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 CO₂ 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.

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 H₂O₂

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.

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.

OXYSWING 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.

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