ZPTS

Polishing - Gas Conditioning Plant

For Gas liquefaction the required gas quality is more stringent than pipeline quality, in order to produce liquefied methane (LNG), the CO_2 content needs to be under 100ppm . To this end, our **ZPTS® Plant** *(Zeolite Pressure Temperature Swing)* extracts all carbon dioxide (CO_2) and moisture (H_2O) through molecular sieve adsorption towers. The gas pressure is regulated at the inlet of the CO_2 polishing skidand then enter into a set of modular towers, packed with zeolite that will retain these impurities.

Once saturated, the towers can be regenerated. The ZPTS is designed with enough redundant towers that operation is uninterrupted while other towers are regenerating. This regeneration consists of 3 phases:

- **Heating:** in this phase desorption occurs, a reverse process to adsorption where the zeolite is heated with high-temperature gas to facilitate the separation of impurities from the zeolites.
- **Vacuum:** a depressurization and a series of pressure and vacuum pulses are generated that withdrawal these impurities from the towers (which can be used for power generation or other intrinsic user-end processes).
- **Cooling:** finally, the zeolite module is cooled, leaving the tower free from impurities and ready to return to the gas filtering operation.

This regeneration process can be carried out thanks to the presence of a MX 200 compressor integrated into the system and responsible for driving the necessary gas in the closed circuit that makes up each phase mentioned above

Additionally, it should be noted that our Plant presents its mobile version called ZPTS Trailer, which allows the equipment to be easily transported and relocated if required. Its special design with a self-transporting chassis allows the incorporation of carriages for movement and has hydraulic systems to raise it and position it quickly on location.

Last update: SEP/2025.

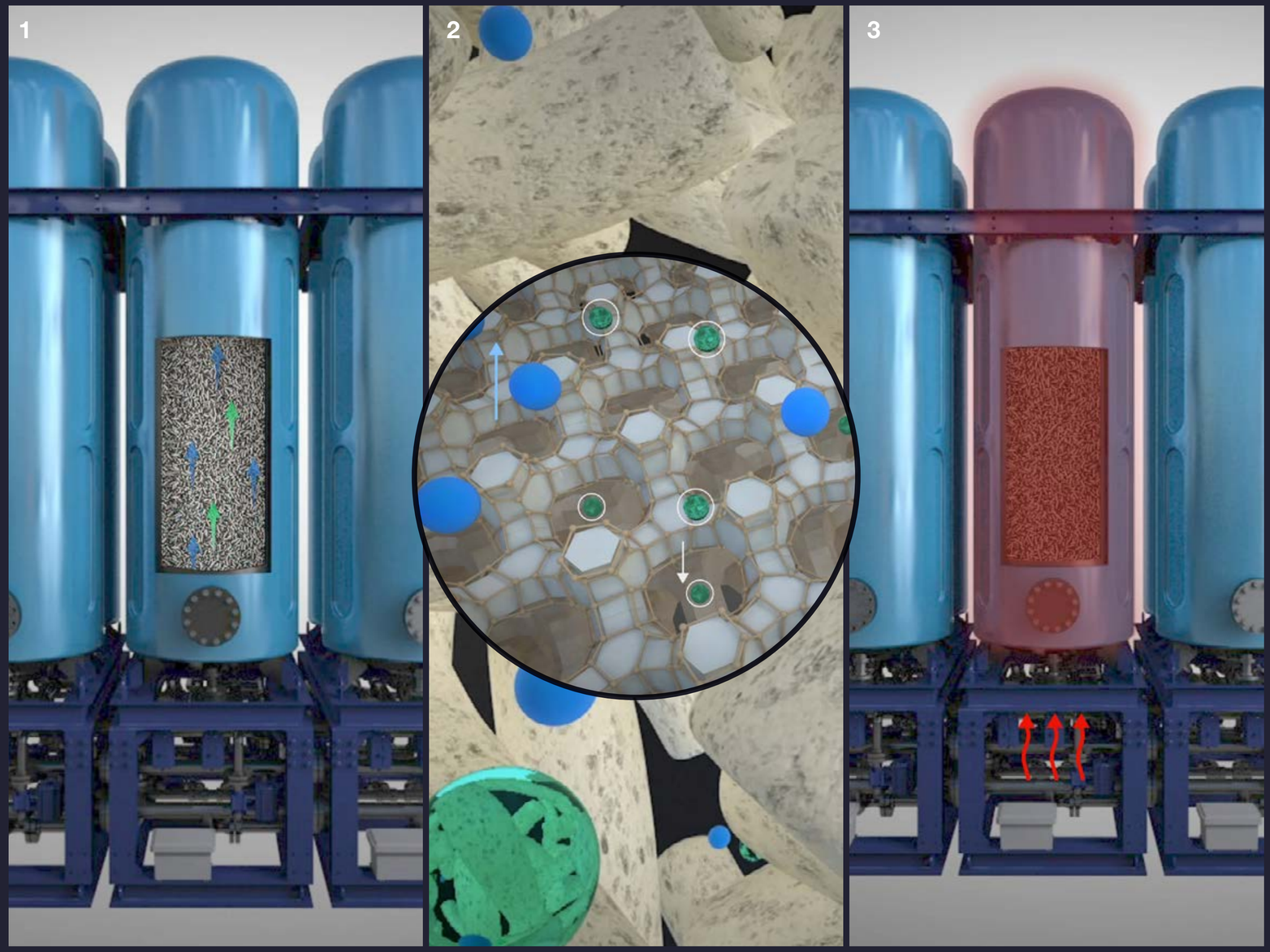
GALILEO Technologies

Campo Azulão, Amazonas, Brazil

Process description:

Polishing (zeolite adsorption)

1. Gas entry into the zeolite tower.
2. Adsorption of H_2O and CO_2 and purified natural gas exits to the liquefaction module.
3. Regeneration of the zeolite bed by heating, vacuum and cooling.



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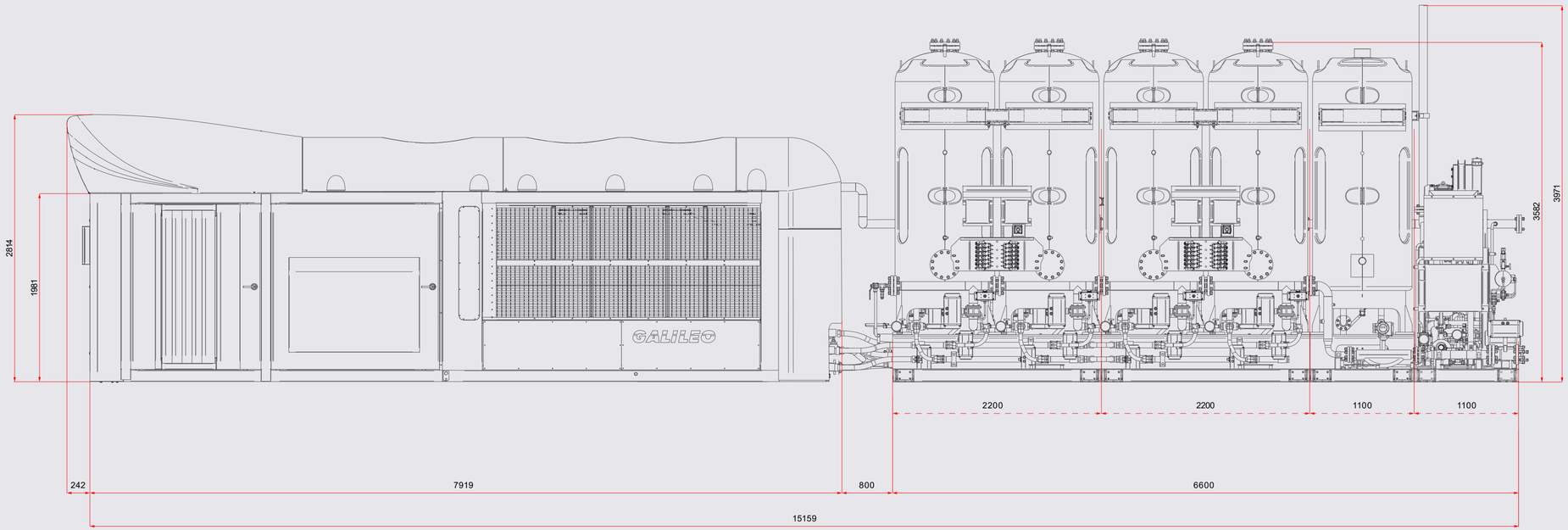
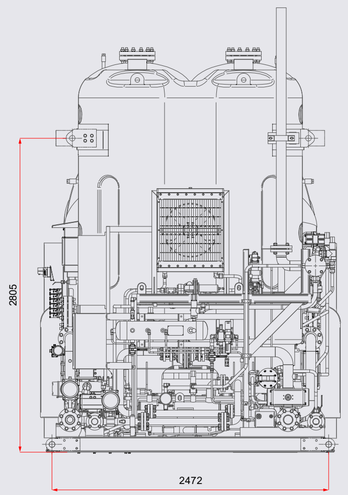
Dimensions (mm)





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Datasheet

		ZPTS	
Electric Installed Power	KW	304	
	HP	275	
Main Compressors		MX200	
Gas characteristics		Inlet	Outlet
Pressure (Min/Max)	barg	11 to 16	10 to 15
	psig	159.5 to 232	145 to 217.5
Temperature (Min/Max)	°C	10 to 50	30 to 45
	°F	50 to 122	86 to 113
Flow (Min/Max)	Sm^3/h	900 to 3600	900 to 3600
	MSCFD	764 to 3056	764 to 3056
Water	H_2O	Saturated	Dry
Carbon Dioxide	CO_2	up to 1% @ Max Flow/up to 2% @ Min Flow	< 150 ppm
Hydrogen Sulfide	H_2S	up to 15 ppm	
Nitrogen	N_2	No limit	
Methane	CH_4	More than 80%	
Oxygen	O_2	No limit	
Utilities Consumption	Lube Oil	0.5 L/day (Multigrade 15W40 or similar) 0.13 gal/day (Multigrade 15W40 or similar)	
	Air	1.2 to 3.2 Nm^3/h @ 9barg (ISO-8573-1 Type [2;2;2] or higher quality) 0.7 to 1.9 MSCFD @ 130.5psig (ISO-8573-1 Type [2;2;2] or higher quality)	

All values are expressed under a regular operation and may present changes with variation of gas composition and environmental conditions.

Datasheet

		ZPTS	
Dimensions	Towers	6.6m L x 2.6m W x 3.97m H	21.65ft L x 8.5ft W x 13.02ft H
	Main Module	7.9m L x 2.2m W x 2.2m H	25.92ft L x 7.22ft W x 7.22ft H
Weight	Towers	22.7 ton	50046 lb
	Main Module	11 ton	24250 lb
Features			
Intrinsecally Safe		Yes	
Monitoring		Yes, 24/7 through our Galileo Global Link Scada System	
Modularity		Yes	
Plug & Play		Yes	
Scalability		Yes	
Electrical parameters*			
Main Compressor Start System		Star-triangle	

*For lower pressures than 0.8 barg (11.6 psig), a blower skid can be incorporated before the inlet to the unit (optional)..
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