

Ecological transition to economy without CO₂ emission and circular economy

DCT answer for a more sustainable world

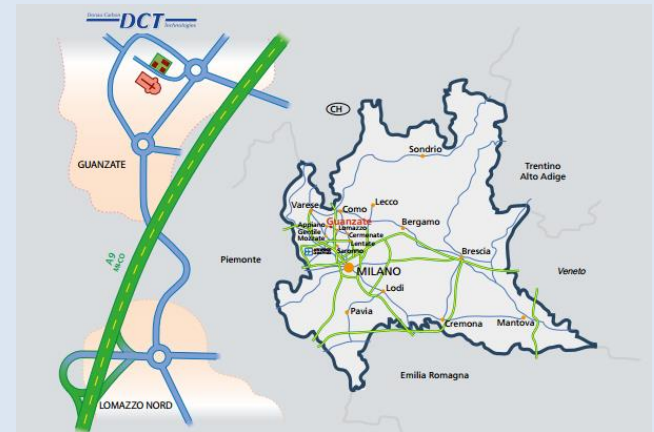
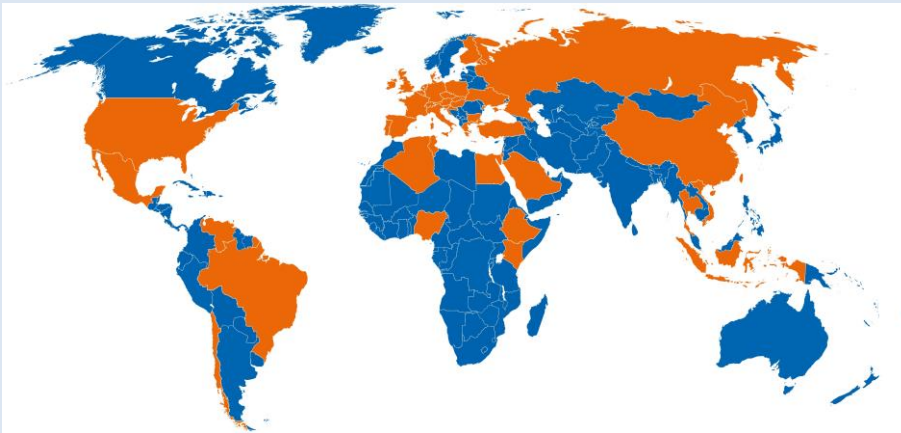
Solvent Recovery Technologies available without CO₂ emission

The **Green** solution carbon free



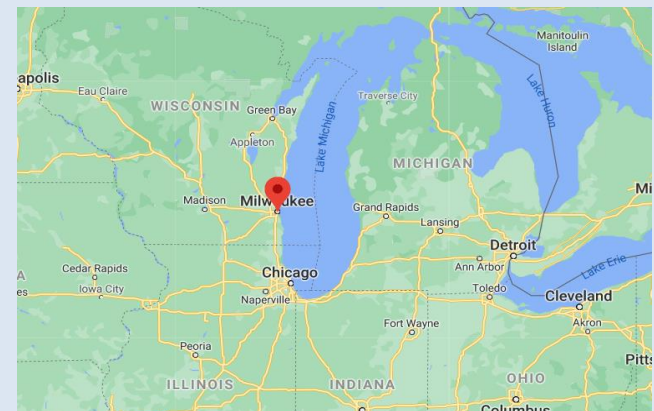
About DCT

Donau Carbon Technologies Srl, was born in 1981 (former SIRI) and The Company has been operating in air treatment field for more than 40 years, providing solvent recovery plants, regenerative thermal oxidizers RTO.



Donau Carbon Technologies Srl is located in Guanzate, Como area, 30 km north Milan

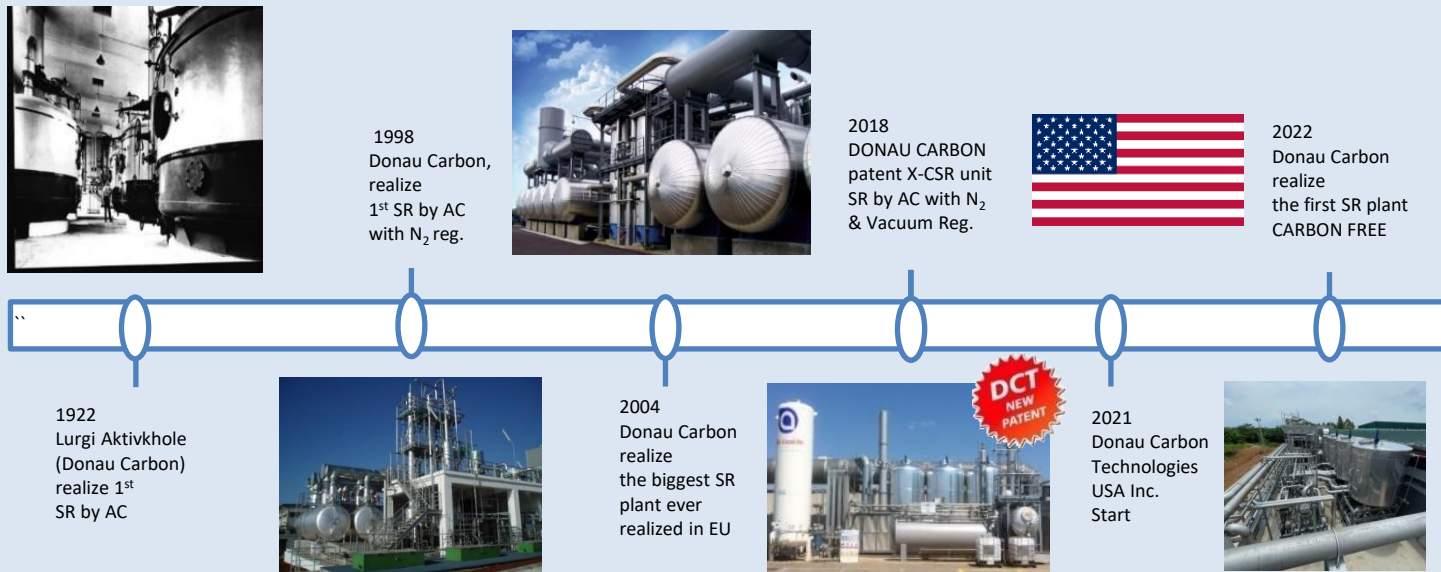
**Several thousands solvent recovery plants
with Donau Carbon - Lurgi licence installed
worldwide since 1922**



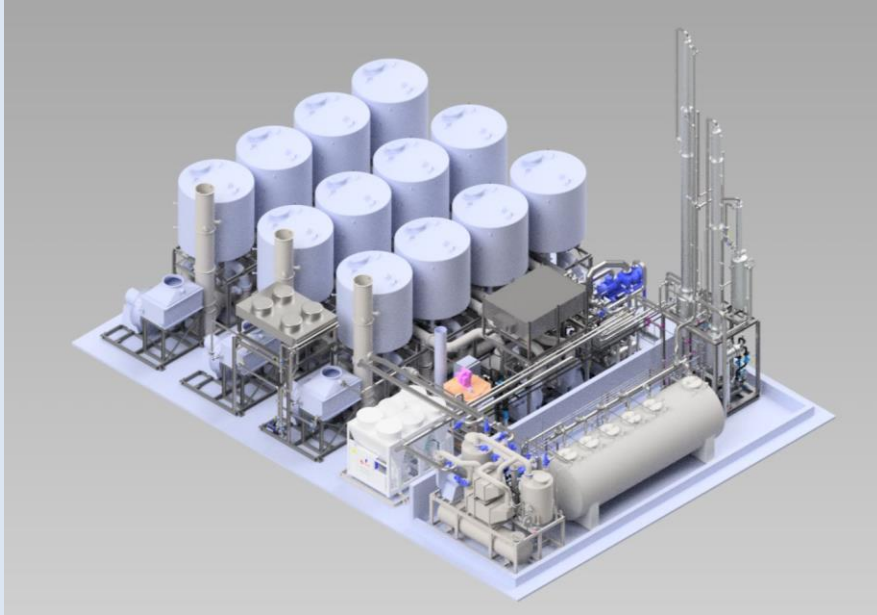
Donau Carbon Technologies USA Inc

DCT – 100 year history of Solvent Recovery

(.... and counting)



Typical X-CSR SR WITH VACUUM REGENERATION



82,000 m³/h



110,000 m³/h

TYPICAL CONFIGURATION :

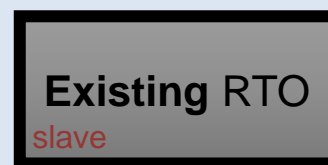
- 3 ADSORPTION SKIDS each of them with 4 or 5 adsorbers according to the size of the system (80,000 m³/h or 110,000 m³/h)
- 1 REGENERATING SKID (to create vacuum and condensate the solvents)

X-CSR Solvent Recovery Compact

CASE STUDY PROJECT

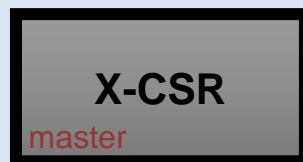


6,200 running Hrs



90,000 m³/h

Solvent: 2000 ton/y



- CO₂ emission savings 4,000 T/y
(sustainability)



Solvent Recovered
2,000 ton/y
(Circular Economy)

2.000.000 USD/y saving



No indirect pollution
(Solvent Production, Transport)

Donau Carbon **DCT** Technologies

X-CSR PROCESS DESCRIPTION

Adsorption and regeneration

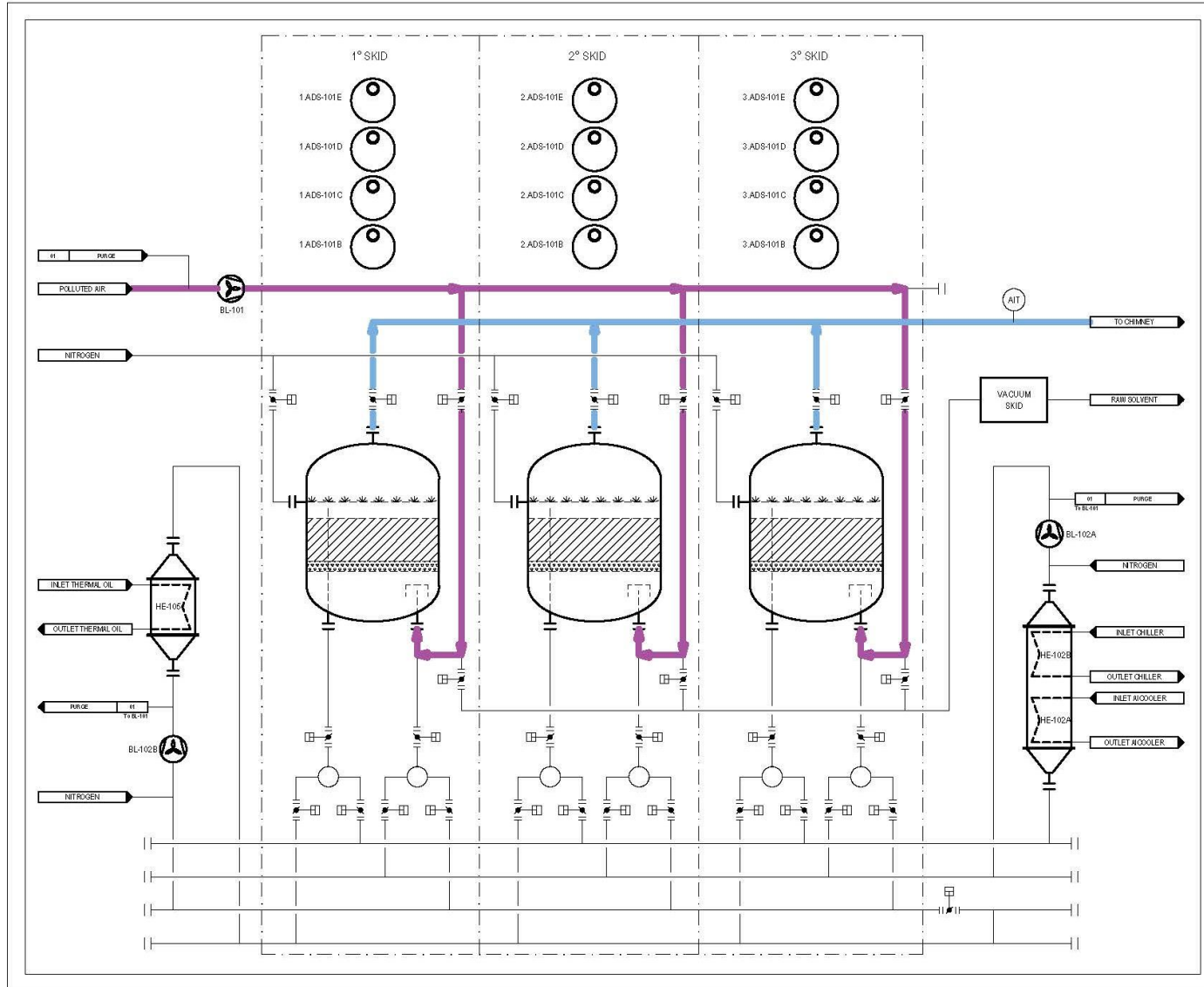
The loaded air coming from the converting machines (S.L.A.) is suctioned by the main process fans and fed, after dust filtering The adsorption section will be equipped with a series of adsorbers for each skid for a maximum of 3 skid, depending on the flowrate the system has to treat.

Each adsorber is filled with active carbons that are able to capture the solvent. The cleaned air exits the adsorber and goes to the stack according to EU and Chinese emission laws.

When an adsorber achieves the maximum of its working capacity, the regeneration with nitrogen gas is carried out.

It is possible to regenerate simultaneously one adsorber for each skid, so in general it is possible to regenerate at maximum three adsorbers at the same time.

PFD ADSORPTION



X-CSR PROCESS DESCRIPTION

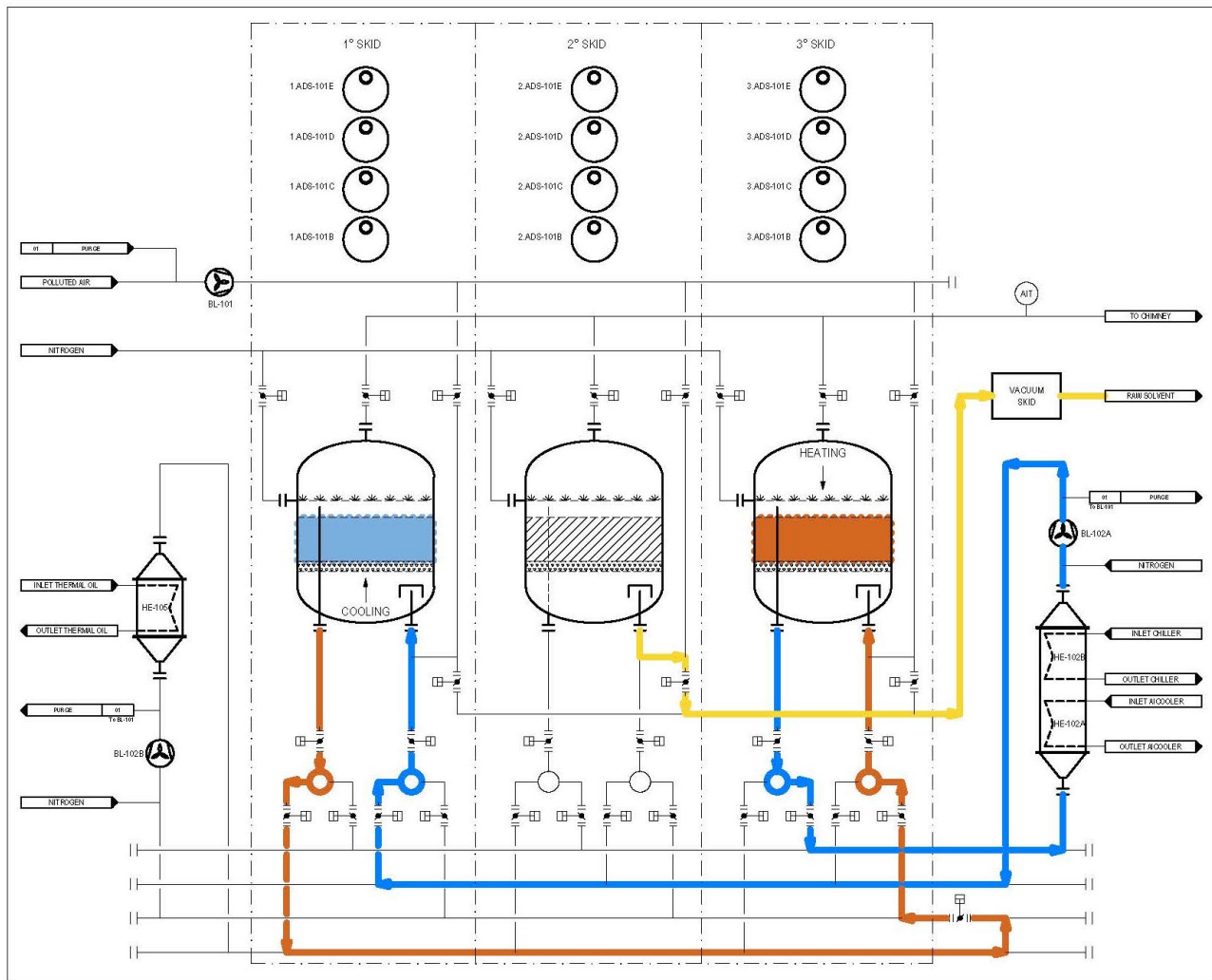
Preheating System (Energy saving)

By means this mode, it is possible to exploit the heat released by the adsorber which is in cooling phase, to start preheating the next adsorber which has to be regenerated.

In this way it is possible to save both thermal energy that should be used to partially heat the carbon of the adsorber which has to be regenerated and electrical energy of the chiller that should be used to cool down the adsorber which is in cooling phase.

PFD PREHEATING

Energy Saving

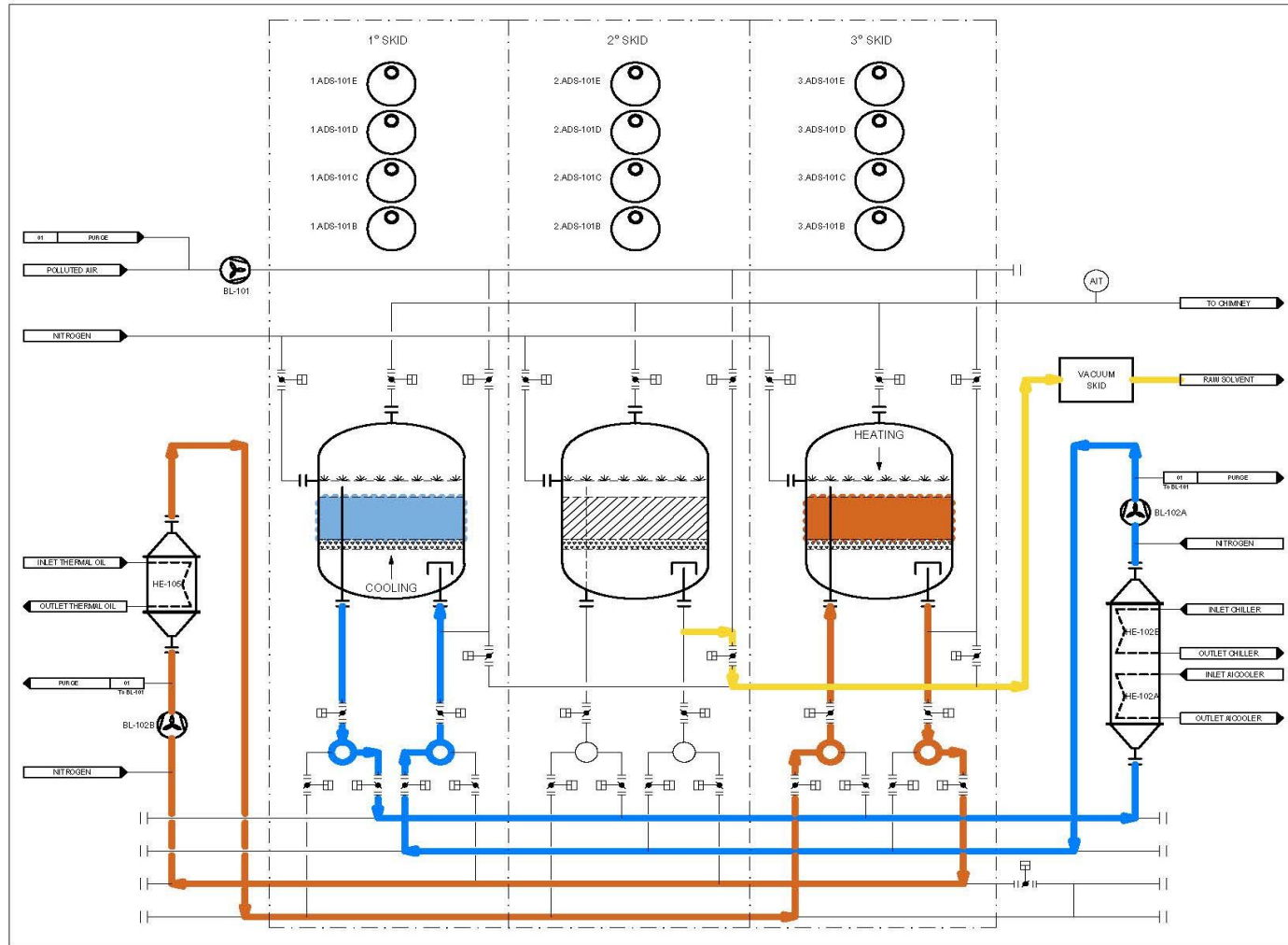


X-CSR PROCESS DESCRIPTION

The regeneration phases are the following:

- a) Inertization phase: the saturated adsorber is inertized injecting nitrogen to eliminate the oxygen in the circuit.*
 - b) Heating phase: the activated carbon is heated by the nitrogen gas by means of a heat exchanger fed with heating thermal oil or an electrical resistance. The nitrogen flux generates a solvent concentration gradient in the active carbon (higher concentration on the bottom); when the stripping temperature is reached also in the bottom part of the carbon bed, the nitrogen circulation is stopped and the solvent recovery phase begins.*
 - c) Vacuum phase: During the recovering phase, a group of vacuum pumps starts extracting the N₂ with high concentration from the adsorber and carbon bed, until is completely regenerated. The extracted raw solvent flows through condensers, which bring it into the liquid phase- and stored in buffer tank.*
 - d) Cooling phase: the activated carbon bed is cooled at a temperature of 35°C in order to prepare it for a new adsorption phase.*
- During the regeneration phase temperature, pressure and O₂ concentration are controlled and monitored in continuous.*

PFD REGENERATION



Fast delivery and start up

