regas | Energy progress

emma

The exact amount of energy for every cubic metre of natural gas

Emma

Pre-heating is a crucial process for gas decompression at city-gates, as it protects other city-gate services, such as regulation and measurement. For this reason it is a reliable, consistent and safe procedure.
Why not make it also EFFICIENT?
The pre-heating system at city-gates is hardly equipped with regulation or energy saving mechanisms that allow to **minimise the self-consumption of natural gas** while maintaining the intrinsic reliability required by this process.

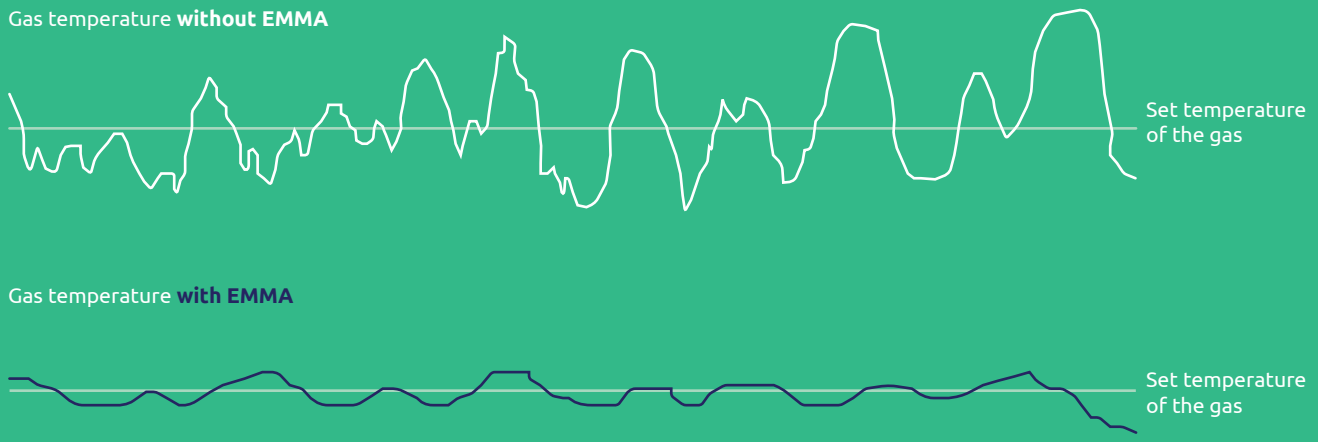
Commonly, pre-heating is carried out with traditional technologies (duct thermostats, boilers, heat exchangers) and the boilers' management leads to high thermal inertia, temperature fluctuation, gas excessive heating, thermal dispersions and a consequent non-optimised consumption of the pre-heating gas.

Emma: What is it?

EMMA is a patented technology that, thanks to its intelligent adaptive algorithm, allows significant savings of the natural gas used for pre-heating in decompression and measurement city-gates and a **more efficient, innovative and sustainable management** of its distribution.

Without requiring special technical arrangements, **EMMA** is a device that can be applied to almost all pre-heating plants and allows **immediate operating costs reduction** for gas distribution companies.

EMMA's operating principle is distinctly innovative and the system, designed and built entirely at the REGAS plants located in Italy, has enabled our customers to achieve **an average saving of 36%** compared to the initial methane consumption.



Emma: What is it?

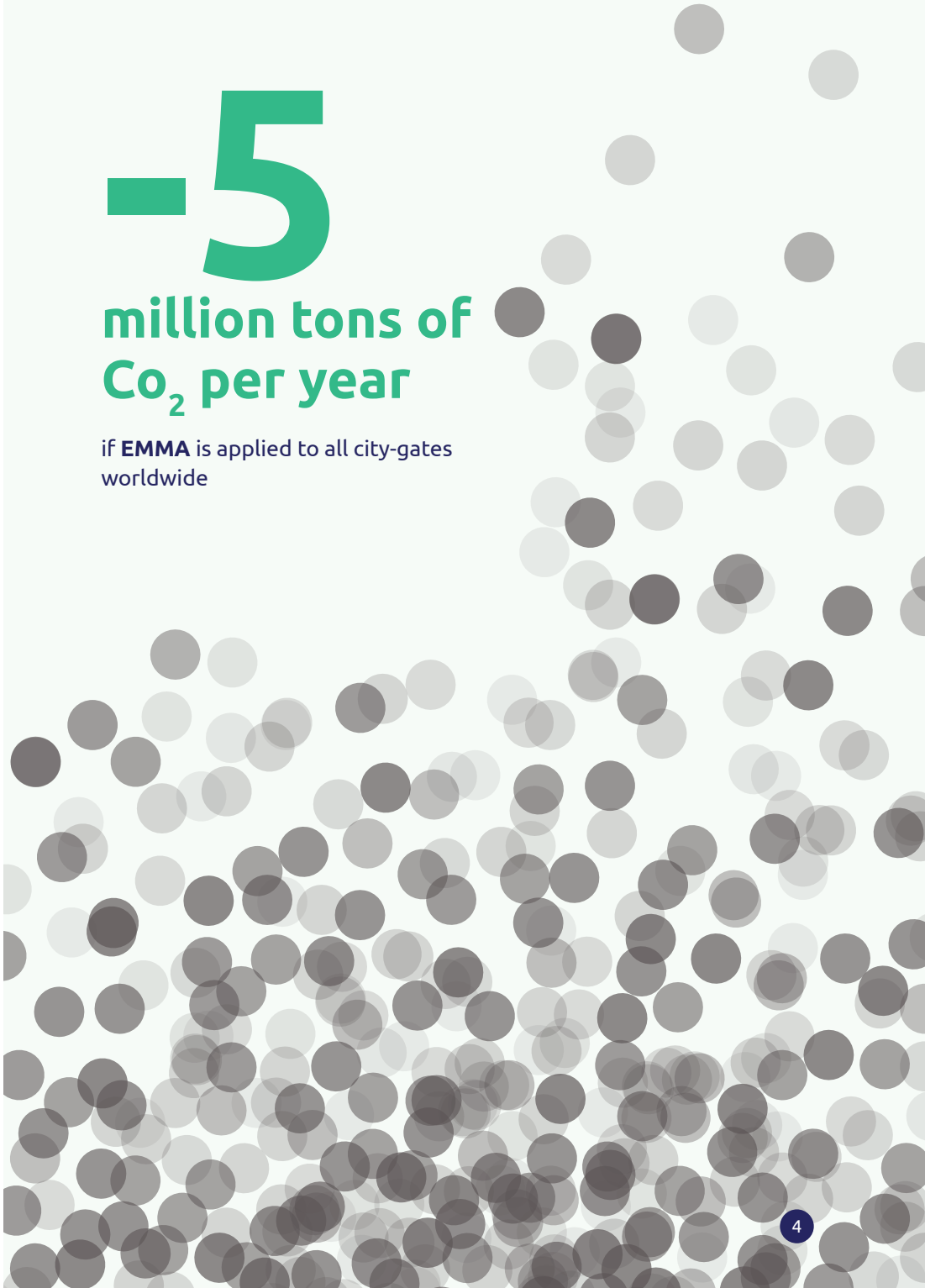
In addition to economic savings on fuel, **EMMA** can give access to the delivery of **White Certificates** (Energy Efficiency Allowances) that are deducted from the quantity of certificates that the gas distributor is obliged to produce each year.

Saving methane also means **reducing greenhouse gas emissions** into the atmosphere, mainly carbon dioxide. It is estimated that, if EMMA were applied to all city-gates in the world, it would allow a reduction in annual emissions of 5 million tons of CO_2 per year, equal to the emissions of a small country.

-5

million tons of Co_2 per year

if **EMMA** is applied to all city-gates worldwide



key-points

1. Easy to use
2. Immediate Return-on-Investment
3. Maintenance costs close to zero
4. First and only device specifically developed for pre-heating at city-gates
5. Compatible with the most popular remote-control systems
6. Average savings of 36% in gas consumption and consequent reduction in CO_2 emissions
7. Suitable for use in emission trading projects
8. Ready to be installed in almost all city-gates
9. Effective adaptive algorithm to maximize performance
10. Fitting with the most advanced heat generators (heat pumps, condensing boilers, hybrid systems)

Emma: how it Works?

EMMA continuously analyses values of:

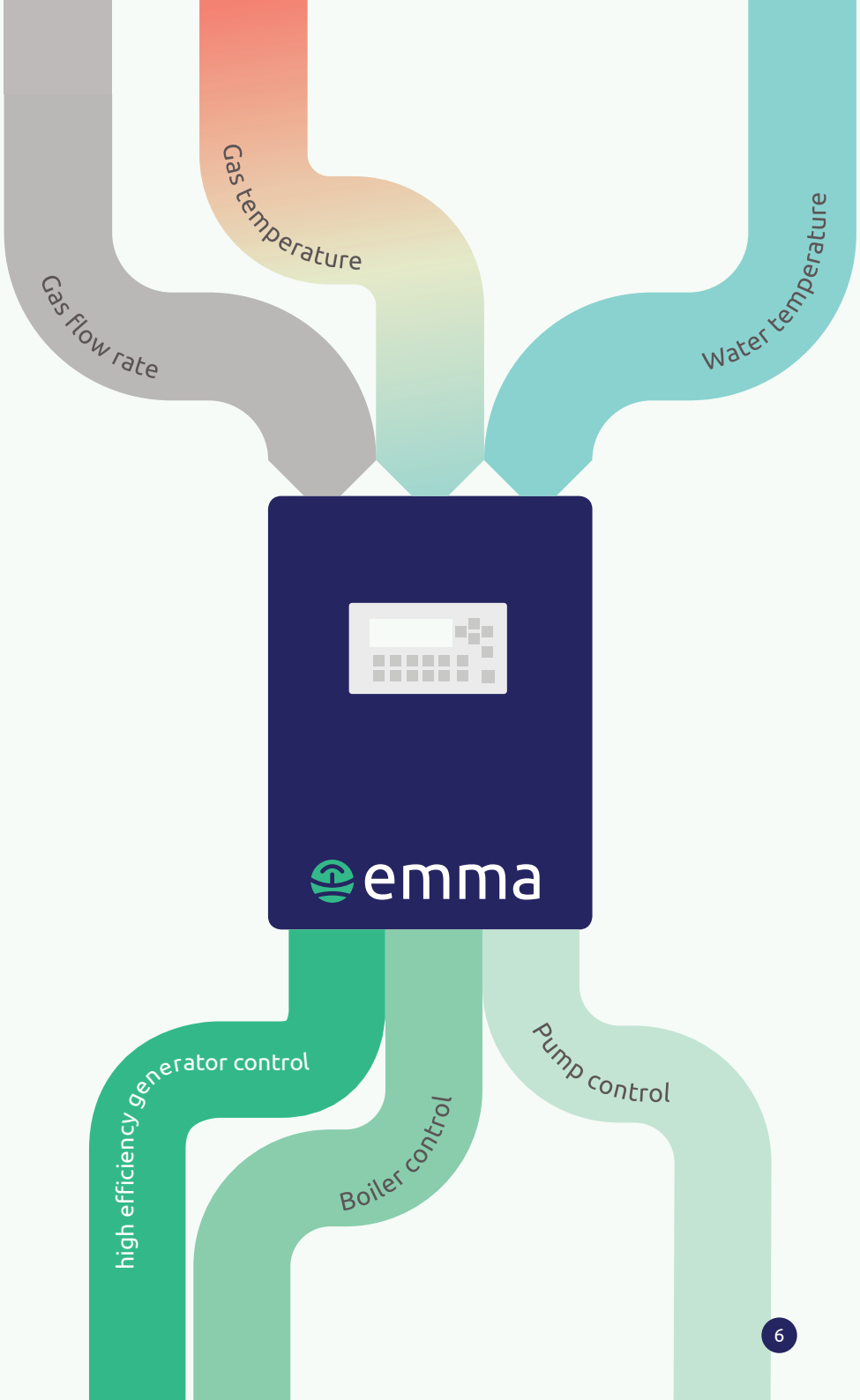
- Gas flow rate
- Gas temperature
- Water temperature
- Room temperature and relative humidity

Through a sophisticated control system guided by an adaptive algorithm, **EMMA automatically sets the best configuration of the heating plant**. When the operating conditions change, **EMMA** readjusts the operation of the pre-heating system, allowing easy adjustments and a significant reduction in the outlet gas temperature.

The user just sets the desired gas temperature, EMMA does the rest.

In addition, **EMMA** can be **remotely controlled** in real time, ensuring service continuity and pursuing the logic of technical and economic optimisation of gas distribution systems.

EMMA is a **turnkey installation and operation service**, whose reliability is demonstrated by more than 600 installations and ten years of specific on-field experience.



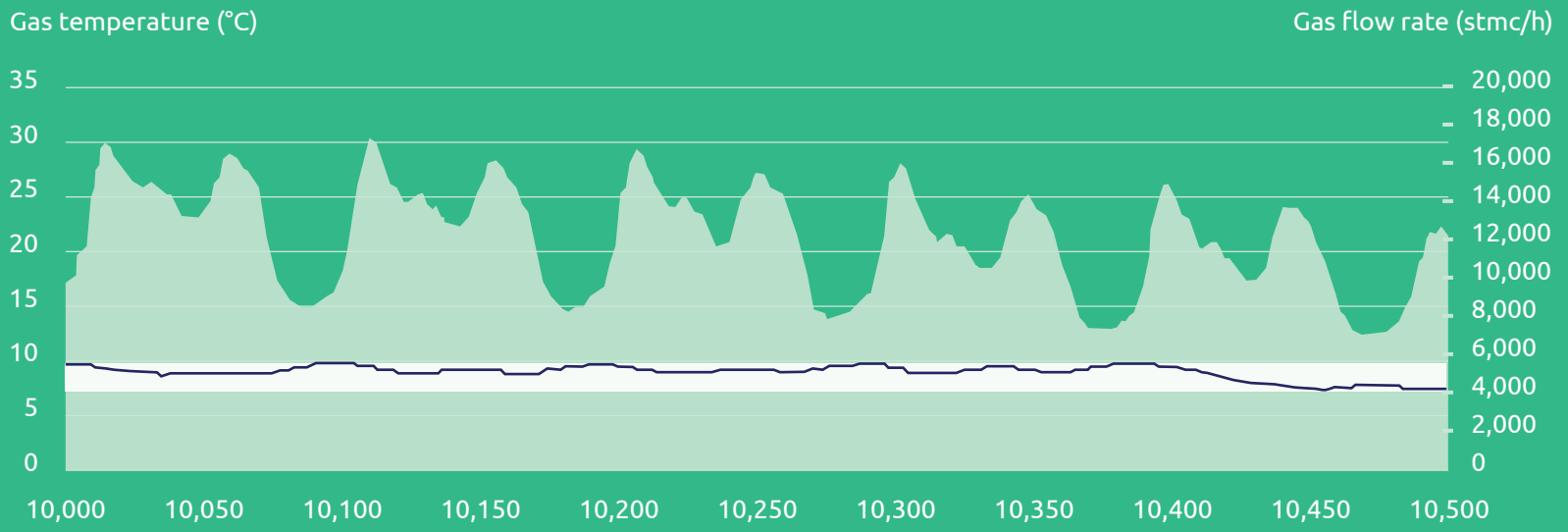
Effective Management

EMMA's basic principle is to **constantly provide the right amount of heat to the natural gas**. In fact, every cubic metre dispensed, requires the right amount of energy to match the temperature set-point.

EMMA:

- Continuously analyses the operating data of the city-gate
- Optimizes the operation of equipment installed in the city-gate to ensure the best energy efficiency performance
- **Constant gas temperature at the plant outlet > Safely set-point reduction > GAS SAVING**

EMMA's unique self-learning adaptive algorithm is able to bring the gas temperature to the required set-point within a few hours from its installation.



-36%

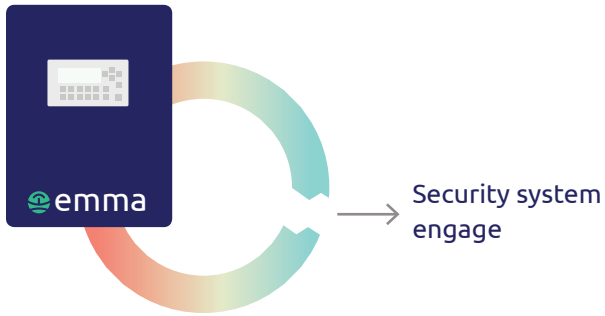
of natural gas self-consumption

Guaranteed Safety

The pre-heating phase at the city-gates can never be interrupted, even in the event of a lack of electrical voltage or power black-out.

Therefore, one of **EMMA**'s main characteristics is to **maintain service continuity.**

Passive management of the system continues while **EMMA** actively controls the temperature within the range of existing thermostats. Any deviation from the settings, due to a lack of energy or failure, is detected by the duct thermostats that keep the plant safe.



Winter

- Boilers and water pumps are enabled
- Winter temperatures and other optimization functions are enabled

Summer

- Automatic and complete system shut down are enabled
- Anti-condensation function and other dedicated special options

Custom

- The system can always be set by the user, customising the desired temperature profile

Advanced control

The EMMA system has a graphic interface embedded in its management software that allows the setting up and control of the equipment in different modes.

This control can be carried out:

Locally

- through serial or Ethernet interface and proprietary CCR control software
- through display keypad (optional)

Remotely

- through REGAS WEB APPLICATION
- through proprietary CCR software (optional)
- through third party SCADA, being the system based on Modbus RTU protocol and adaptable also to other industrial standard protocols (optional)

Events
Depending on the user's specific settings, it's possible to configure alarm alerts for each detected status. This information is transmitted to the remote-control software (both in the case of CCR - software owned by REGAS - and of third party SCADA) and appropriately stored.

Data
Process values are continuously recorded and can be analysed by the software, even in offline mode.

Inputs
The system allows remote input commands.

Available Versions:

Emma eco

All **REGAS** know-how in an essential and easy-to-manage system. **EMMA ECO** was developed with the aim of guaranteeing the fastest return on investment for our customers.

Characterised by an extremely intuitive local interface, it is suitable for installation in any city-gates.

EMMA ECO is an ideal choice in any city-gates equipped with pre-heating systems because, thanks to its technological efficiency and competitive price, it quickly repays the investment.

And when the break-even point is reached, every cubic metre of gas saved becomes a cubic metre earned!

Emma premium

The already high efficiency offered by **EMMA ECO** can be increased by using advanced heat generators. **EMMA PREMIUM** allows to combine new technologies with traditional systems, allowing the control of modern generators, such as:

- Condensing boilers.
- Electric and gas heat pumps.
- Hybrid systems.

By maintaining the accessibility and safety of the existing hydraulic circuit, **EMMA PREMIUM** achieves never-seen-before efficiency performances in terms of gas consumption and CO_2 emission reductions.

The high-efficiency system is installed in parallel with the traditional boilers, and the inlet and outlet pipes are derived from the existing ones. **REGAS**'s high level of specialisation enables it to supply **EMMA PREMIUM** with a turnkey formula.

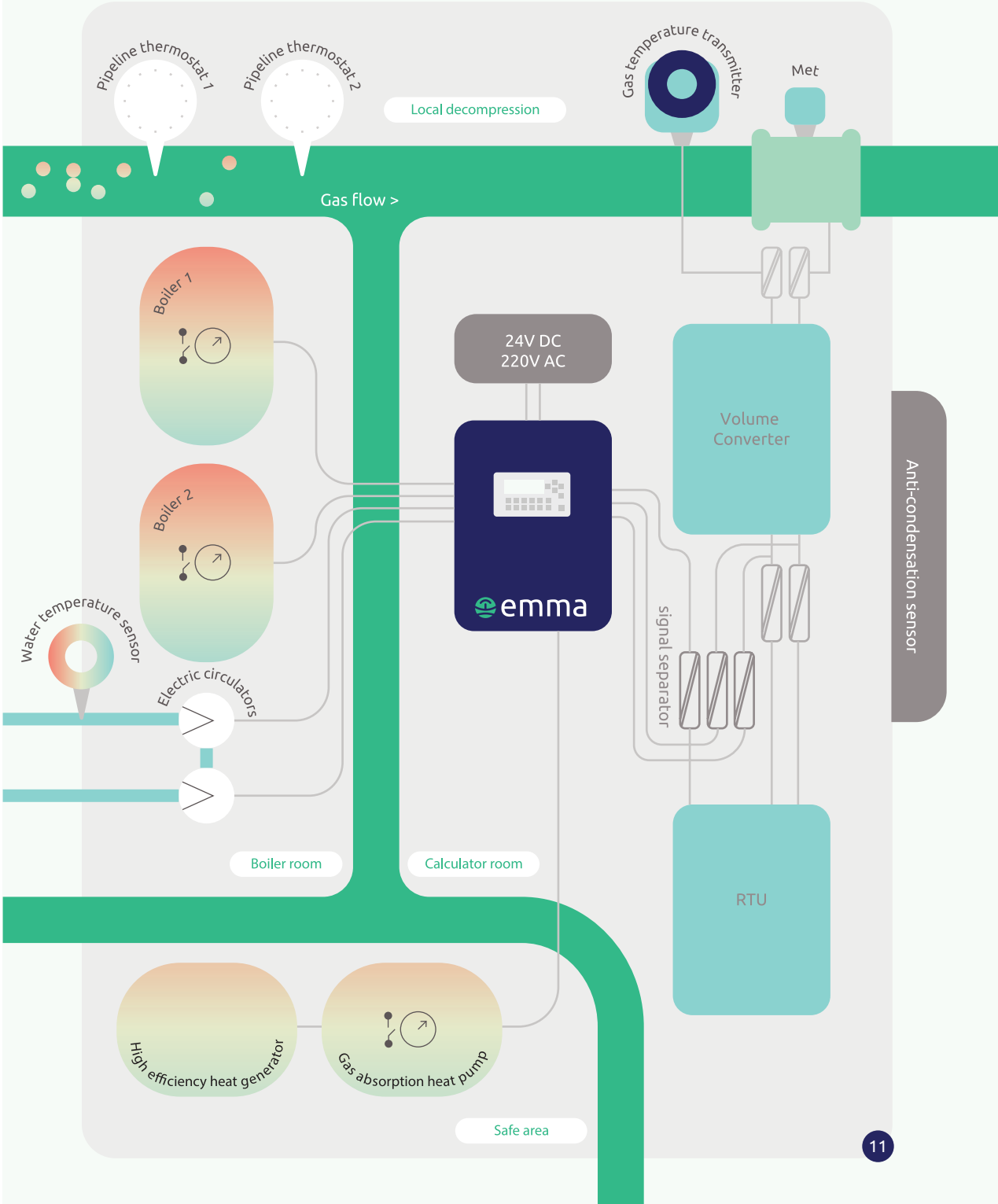
Main Technical Characteristics

Main components

- Power supply: 230V CA 50/60 Hz or 24V CC
- Modular controller with integrated I/O for interface with signals and consumers
- RS232 serial communication port (optional)
- The system makes a standard Industrial Ethernet access internally available and supports all communication carriers available on the market (2G/3G/4G/5G, NBioT, LoRaWan, etc.)
- 3.6” FSTN display with 240x80 dot resolution and 10 freely configurable function keys

Available Connections (Din Card):

- 4 analogue inputs 4 ÷ 20 mA (configurable as active or passive)
- 8 digital inputs (configurable as active or passive)
- 6 digital outputs
- 1 RS232 serial connector
- 1 RJ45 Ethernet connector



regas | Energy progress

REGAS provides state-of-the-art solutions expressly designed to support companies operating in the natural gas transmission and distribution sector

Our flagship products

EMMA, which optimizes the preheating process by reducing gas consumption

INGRID, which injects odorant into the grid in an accurate, precise and innovative way

GRETA, which provides gas-chromatographic analysis in real time and an advanced management of gas processes remotely

Our Goal

Our goal is to promote disruptive innovation in the natural gas industry and to develop advanced technologies that maximize efficiency in its entire value chain

Regas Srl

Headquarter
Via dell' Innominato, 10
24053 Brignano Gera d' Adda (BG)

T (+39) 0363 815867
E regas@regasenergy.com

Factory
Via Lago Maggiore, 7
36040 Monticello Di Fara – Sarego (VI)

T (+39) 0444 821499
E regas@regasenergy.com

Registered Office
Viale Lunigiana, 5
20125 Milano (MI)

T (+39) 0363 815867
E regas@regasenergy.com