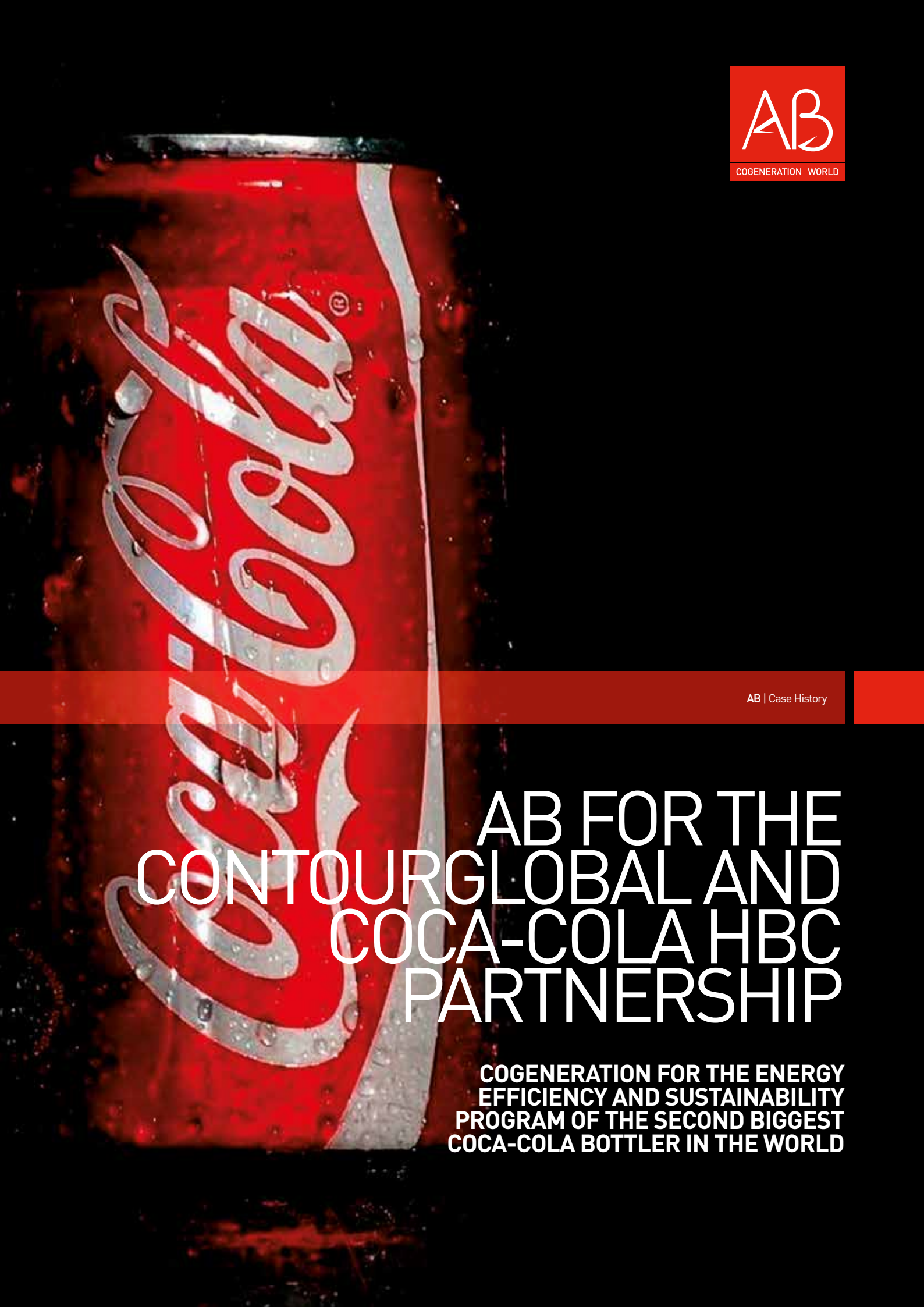


COGENERATION WORLD

AB FOR THE CONTOURGLOBAL AND COCA-COLA HBC PARTNERSHIP

COGENERATION FOR THE ENERGY EFFICIENCY AND SUSTAINABILITY PROGRAM OF THE SECOND BIGGEST COCA-COLA BOTTLER IN THE WORLD

AB FOR COCA-COLA

A CHOICE COMBINING PRODUCTION LINE EFFICIENCY WITH LOWER EMISSIONS


COGENE
www.gruppoab.it

RATION IN THE BEVERAGE INDUSTRY.

THE IMPORTANCE OF THE COCA-COLA HBC CASE.

Upgrading energy efficiency offers numerous benefits to the manufacturing industry in a mature market context. The more efficient use of fuel results in lower operating costs and, at the same time, minimizes the overall manufacturing impact on the environment, a strategic goal for both Coca-Cola HBC and ContourGlobal. Coca-Cola HBC, world leader in the soft beverage sector and ContourGlobal, a leading Company in the energy sector, set the example for an efficient use of energy. The two companies entered into an agreement to improve the effectiveness of production and reduce the carbon footprint.

The agreement is to implement QuadGen plants for the supply of electrical energy, steam, hot and cold water as well to capture CO_2 emissions. ContourGlobal chose AB, global leader in the implementation of turnkey cogeneration solutions, for the carry out of a number of CHP systems to serve the energy needs of Coca-Cola HBC. The cooperation between AB, the Orzinuovi Industrial Group, and ContourGlobal was the unanimous decision of ContourGlobal's engineers given the excellent quality of AB's slimline modular plants, chosen by over **700** industrial companies and able to secure on-time and on-budget implementation.

BEYOND THE BRAND A UNIVERSE OF VALUES.

SINCE 1886, THE MOST FAMOUS "BRAND NAME" ON EARTH HAS ALWAYS BEEN LOOKING TO THE FUTURE WITH RESPONSIBILITY AND OPTIMISM.

Coca-Cola HBC was the first bottler to use QuadGen technology thus reducing **energy consumption.**

For the future the company intends to continue investing in alternative energies, with a special focus on **cogeneration**.


Coca-Cola

COGENERATION AS A STRATEGIC PART OF COCA-COLA HBC'S SUSTAINABILITY.

Care for the environment, safety and efficiency are among the main strengths of the Coca-Cola HBC facility at Oricola (L'Aquila, Italy), which provides jobs to people from an area covering the whole of central Italy, from the Adriatic to the Tyrrhenian seas. The trigeneration plant designed and built by AB, with an installed power of **3MW**, has made it possible to further increase the energy efficiency of the production site.

ContourGlobal

As an independent power producer, ContourGlobal has an installed capacity of over 3GW in North and South America, Europe, Guadeloupe, Saint Martin and Africa. Since it was founded in 2005, CountorGlobal is offering clean and reliable energy generation in all of its plants. ContourGlobal was praised by President Obama for its contribution to the energy sector in Africa, since it enabled a faster sustainable growth of the continent. A major element in CountorGlobal's decision to turn to AB was its desire to find a real partner able to provide turnkey cogeneration solutions. Its decision proved to be wise as the Coca-Cola HBC plant in Oricola was built within the set budget and on-time.

THE COOPERATION BETWEEN AB AND ContourGlobal

TRIGENERATI

FOR THE COCA-COLA HBC FACILITY IN ORICOLA (L'AQUILA, ITALY)

ON

One of the key strategic projects of Coca-Cola HBC is the target of sustainable growth. ContourGlobal together with Coca-Cola HBC is achieving this goal by implementing TriGen and QuadGen plants in Coca-Cola HBC's bottling facilities.

The example of the Oricola bottling facility, in the province of L'Aquila (Italy), is particularly significant as it demonstrates how technological decisions aimed at upgrading efficiency are combined with the objective of reducing emissions and energy consumption levels. This was achieved by the TriGen **Ecomax® 30 NGS** plant built by AB.

AB and ContourGlobal engineers proposed, as the best configuration for Oricola, a plant with a full-load rate capacity of **3,041 electrical kW** and a cogeneration thermal capacity of **2,677 kW**. The plant is housed in an outdoor modular solution and supplies the bottling facility with electricity, steam at 8 bar and hot water at high temperature (95°C), which is used by the absorption chiller to produce chilled water. The cooling energy obtained by means of **trigeneration** is also used in various stages of the production cycle, especially to store the beverage bases of syrup, by now famous throughout the world, at a controlled temperature. Among the results obtained by switching from traditional boilers to a cutting-edge TriGen plant, besides the reduction in energy production costs and improved overall management of thermal energy, there are also substantial reductions in water consumption, a lower environmental impact and less noise inside the production facility, to the benefit of workers; yet a further indication of AB, ContourGlobal and Coca-Cola HBC's constant focus on stakeholders.

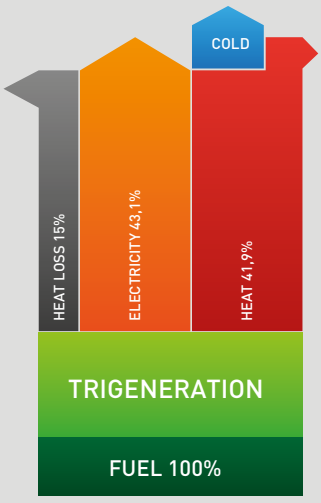
The Ecomax® modular cogeneration plant, the result of AB's applied research, is unique in terms of design and production capacity. Ecomax® is an industrial product based on versatility, modularity and compactness, able to combine these distinctive features with high energy performances. An idea conceived and developed entirely by AB, offering numerous application options and setting the standards for modern cogeneration in terms of technology and market.

WORKS TIMETABLE

YEAR	2011					2012					
MONTH	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
Obtaining permits											
Executive design											
Prefabrication in workshop											
Civil works											
Tie-ins completion (process water/steam/boiler supply water/raw water/hot water/cooled water)											
Power connections on site											
Mechanical installation, engine testing and start up											
Delivery of main plant components											

For the needs of the Coca-Cola HBC facility in Oricola, AB and ContourGlobal specialists suggested adopting Ecomax® 30 NGS in a configuration developed for the specific requirements of the facility and which integrated perfectly with the already-existing plants, particularly as regarded the use of thermal energy.

TRIGENERATION



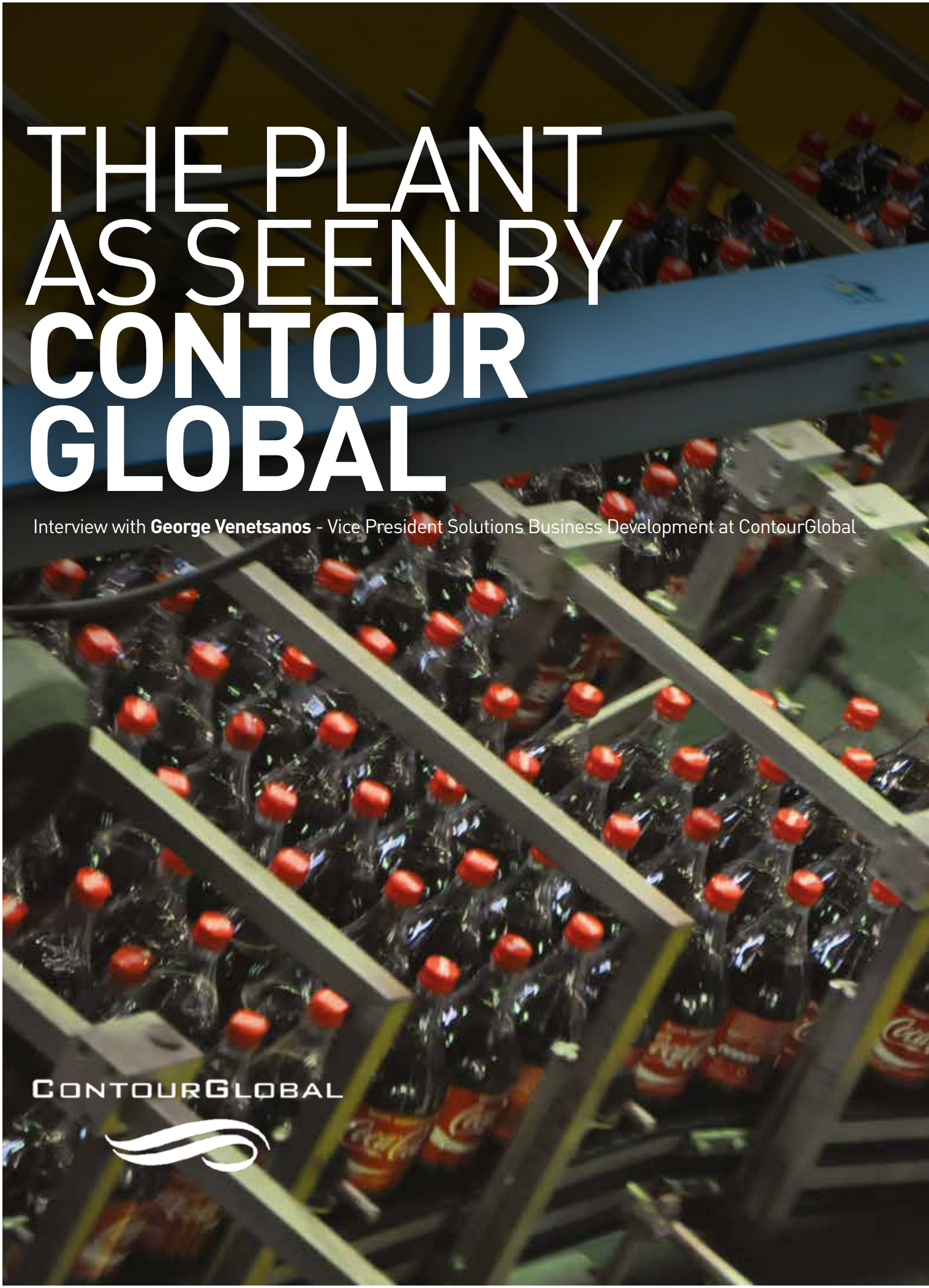
TRIGENERATION DIAGRAM

Trigeneration is the production of electricity, heat and cooling in one process. Basically, a trigeneration power plant is a cogeneration power plant that has added absorption chillers for producing chilled water from the heat that would have been wasted from a cogeneration power plant. In addition to the economic benefits and advantages, trigeneration plants help our environment by dramatically reducing greenhouse gas emissions - such as carbon dioxide - when compared to typical power plants. Trigeneration plants are very energy efficient, conserve natural resources and reduce fuel consumption as the system operates at such high efficiencies. Cogeneration and trigeneration power plants are about 90% efficient and approximately 300% more efficient than "central power plants" which average at 27% to 40% efficiency. When fueled with renewable fuel, cogeneration and trigeneration plants are carbon neutral, producing no greenhouse gas emissions, thus becoming the optimal solution for clients seeking to reduce their energy expenses and greenhouse gas emissions.

THE ECOMAX® PLANT

Ecomax® 30 NGS

LHV natural gas	kWh/Nmc	9.5
Natural gas consumption	Nmc/h	757
Energy input	kW	7,195
Mechanical output (cosphi 1)	kWe	3,119
Electrical output	kWe	3,041
Steam production from exhaust gas recovery	kWt	1,250
Thermal power from engine circuit recovery and exhaust gas recovery second stage	kWt	1,427
Steam pressure	Bar	8
Steam temperature	°C	175
Steam flow rate	Kg/h	1,900
Thermal power as cold water	kW	912
Cold water delivery temperature	°C	6
Electrical efficiency	%	42.3
Thermal efficiency	%	37.2
Total efficiency	%	79.5



THE PLANT AS SEEN BY **CONTOUR GLOBAL**

Interview with **George Venetsanos** - Vice President Solutions Business Development at ContourGlobal

Why did ContourGlobal choose cogeneration? What is the real benefit of a cogeneration plant in the beverage industry?

As an energy production company that uses state-of-the-art technologies and equipment, we strongly believe in energy efficiency and emissions reduction. Optimizing consumption and environmental impact not only benefits our clients but also remains in line with our sustainability plan. In compliance with these principles, ContourGlobal has teamed up with Coca-Cola HBC for the construction of QuadGen and TriGen plants within Coca-Cola HBC's bottling facilities in Europe and Africa. Coca-Cola HBC's production environment, in which electrical and thermal energy are used, is an ideal environment for QuadGen applications.

How come you called in AB to build the plant?

This cooperation resulted from AB's know-how and expertise in the cogeneration market both on a plant installed basis and the service level. We carefully assessed the type of plants designed and made by AB, considering them ideal for the requirements of the beverage industry and of the Coca-Cola HBC facilities in particular. We were in fact seeking easy-to-install package plants. Equally important so far as we were concerned was to have a precisely-defined plan, whereby interlinking with the production process of the Oricola facility and reducing production stops to the utmost were crucial.
From our first contacts with them, we found AB highly professional and capable of understanding and designing our requirements for the Oricola plant. The feasibility plan presented by the AB engineering department was up to our expectations, and their capabilities satisfied our concept for a turnkey solution.

How does the cogeneration plant built by AB integrate with the plant engineering conditions of the Oricola facility and what are the existing energy dynamics?

Coca-Cola HBC has a number of plants in Italy and has developed a specific program aimed at more efficient energy production systems with low environmental impact. The cogeneration plant installed at the Oricola bottling facility successfully meets the electrical and thermal energy targets required.

Have you managed to determine effectiveness with respect to the expected benefit?

The benefits are clear. A low efficiency gas-fired boiler and mechanical chillers have been replaced in the latest TriGen technology, significantly increasing efficiency and reducing costs.

AB SETS THE COGENERATION STANDARDS GLOBALLY

AB INDUSTRIAL GROUP HAS BEEN OPERATING FOR OVER 30 YEARS IN THE SECTOR OF COGENERATION AND PROMOTION OF ENERGY FROM RENEWABLE SOURCES.

AB is currently made up of 24 companies and over 600 employees and is a single entity able to manage the entire manufacturing cycle of a cogeneration plant: consultancy, design, production, installation and start-up with a comprehensive service. This has enabled AB to acquire unparalleled know-how, to become acquainted with every product detail and to provide a top-quality and highly-effective after-sales service. The success of AB - which has already designed and built more than 1000 plants - stems from ongoing investments in cutting-edge technologies, from the constant training and professional specialisation of all operators and from the development of an absolutely unique engineering department: a team of over 120 engineers engaged in developing the industry towards the production of reliable plants with higher performances. AB cogeneration plants are distinguished by modularity, compactness and ease of transport and cater to the energy requirements of a number of different companies. Outright leader in Italy, AB is also expanding globally: in Spain (2007), in Romania (2009), in Poland (2010), and again with the opening of subsidiaries in Croatia and Serbia (2011). From 2012 AB is in Czech Republic, from 2013 also in the Netherlands, Austria, Brazil, France and Canada. From 2014 in UK, Germany, USA and Israel, and from 2015 in Russia, Turkey and Mexico.

AB HOLDING SPA

ITALY SALES	AB Energy SpA				
FOREIGN BRANCHES	AB Energy International GmbH	AB Energy España S.L.	AB Energy Romania Srl	KWE AB Energy Polska Spółka z.o.o.	AB Energy Hrvatska d.o.o.
	AB Energy Srbija d.o.o.	AB Energy Ceská s.r.o.	AB Energy do Brasil Ltda	AB Greenhouse Power Netherlands B.V.	EPS AB Energy Canada Ltd.
	AB Energy (UK) Ltd.	AB Energy Deutschland GmbH	AB Energy USA, LLC	AB Energy RUS LLC	A.B. (Cogeneration) Energy Israel Ltd.
	AB Energy France sarl	AB Energy Turkey	AB Energy México S. de R.L. de C.V.		
PRODUCTION	AB Impianti Srl	AB Power Srl			
SERVICE	AB Service Srl				
FINANCING	AB Fin-solution SpA				
RENEWABLE ENERGY	AB Ambiente Srl				

Cogeneration has proven to be a winning choice in industrial and non-industrial fields, such as food chemical, pharmaceutical, textile, plastic, paper, brick, etc.

700 customers, some of them are:
Amadori, Benetton, BNL, Buitoni, Cartiere Saci, Coca - Cola, Cotonificio Albini, Eridania, Esselunga, Fatro, Ferrero, Felli Color, Galbani, Garda Plast, Granarolo, Gruppo Cremonini, Gruppo Mapei, Kraft, Lafarge, Lilly, Martini & Rossi, Nestlè, Orogel, Pastificio Garofalo, Pastificio Rummo, Peroni, Pfizer, Polynt, Spumador, Wienerberger, etc.

BIOGAS CHANNEL

www.biogaschannel.com

COGENERATION CHANNEL

www.cogenerationchannel.com

AB

COGENERATION WORLD

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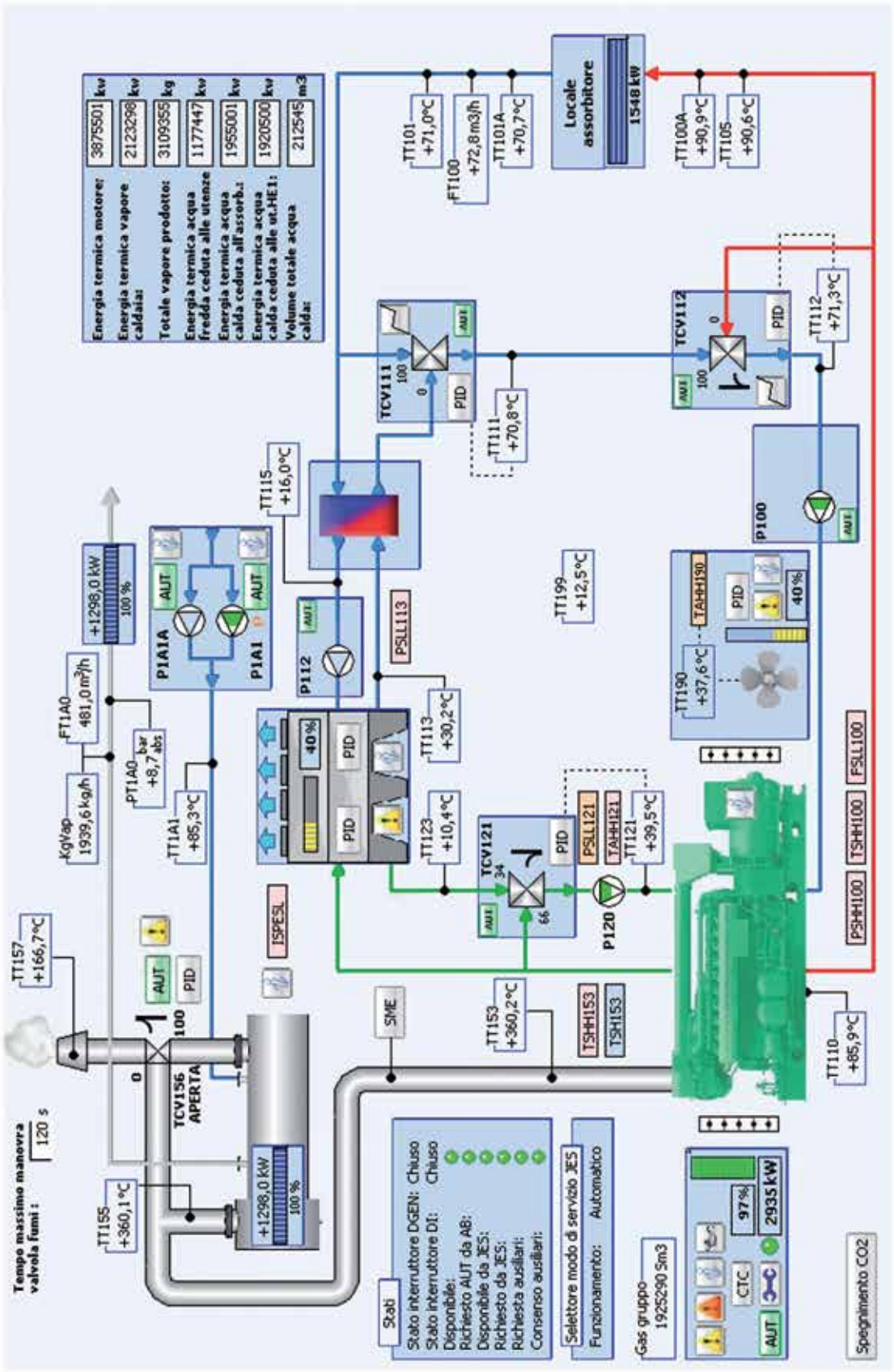
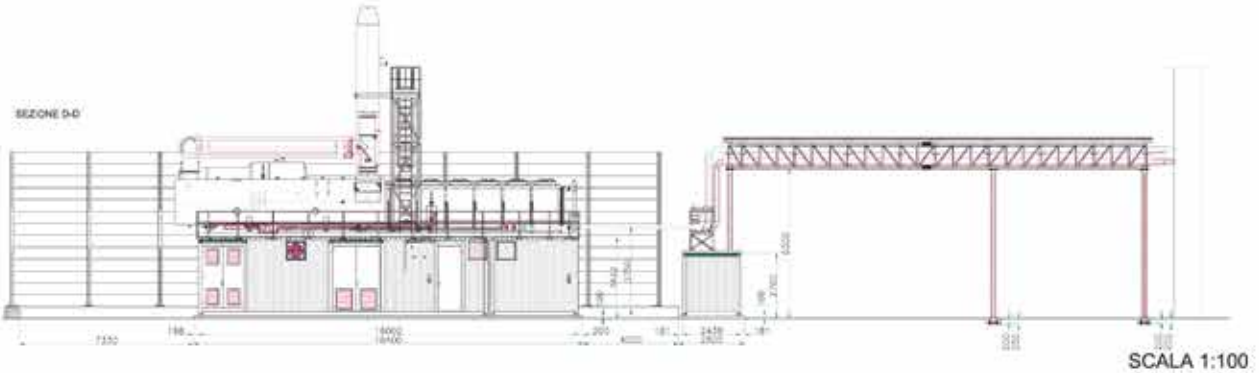
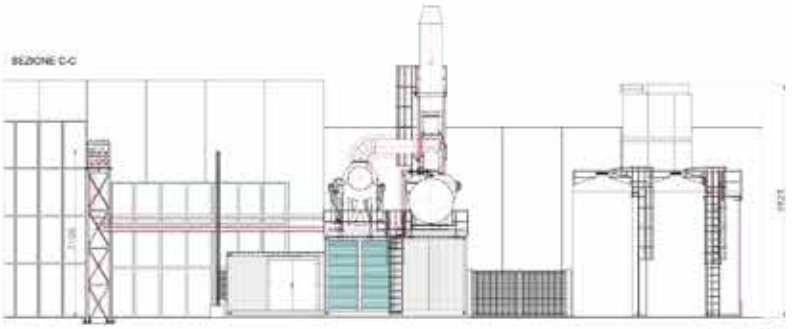


MONITORING SYSTEM

ENGINE CONTAINER VIEWS

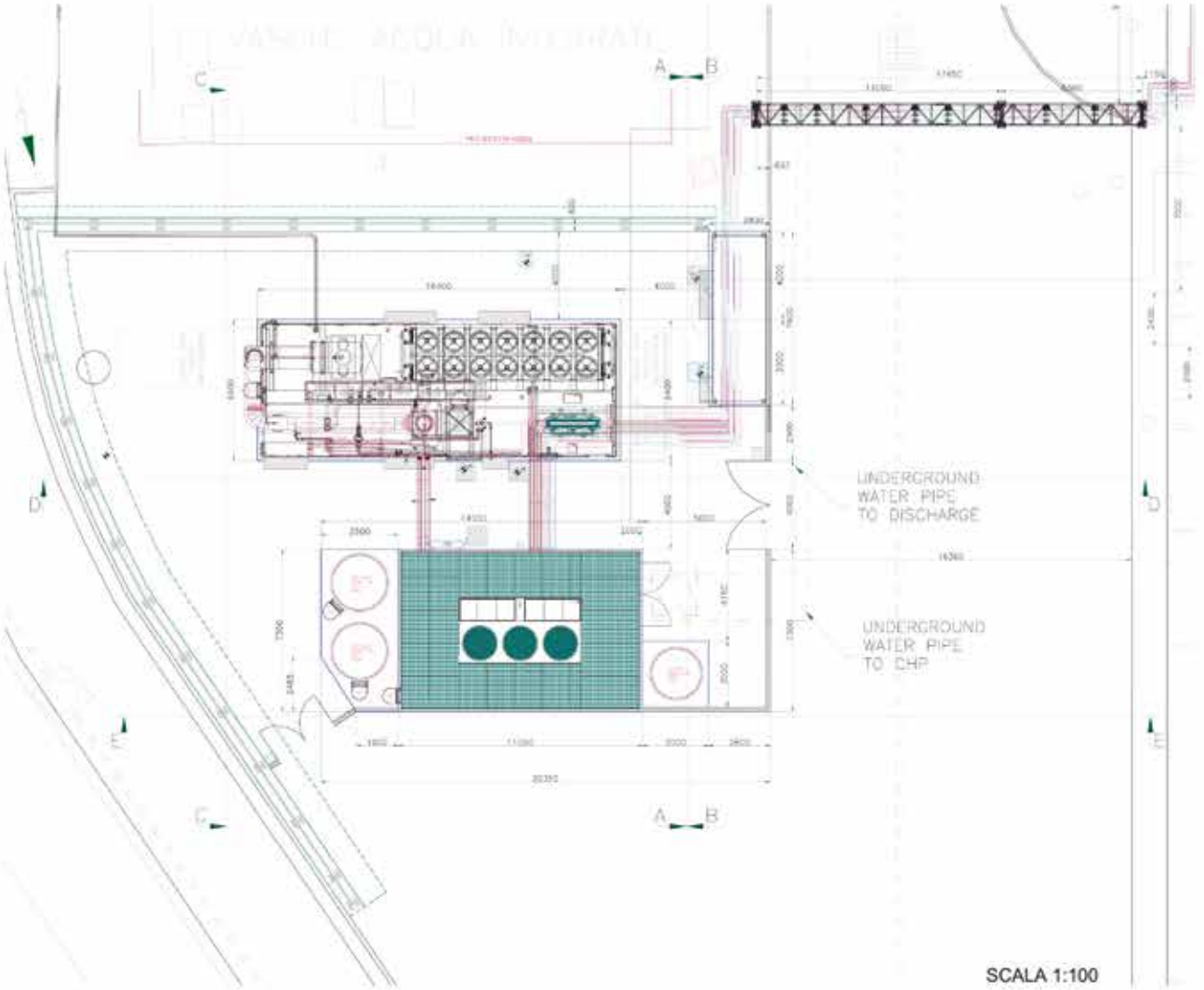


SCALA 1:100



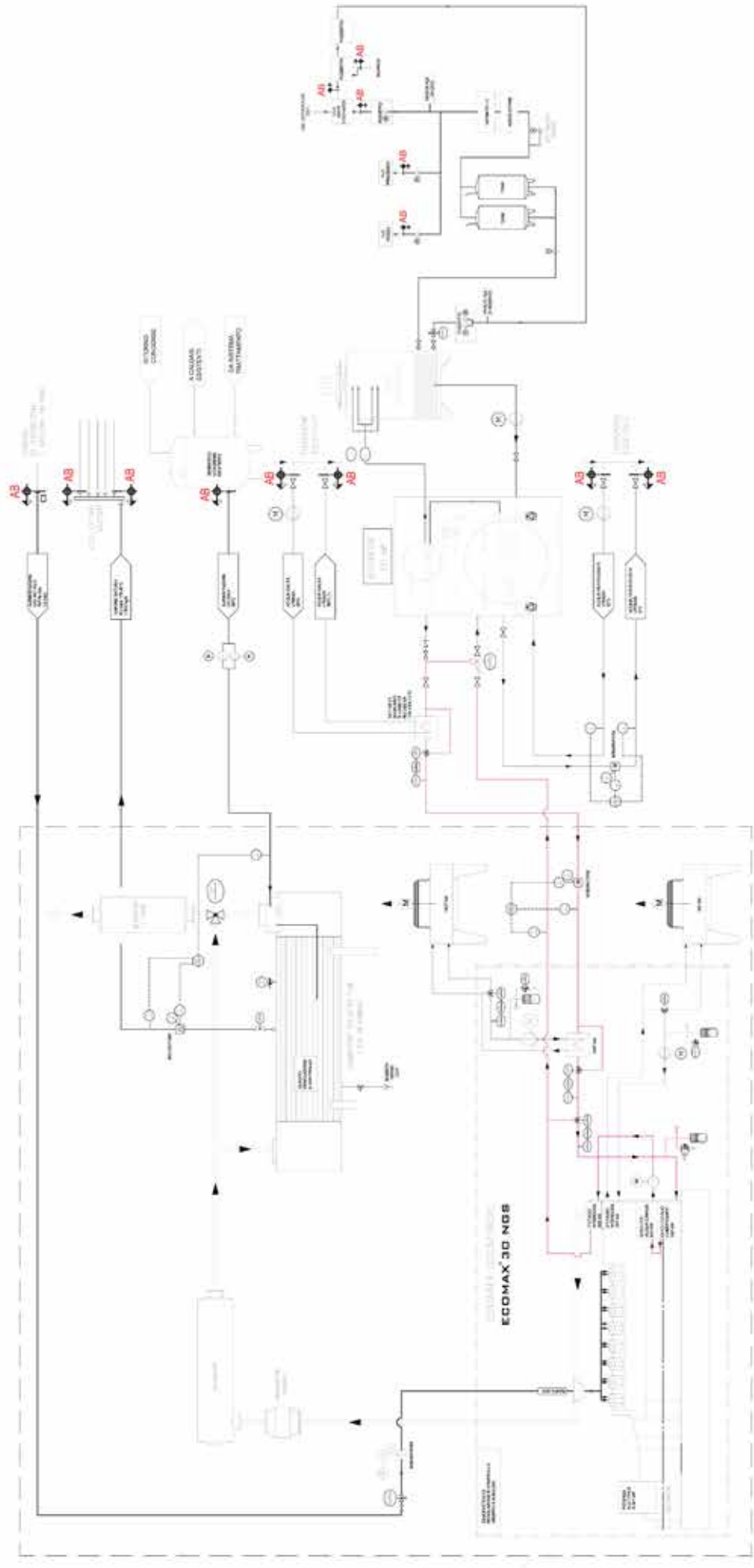
ABSORBER CONTAINER VIEWS

SCALA 1:100



SCALA 1:100

PLANT LAYOUT ECOMAX® 30



FUNCTIONAL PLANT DIAGRAM ECOMAX® 30


Coca-Cola
Coca-Cola