Gas Generation and Purification

MAHLER
ADVANCED GAS SYSTEMS

Plants in over 70 countries show the experience and know-how of Mahler AGS.
Our gas generation plants and purification plants are applied in all kind of industries.
Mahler's philosophy is to find the most suitable solution for our clients all around the world, having close contact and a relationship built on a long term cooperation.

Our company

With more than 4,500 plants built worldwide since 1950, Mahler AGS is one of the leading suppliers of on-site gas plants for hydrogen, oxygen and nitrogen generation and gas purification plants.

Mahler AGS manufactures cost-effective, safe and reliable on-site generation systems for high quality industrial gases (i.e. hydrogen plants, oxygen plants and nitrogen plants) as well as plants for the purification and recovery of technical gases and process waste gases. Our plants can be used in a wide range of industries, are exactly tailored to the customer's requirements and can be easily integrated into already existing processes.

Highlights

Our hydrogen generator was the first remote controlled hydrogen plant in the world, our oxygen generator technology provides lowest consumption figures and our nitrogen PSA-systems are applied for one of the biggest on-site projects with this technology.

Our services

Understanding that every application and location is unique, Mahler AGS offers a family of cost-effective and reliable on-site generation systems.
In cooperation with the customer, Mahler AGS' engineers will analyze the requirements to offer a system, which meets the specifications regarding flow, purity and pressure.
The typical scope of supply includes design, manufacturing, installation and start-up of the system. A service team is always available to provide necessary support or maintenance during the lifetime of the system.

Our goals

The high-quality generation systems have proven reliable and safe, but this is just the beginning. Mahler AGS' after-sales service, continuous process improvement, trustful cooperation with research institutes and the certification of the Quality Management System (according to DIN EN ISO 9001) will ensure superior products and services.

HYDROFORM-C

The hydrogen generator

The basic process

Steam reforming of natural gas, LPG or naphtha (feedstocks) with subsequent purification is the most economic and thus most common process for hydrogen production and serves 95% of the world's hydrogen demand.

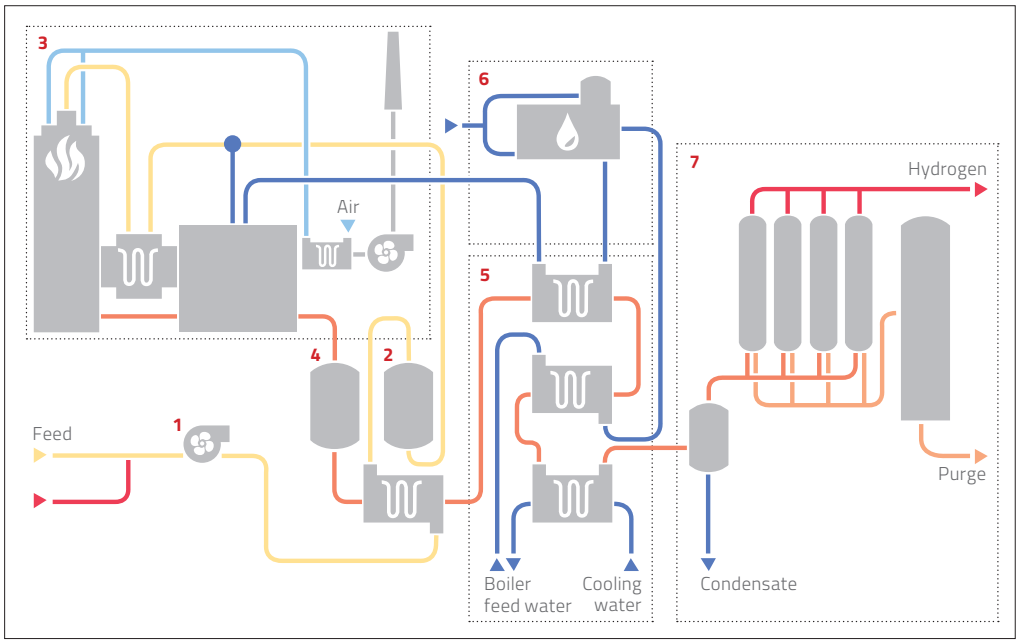
Pretreatment of the feed
The feed is mixed with a small amount of hydrogen, is pretreated (e.g. compressed, warmed-up) and sent to the desulphurization reactor. After desulphurization the feed is mixed with process steam generated in the steam boiler.

Steam generation and reforming
Steam is generated in the optimized waste-heat-recovery unit which includes mainly combustion air preheating, feed superheater, fluegas boiler and process gas cooler. The feed/steam-mixture is reformed within the top-fired reformer furnace into raw hydrogen-rich gas. The required heat is generated by means of combustion of fuel gas and purge gas coming from the HYDROSWING system.

High temperaure CO conversion
The process gas is fed to the HT-CO conversion reactor to obtain additional hydrogen according to the water-gas shift reaction.

Gas cooling and heat recovery
After CO-conversion the converted gas is cooled down in a series of heat exchangers by simultaneous economical preheating of process streams. The process condensate is separated and can be reused.

Purification system – HYDROSWING
The hydrogen-rich gas is sent to the HYDROSWING system which usually consists of four or five adsorbers filled with different adsorbents. The purification process is based on pressure swing adsorption by which the impurities are separated to obtain high-purity hydrogen with purities up to 99.9999 vol.-%. The purge gas from depressurization and purging during the regeneration step is used as fuel gas in the reforming section.



1 Feed compression unit **2** Feed pretreatment **3** Reforming and steam generation **4** High temperature CO-conversion
5 Heat exchanger unit **6** Pretreatment of boiler feed water **7** Purification unit – HYDROSWING system

Applications

Hydrogen is an important utility for numerous applications in multiple industries. Users in a wide range of industries can benefit from operating a cost-effective Mahler AGS hydrogen plant and reduce their production costs significantly.

- Metallurgical and steel industry
- Petrochemical and refining industry
- Glass and float glass manufacturing
- Chemical and pharmaceutical industry
- Production of H_2O_2
- Food industry
- Electronics industry
- Technical gases

PLANT FEATURES

Capacities from 200 to 10,000 Nm³/h

Product pressure between 10 and 30 bar(abs)

Purities up to 99.9999 vol.-%

Design for long lifetime

High operational reliability:
Many years of experience in plant design, engineering and manufacturing guarantee a high reliability of the HYDROFORM-C system.

High quality and high safety standard

First class sub-suppliers for equipment and components

Fully automatic operation and remote control:
The system is designed for automatic and unattended operation, e.g. change of capacity. Even automatic start-up, shut-down, control and load adjustment from long distances is possible.

Prefabrication in skids/modules:
The system is pre-assembled and delivered in prefabricated units.

Easy maintenance and accessibility

Additional/Optional features:
Individual plant concepts with respect to desulphurization, export steam generation, product compression, turnkey delivery, water treatment, hydrogen product storage etc. can be offered.

HYDROFORM-M

The hydrogen generator

The basic process

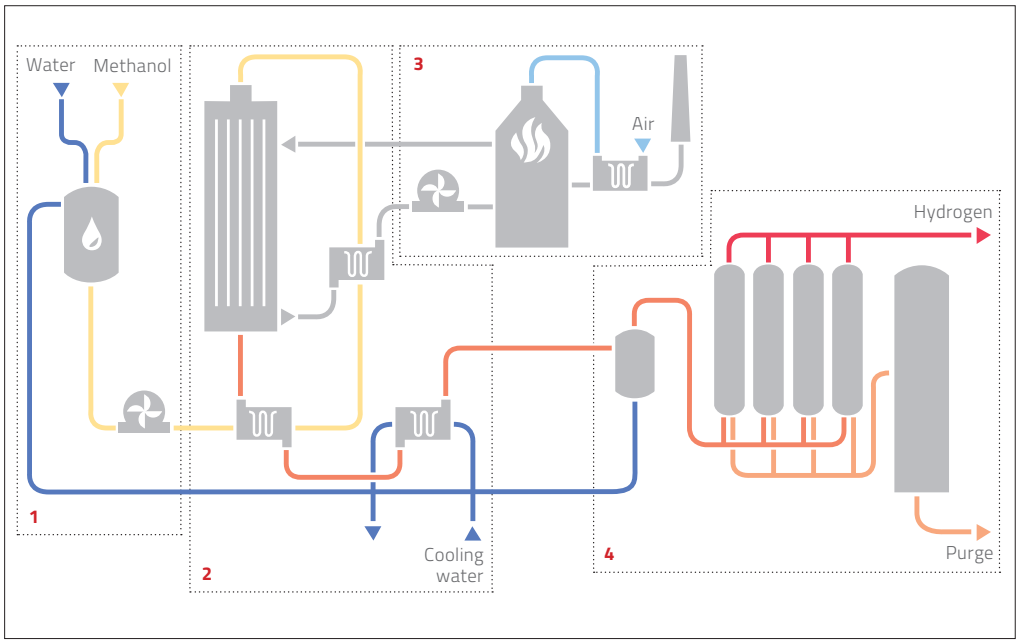
The HYDROFORM-M system is based on steam reforming of methanol as feed to produce a hydrogen-rich gas. The purification of the hydrogen-rich gas is done by means of the subsequent HYDROSWING system.

Pretreatment of the feed mixture
Methanol and fully demineralized water are fed to a storage vessel. Continuous measuring of density and level ensure the availability of the correct ratio of methanol and water. This feed mixture is pumped up and then preheated by heat recovery from raw hydrogen-rich gas. Vaporization of the feed and superheating to the optimal reactor inlet temperature is done by means of thermal-oil in the subsequent heat exchanger.

Methanol reforming reactor
The vaporized methanol-water mixture is catalytically reformed within the tubular thermal-oil heated reactor over copper catalyst into a hydrogen-rich synthesis gas. The reaction is endothermic and the required heat is transferred to the process by means of thermal-oil which ensures an even temperature distribution inside the reactor. The thermal-oil is heated by combustion of purge gas from the HYDROSWING system.

Gas cooling by heat recovery
The hydrogen-rich synthesis gas coming from the methanol reactor is cooled down in heat exchangers by simultaneous economical preheating of the feed mixture. The process condensate is separated and sent back to the feed storage vessel to be reused.

Gas purification – HYDROSWING
The hydrogen-rich gas is sent to the HYDROSWING system which usually consists of four or five adsorbers filled with different adsorbents. This process is based on pressure swing adsorption by which the impurities are separated to obtain hydrogen with purities up to 99.9999 vol.-%. The purge gas from depressurization and purging during the regeneration step is used as fuel gas in the thermal-oil system.



1 Pretreatment of the feed mixture **2** Methanol reforming and heat exchanger unit **3** Thermal-oil system
4 Purification unit – HYDROSWING system

Applications

Hydrogen generation based on methanol reforming with subsequent purification is a well-established process for hydrogen production and the alternative method at locations with limited access to hydrocarbons (e.g. natural gas, LPG or naphtha).

- Metallurgical and steel industry
- Petrochemical and refining industry
- Glass and float glass manufacturing
- Chemical and pharmaceutical industry
- Production of H_2O_2
- Food industry
- Electronics industry
- Technical gases

Highlights

With the use of thermal-oil the hydrogen production plant will keep its operating temperature extremely stable and can be restarted at short notice e. g. if a power failure occurs.

With Mahlers' technology and design an overheating of the reactor is prevented and the low temperature catalyst, which is highly temperature sensitive, is protected by using a heat transfer media (thermal-oil) buffering any temperature peaks. This helps to protect the catalyst for the complete lifetime.

PLANT FEATURES

Capacities from 200 to 5,000 Nm³/h

Product pressure between 10 to 30 bar(abs)

Purities up to 99.9999 vol.-%

Design for long lifetime

High operational reliability:
Many years of experience in plant design, engineering and manufacturing guarantee high reliability of the HYDROFORM-M system.

Low investment cost

High quality and high safety standard

First class sub-suppliers for equipment and components

Fully automatic operation and remote control:
The system is designed for automatic and unattended operation, e.g. change of capacity. Even automatic start-up, shut-down, control and automatic load adjustment from long distances is possible.

Prefabrication in skids/modules:
The system is pre-assembled and delivered in prefabricated skids.

Easy maintenance and accessibility

Optimized consumption figures:
Optimal heat recovery, e.g. preheating of combustion air and recovery of process condensate.

Thermal-oil system to protect the catalyst even in part load

Additional/Optional features:
Individual plant concepts with respect to product compression, turn-key delivery, water treatment, hydrogen product storage etc. can be offered.

HYDROSWING

The hydrogen purification system

The basic process

HYDROSWING systems are designed for the recovery and the purification of hydrogen from different hydrogen-rich gases coming from steam reforming, methanol reforming or from various refinery or petrochemical off-gases. For this task the principle of pressure swing adsorption (PSA technology) is applied.

Depending on customer's focus and demands the hydrogen PSA systems are designed with either 4, 5 or 6 adsorber vessels and different modes of operation.

The PSA technology applies the principle of physically binding the impurities contained in the hydrogen-rich gases by individually selected adsorbent materials. Since the binding forces for such impurities depend on the pressure, the PSA operates on an alternating cycle of adsorption at high pressures and desorption at low pressures.

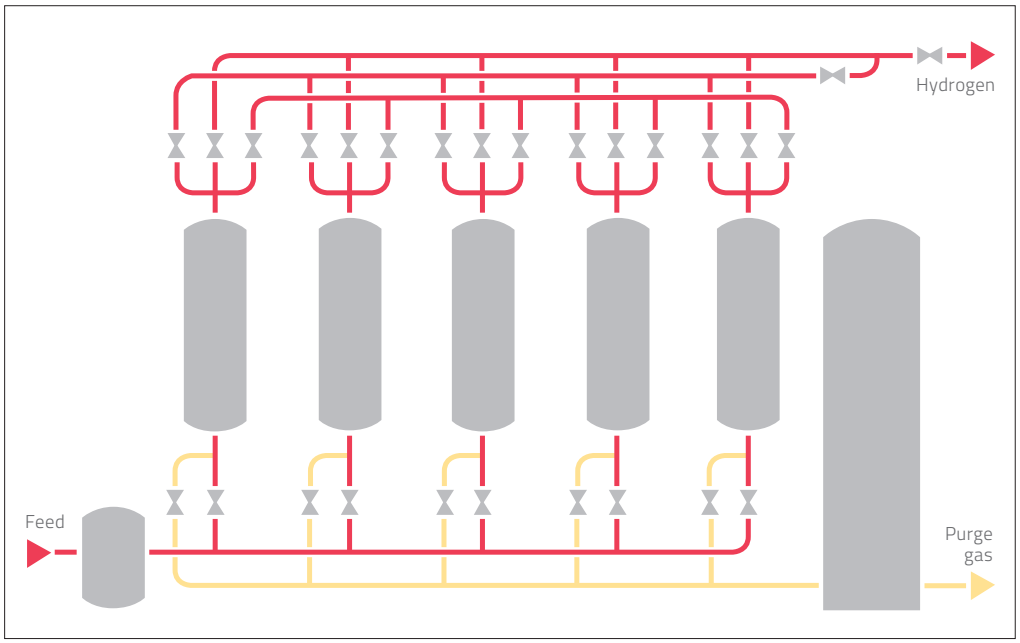
To achieve a continuous hydrogen product flow at least one adsorber is in operation, while the others are in various stages of regeneration. The process is defined by four main steps.

Adsorption
The feed gas enters the bottom of the adsorber at high pressure, the impurities are adsorbed by e.g. molecular sieves and high purity hydrogen leaves the adsorber at the top. Before the adsorption capability of the adsorbents is exhausted, a regenerated adsorber is automatically switched on to adsorption, thus a continuous product flow is ensured.

Desorption
The regeneration is done in several pressure reduction steps. First hydrogen-rich gas is used for repressurization and purging those adsorbers that are in different stages of regeneration. By further depressurization the adsorbed impurities are released and fed to a ventline or to a buffer vessel to be used as fuel gas.

Purging
At the lowest pressure level the adsorber is purged with hydrogen-rich gas from another adsorber. The purge gas is either vented or sent to a buffer vessel.

Repressurization
The pressure of the purged adsorber is stepwise increased to the required adsorption pressure by several pressure equalizations with other adsorbers and finally by recycled pure hydrogen.



Applications

HYDROSWING systems are suitable for many different applications in the refining, metallurgical and steel industry, petrochemical and chemical/pharmaceutical industry.

Feed gases

Hydrogen can be recovered by the HYDROSWING system from very different feed gases, e.g.:

- Synthesis gas from steam reforming, partial oxidation or gasification processes
- Hydrogen-rich refinery off-gases
- Ethylene off-gases
- Methanol and ammonia purge gases
- Coke oven gases

Due to the flexibility of the control system the HYDROSWING system can be adapted to a certain change in feed gas composition or temperature.

PLANT FEATURES

Capacities from 100 to 20,000 Nm³/h

Feed pressure between 6 to 40 bar(abs)

Purities up to 99.9999 vol.-%

Design for long lifetime

High availability due to special control system and the feature to switch-back to an operation with reduced number of adsorber vessels

High operational reliability: High reliability due to proven first class plant components for PSA-applications (e.g. PSA-valves or butterfly-valves and instruments). Many years of experience in plant design, engineering and manufacturing guarantee high reliability.

High quality and high safety standard

Fully automatic operation and remote control: The HYDROSWING system is designed for automatic and unattended operation and automatic adaptation of cycle times according to plant capacity. Even automatic start-up, shut-down, control and automatic load adjustment via remote control is possible.

Completely pre-manufactured valve skid

Easy maintenance and accessibility

High yield
- Individual design according to feed gas composition
- Programmable control system ensures high recovery even at part load operation

Cost efficiency
- Low power consumption
- Minimized maintenance and operating cost
- Minimized cost for supervision

OXYSWING

The oxygen generator

The basic process

Mahler AGS' OXYSWING systems employ the basic principle of air separation at ambient temperatures using high performance zeolite, a material that adsorbs preferably nitrogen to leave a rich stream of oxygen. The adsorptive separation of air is effected in three main process steps.

Purification

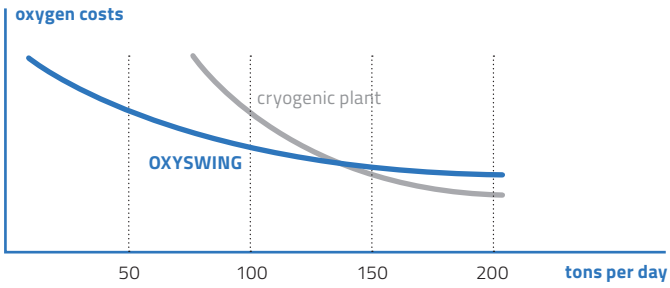
The ambient (inlet) air is filtered before being compressed moderately by a blower system.

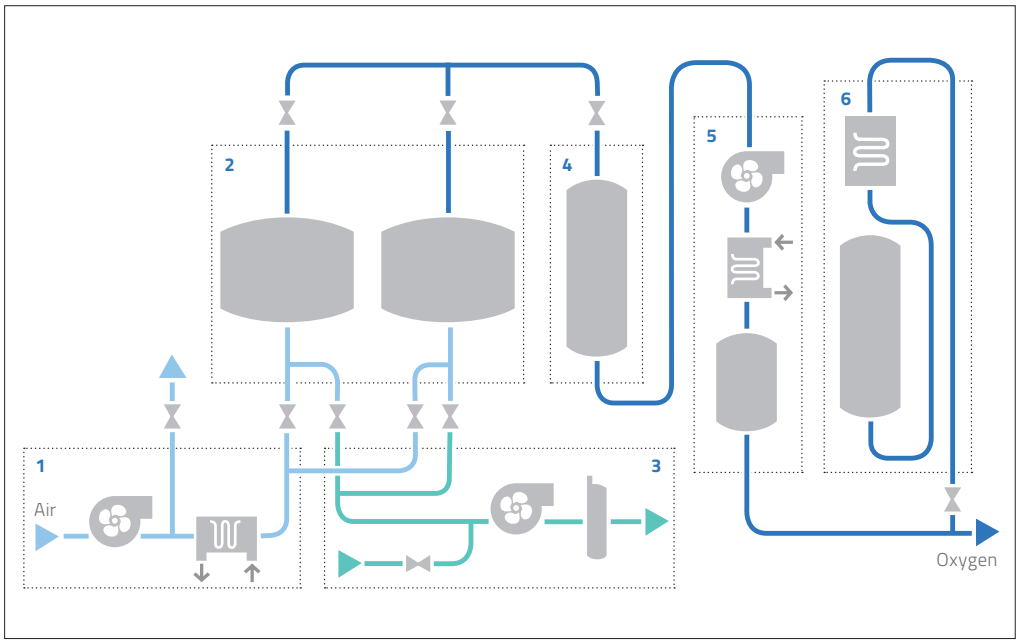
Adsorption

The pre-treated air passes into a vessel containing zeolites to remove any moisture and/or CO_2 and adsorbs the nitrogen while oxygen passes through the vessel outlet. Before the adsorption capability of the zeolite is exhausted the adsorption process is interrupted.

Desorption

The saturated zeolite is regenerated (i. e. the adsorbed gases released) by means of pressure reduction below adsorption pressure. This is achieved by a dry running vacuum pump. The resulting off gas is vented to atmosphere. To maintain a continuous flow of oxygen supply a surge tank is installed.





1 Air compression unit **2** Air separation unit **3** Evacuation unit **4** Oxygen buffer vessel **5** Oxygen compression unit **6** Back-up system

Applications

Users in wide range of industrial applications can cut the production costs by using the Mahler AGS OXYSWING systems:

Glass and enamel industry
- Melting of glass in melting ends
- Melting of enamel in rotary drum type kilns and tank furnaces
- Heating of effluent grooves

Steel industry
- Arc furnaces
- Cupola melting furnaces
- Holding furnaces
- Forge furnaces

Pulp and paper industry
- Oxygen delignification
- Black liquor oxidation
- Feed gas for the ozone production at the ozone bleaching stage

Chemical industry
- Oxidation processes such as production of H_2O_2

Potable water supply
- Feedgas for ozone production for potable water treatment

Public and private waste water treatment and waste disposal industries
- Aerobic waste water treatment
- Thermal refuse incineration

Biotechnology
- Fermentation processes

Highlights

Mahler AGS supplies plants with the top overall performance and cost ratio:
- Low electrical energy consumption
- Highest availability
- No injection water

Plants are in operation for more than 15 years with original equipment.

PLANT FEATURES

Capacities from 300 to 5,000 Nm³/h

Purities up to 94 vol.-%

Product flexibility regarding flow and purity

Design for long lifetime

Completely pre-manufactured skids

Automatic turn down

High availability and reliability:
Many years of experience in plant design and manufacturing guarantee high reliability of all OXYSWING systems.

Fast start-up:
All OXYSWING systems are “on-spec” within minutes.

Full automation and remote control:
All OXYSWING systems are designed for unattended operation and automatic load adjustment.

Independent and low-cost on-site production:
- Production is not affected by road transportation or weather conditions
- Low power consumption
- No injection water
- Minimized maintenance and operating costs

Sound abatement:
Professional sound abatement to meet highest requirements.

NITROSWING

The nitrogen generator

The basic process

Mahler AGS' NITROSWING systems are based on the principle of physical adsorption and regeneration. Nitrogen is obtained by separating the oxygen from compressed air. The whole process is defined by three main steps.

Pretreatment of process air

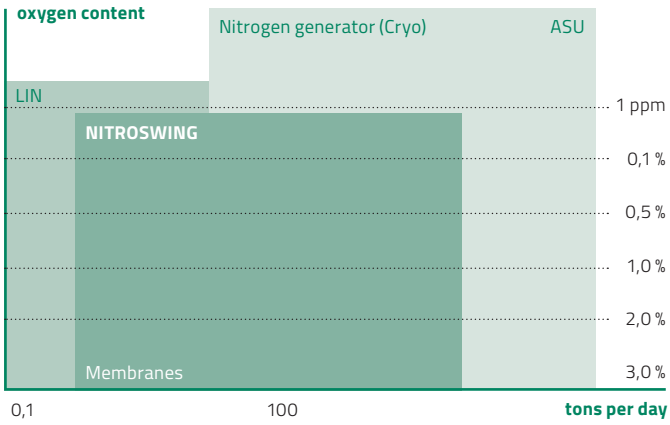
Ambient air is filtered before being compressed by an air compressor and dried by an air dryer system. Mahler AGS applies only state of the art compressors from renowned suppliers and can offer either oil-free or oil-injected compression solutions, depending on the process and environmental conditions. Also available process air can be used as feed for our NITROSWING plants.

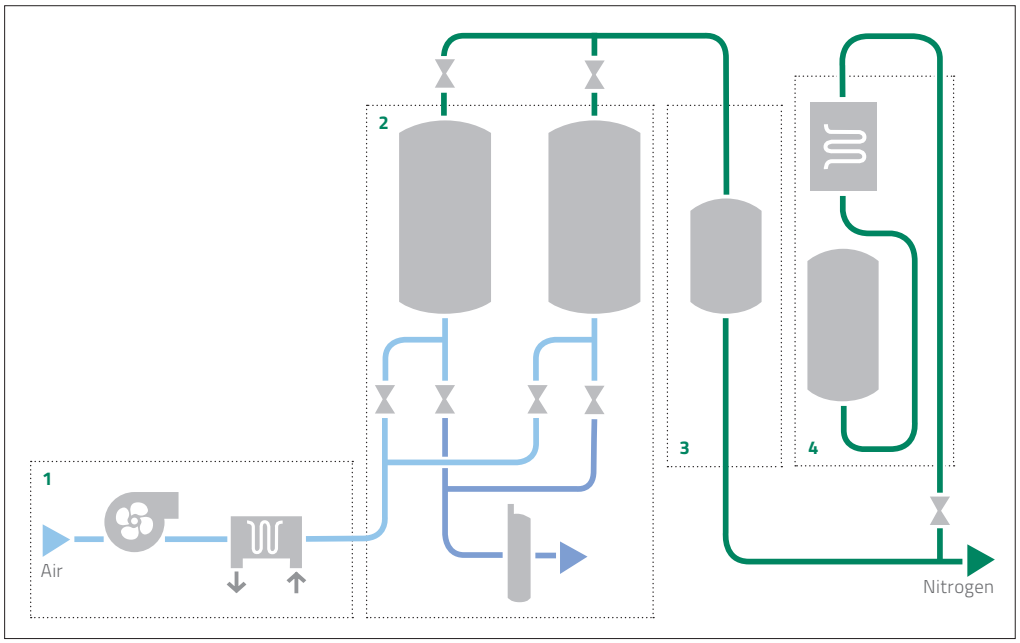
Generation of nitrogen

The pre-treated process air enters one of the two available adsorption vessels which are filled with a selected carbon molecular sieve (CMS). This CMS is the adsorption material which removes the oxygen from the process air. Thus a nitrogen rich product is obtained. The residual oxygen content within the product gas can be as low as 100 ppmv (higher purities on demand). While one adsorption vessel is producing nitrogen the other is in regeneration. The crucial and important regeneration step is achieved by lowering the pressure inside the vessel.

Continuous production

By means of a process buffer vessel and a flow control unit, NITROSWING plants are constantly providing nitrogen at a given flowrate, pressure and quality. A particle filter is applied to ensure a clean product. The dew point of the generated nitrogen is well below the atmospheric freezing point (-40 °C and less).





1 Air compression unit **2** Air separation unit **3** Nitrogen buffer vessel **4** Back-up system

Applications

The Mahler AGS' NITROSWING systems give a broad spectrum of applications, e. g.:

Petrochemical industry
- Purging and blanketing

Metallurgy / Heat treatment
- Annealing
- Hardening and brazing
- Powdered metal sintering

Chemical and pharmaceutical industry
- Purging of tanks and vessels
- Piplines blanketing
- Prevention of oxidation during processing and storage of plastics
- Pneumatic conveyance

Food industry
- Controlled atmosphere storage of fruits and vegetables
- Packaging of foods
- Blanketing of wines and oils

Electronics industry
- Nitrogen atmosphere for manufacturing of semiconductors and electrical components

Mining industry
- Nitrogen plants for explosion protection and fire fighting

Highlights

- Mahler AGS has built one of the world's biggest nitrogen plants with a total capacity of 210 tpd
- Mahler AGS has installed more than 200 industrial plants in the range of 1-210 tpd worldwide
- Plants in operation for more than 30 years with initial filling of carbon molecular sieve

PLANT FEATURES

Capacities from 200 to 4,000 Nm³/h

Product pressure between 6-9 bar(abs)
(at exit nitrogen PSA, higher pressure on demand)

Purities (N_2 + Ar) up to 99.99 vol.-%
(higher purities on demand)

Dew point min. -40 °C

Product flexibility regarding flow and purity

Design for long lifetime

High availability and reliability:
Many years of experience in plant design and manufacturing guarantee high availability and reliability of all NITROSWING systems.

Fast start-up:
Each NITROSWING system has a start-up period less than 5 minutes.

Full automation:
All NITROSWING systems are designed for unattended operation and automatic load adjustment.

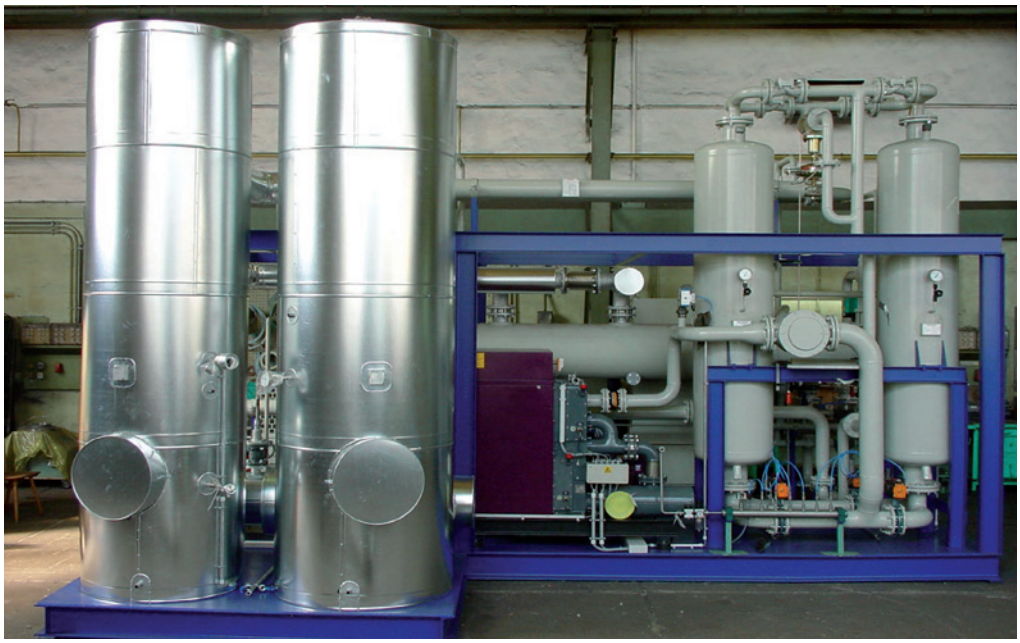
Minimal space requirements:
Packaged units minimize the space required (containerization possible).

Completely pre-manufactured skids

Independent and low-cost on-site production:
· Production is not affected by road transportation or weather conditions
· Low power consumption
· Minimized maintenance and operating costs

HNX

The protective gas generator



The basic process

The process is based on the substoichiometrical combustion of hydrocarbons with air.

Ratio control
The ratio between combustion gas and air is kept constant by means of a fully automatic ratio control. In addition the flue gas is analyzed continuously. In case of a deviation the ratio is immediately corrected.

MEA (Mono Ethanol Amine) boiler and CO_2 stripper
The combustion is effected in a refractory lined reaction chamber. This chamber is equipped with an electrical ignition, an ignition burner and an automatic self-controlling UV-flame monitoring device.

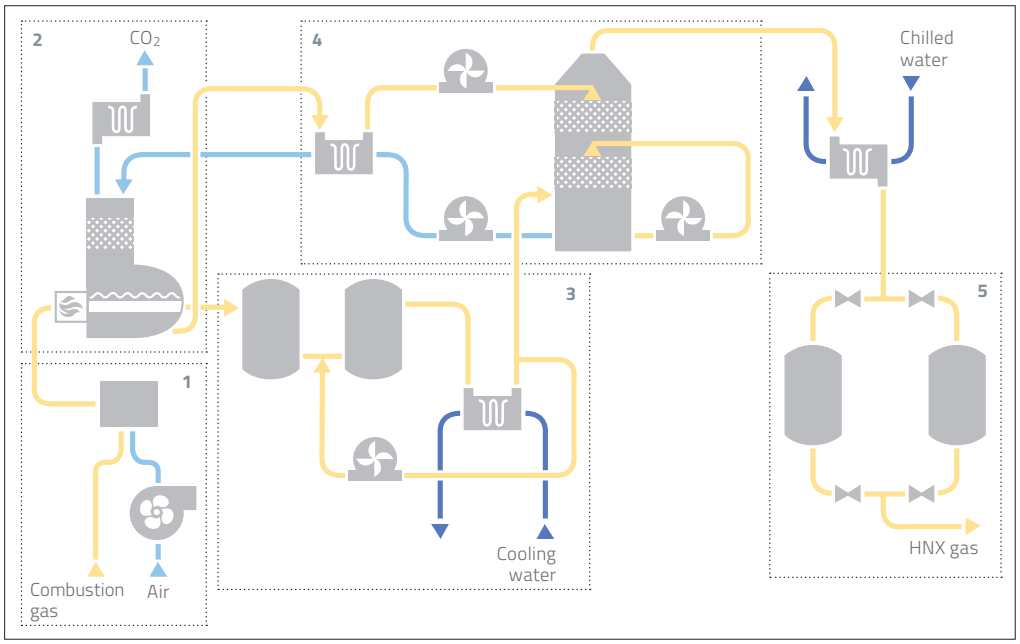
The hot flue gas, generated by this process, releases its heat by means of a heating register to the MEA-boiler, thus regeneration steam for the CO_2 stripper is produced. The flue gas leaves the MEA-boiler at approx. 350 °C and is routed to the CO-converter.

The CO_2 enriched MEA lye coming from the CO_2 scrubber is removed in the CO_2 stripper column.

CO converter HT-1 and LT-2 ***(HT / LT = High / Low Temperature)***
The two-stage CO shift conversion in the reactor HT-1 and LT-2 takes place in presence of steam to generate CO_2 according to the water-gas shift reaction.

The reaction is effected at a temperature of 300 °C in the HT-1 respectively 200 °C in the LT-2 reactor. To achieve an inlet temperature of 200 °C in the LT-2 reactor, the hot CO-convert gas of HT-1 is cooled by quenching with condensate.

CO_2 scrubber
A regenerative organic alcaline solution (MEA) is used as CO_2 absorbent. The loaded alkaline solution is routed to the CO_2 stripper column where the CO_2 is removed by means of the strip-steam generated in the MEA-boiler.



1 Ratio control **2** MEA boiler and CO_2 stripper **3** CO converter HT-1 and LT-2 **4** CO_2 scrubber **5** HNX gas drier

Gas drying

The "wet" HNX protection gas is dried in a thermically regenerated two bed absorption drier. Molecular sieve is used as drying agent. While drying is applied in one absorber the other is regenerated at temperatures exceeding 200 °C. After drying the HNX gas is provided to the customer.

Applications

Mahler's HNX protective gas generators cut the production cost considerably, e. g. in the following industrial applications

- Heat treatment of steel in the metallurgical / steel industry (e. g. bright annealing, galvanizing)
- Float glass manufacturing

PLANT FEATURES

Product flexibility:
· Plant capacity up to 1,000 Nm^3/h
· Adjustable H_2 content between 0,5 to 15 vol.-%
· Gas analysis, typical values:

H_2:	0.5 - 15 vol.-%
CO:	50 - 1,000 ppmv
CO_2:	50 - 100 ppmv
CH_4:	20 -100 ppmv
O_2:	< 5 ppmv
N_2+Ar:	balance

· Dew point: -70 °C
· Delivery pressure as required

High reliability:
Many years of experience in plant design and manufacturing guarantee high reliability of all HNX protective gas generators.

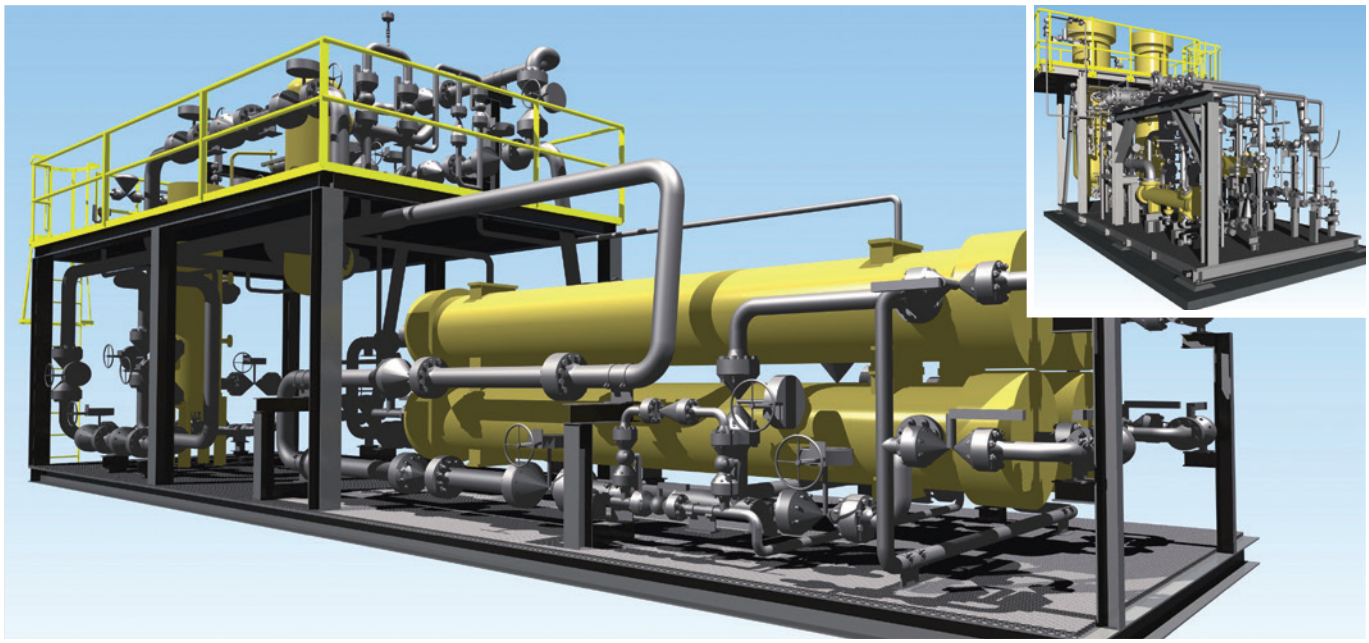
Full automation:
All HNX protective gas generators are designed for unattended operation and automatic load adjustment.

Independent and low-cost on-site production:
Production is not affected by road transportation or weather conditions.

Cost efficiency:
Minimized maintenance and operating costs.

Permags-Pro

Process gas membrane systems



The basic process

Process gas membrane systems are designed for the recovery of process gases from crude feed or off-gas streams. Often referred to as HRU (Hydrogen recovery unit), a membrane separation system is not only limited to the recovery of hydrogen. Also the adjustment of synthesis gas ratios, recovery and separation of methane, helium, carbon dioxide, as well as oxygen and nitrogen from ambient air have to be mentioned as few of many possible applications in the industry. The process is continuous and divided into two main steps.

Pretreatment and conditioning of the feed

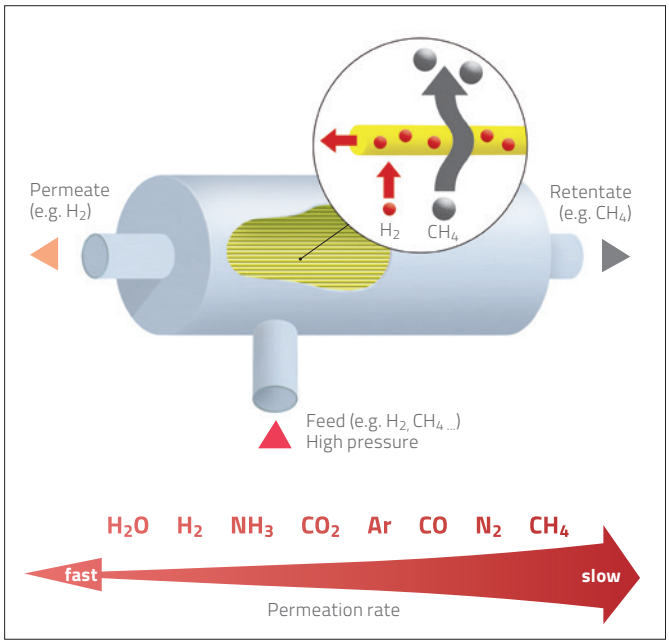
The pretreatment section consists of a filter unit which protects the small membrane fibers from solid particles and fluids. The design of this protection system depends on the feed conditions. Humid feeds require coalescers, while dry gas streams are treated by means of a particle filter.

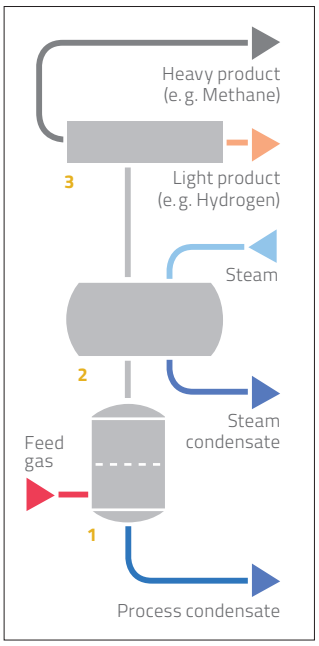
Subsequently a heat exchanger is applied to control the temperature of the process gas. Temperature is a crucial parameter for the performance of the unit and ensures stable operation also during part-load and changing process conditions.

Separation step

Crude feed gas at high pressure enters the membrane modules and is separated into two streams, which are defined as permeate and retentate. The permeate stream is reduced in pressure and usually contains smaller molecules like hydrogen, thus often referred to as “hydrogen rich product”. The retentate is equal in pressure to the feed gas and is made-up of mostly larger molecules like methane. The performance of the separation step depends on:

- Membrane material
- Surface area of the membranes
- Feed temperature
- Feed pressure
- Differential pressure across the membrane modules
- Flow rate of the feed





1 Pre-filter 2 Heat exchanger
3 Membrane

PLANT FEATURES

All kind of possible feedstocks, e.g. air, natural gas, off-gas, crude hydrogen, ammonia purge gas, syngas

Capacities from 500 to 200,000 Nm³/h and even more

Feed pressure between 20 - 200 bar(abs)

Recovery up to 99.9 %

Purities up to 99.99 vol.-%

Completely pre-manufactured skids

- Unattended and automated operation
- Continuous process without any moving parts
- Installation on a common, single base frame (standard unit)
- Options for vertical and horizontal installation for spatial optimization
- Dimensions equal to a 40" container (standard unit)

Online adjustment of recovery and product purity possible

High availability and reliability

Design for long lifetime

The permeation process

Permeation is the working principle of a membrane system. For this reason membranes and membrane modules are often referred to as "permeators" and the process as "permeation". Mahler AGS only applies state of the art membrane modules from renowned suppliers. A membrane bundle consists of numerous hollow fibers which can be as thin as a human hair and are made up of special kinds of polymers. Each polymer is different in its effect on the separation process. Some polymers are designed to achieve maximum recovery, while others are optimized for high purities. Also the resistance to chemicals, humidity and physical forces are different for each polymer.

The way a permeator works can be compared to a particle filter operating on molecular level. The crude feed gas flow is directed through the membrane fibers. Small molecules can pass the wall of the hollow fibers. The molecules permeating the fibers are now separated from the feed gas and are obtained as the pressure reduced product. The residue which cannot permeate through the wall of the hollow fibers forms the retentate product. Depending on the application the flow direction of the permeate can be either from inside of the fibers to the outside or vice versa.

Applications

Petrochemical industry, chemical industry, refineries, oil & gas industries, ammonia and methanol production

- Recovery, separation and purification of feedstock and rejection of inert gasses from purge gas streams
- Syngas ratio adjustment
- Separation of carbon dioxide from natural gas
- Drying of gases

Nitrogen generation

Our service concept

Whether construction, maintenance or customized solutions, Mahler AGS provides the complete service package.

Installation
Experienced and competent field engineers assure the correct installation of a plant. At any time they can revert to the assistance of our qualified office staff. In addition Mahler AGS provides time and working schedules as well as documentation in order to ensure completion in due time.

Commissioning
After mechanical completion and final check of erection until performance test we provide all commissioning services. The commissioning includes catalyst and adsorbent loading of reactors and vessels, carrying out numerous function tests, plant start-up, adjustment of process parameters and check of all safety functions. Our target is to reach the specified performance parameters and client's full satisfaction while keeping the time schedule.

Spare part service
We offer the best and most economical solution for your purposes for either defective or modification parts. Our strength is to react fast and to come up with cost-effective solutions to keep the plants in operation throughout the service life of your plant, even if the plant is more than 40 years old.

Inspection and maintenance
Regular inspection and maintenance ensures long-term functioning, avoids damages and prevents unexpected malfunctions. This service includes a comprehensive check of the plant status and functional tests of all relevant components. Also service on sub-suppliers' equipment and machinery can be provided.

Remote service
Mahler AGS offers a direct line between your plant and our experienced office personnel. The possibility of remote access and data transfer between your plant control system and our service center enables us to assist quickly, whenever required, all over the world, in case operational problems or malfunctions occur.
In addition Mahler offers remote service packages, individually adapted to your requirements, with access to our service hotline.

Revamp, overhaul and relocating
If you require capacity or performance upgrades, modernization of individual components or complete systems or even a relocation of a plant, Mahler AGS plans and carries out all necessary activities considering local regulations and clients' specifications.

High availability, long lifetime and reliable performance, these are the major requirements for process plants.
With our broad variety of service capabilities we offer our customers active support based on highest technical standards all around the world during the complete life time.

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