MIXED GAS RECYCLING SYSTEMS

ON2Quest
SUSTAINABLE GAS GENERATION & PURIFICATION

TRANSFORMING WASTE GASES INTO SUSTAINABLE GAINS

MIXED GASES RECYCLING SYSTEMS

ON2Quest's mixed gases recycling systems are engineered to provide a cost-effective and sustainable method of recovering spent industrial gases and effectively upgrade them to the desired quality and composition to be reused in the process.

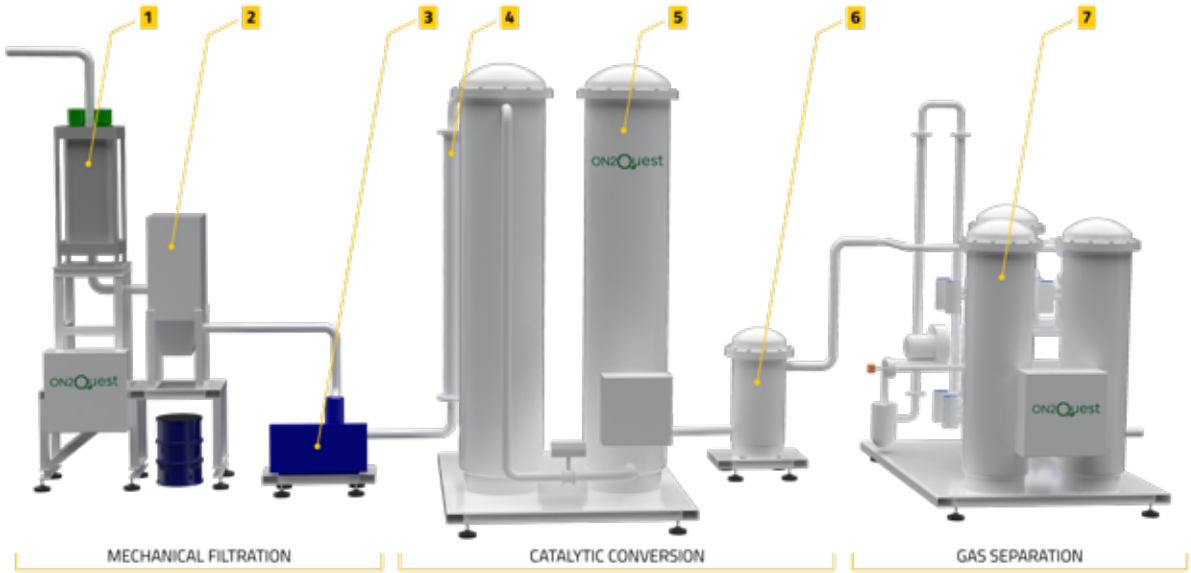
THE EQUIPMENT

Mixed gases are used in a wide variety of industrial applications, either as protective atmosphere or as process gas. In most cases, these gases will be contaminated with undesired components and become available at lower pressure at the end of the production line. This usually makes venting to the environment the only option.

ON2Quest has developed technologies for low pressure mechanical cleaning, catalytic conversion and gas separation. These technologies, often based on proprietary catalysts and adsorbents, can be combined with commercially available components into integrated systems. These systems recover spent gases, selectively remove undesired species, and upgrade the product gas stream to desired fresh gas quality again.

Since different industrial applications will produce spent gas with different contaminants, compositions and process conditions, some level of tailored engineering is usually required. This is usually limited because of the availability of major building blocks or the adaption of standardised systems like the CircleQuest-Glass that has been tailored for the flat glass industry.

TYPICAL INSTALLATION



1. Cooling
2. Particles removal
3. Compression
4. Intercooler
5. Sulphur / Chlorine / Alkaline removal
6. Oxygen removal
7. Drying

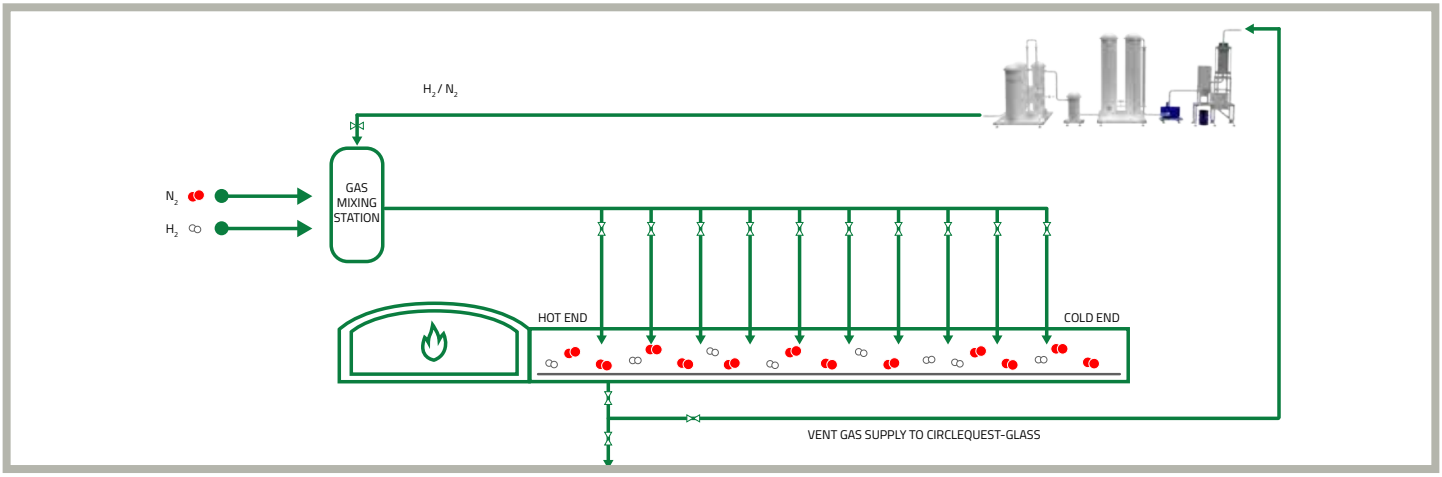
CIRCLEQUEST-GLASS

In flat glass production, glass is formed by pouring it over a bath of molten tin with a carefully controlled temperature gradient, to guarantee slow crystallisation and high quality end product. In this process, the tin bath needs to be shielded from the atmosphere, to prevent formation of undesired species that influence the glass quality. This is achieved by injecting a mixture of hydrogen and nitrogen continuously. At the end of the process, this gas mixture is contaminated and usually vented into the atmosphere.

CircleQuest-Glass is a standardised system designed to effectively remove particles (usually tin suphides and oxides) by low pressure mechanical filtration, followed by chemical removal of sulphur, chlorides and oxygen. After which the gas is prepared to be reused by drying and compression.

USE CASE: FLAT GLASS INDUSTRY

HOW IT WORKS



SPECIFICATIONS

Input	
Flow [Nm³/h]	300 - 600
Temperature [°C]	max. 450
Pressure [Pa]	min. 3
H_2 concentration in N_2 [%]	max. 10
Output	
Recovery [%]	>99
Pressure [bar(g)]	max. 0.4
Temperature [°C]	Ambient
Dew Point [°C]	< -58
Total impurities [ppm]	max. 5
Consumption	
Nominal electricity [kW]	36
Compressed air [Nm³/h]	1
Cooling water [m³/h]	14 at 20°C
Nitrogen [Nm³/h]	37

KEY BENEFITS

COST SAVINGS

- Reduced expenses for delivered gases.
- Increased atmosphere refresh rates reduces product fall-out.

ENVIRONMENTALLY FRIENDLY

- Reduced emissions associated with trucking and generation of gases.
- Reduced emissions from venting of spent gases.

QUICK & FLEXIBLE DEPLOYMENT

- Skid mounted modules, pretested after manufacturing.
- Flexible configuration to fit every available plant space.

ENHANCED SAFETY & REDUCED HEALTH RISKS

- Reduces on-site storage.
- Controlled gas extraction and dust collection prevents negative employee health impact.

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