



## GAS INDUCING MIXERS FOR THE FOOD & CHEMICAL INDUSTRY



### PROCESS:

Gas/liquid reactions with pure gases

### TYPE OF PRODUCT:

Hydrogenated fatty acids – pharmaceuticals – hydrometallurgical products

### APPLICATIONS:

Hydrogenation – Chlorination – Oxidation – Alkoxylation – Amination – Carboxylation

We offer **maximum reliability, high durability** and **stirring efficiency**

### Process description

The aim of the gas-liquid contact is a chemical or bio-chemical reaction between the gas and the liquid phase. The dissolution rate (the mass transfer) between the phases must be sufficient for the demand by the reaction rate in the liquid phase. The mass transfer depends not only on the gas flow but is also enhanced by the stirring power. Traditionally a so-called "surface aerator" which created a large vortex to accomplish the reaction was used. The JONGIA gas inducing mixer is a stirrer system for gas-liquid reactors, providing gas recirculation from the headspace of the reactor through the hollow stirrer shaft without an additional gas compressor.

It provides an excellent mass transfer rate and rules have been established for the prediction of the transfer coefficients depending on the physical properties of the gas-liquid system, the dimensions and operating conditions. There will only be low concentrations of catalysts required in the reactor due to high rates of mass transfer which also contributes to short mixing times.



### References

Major players in the industries such as Cargill, Croda, Bunge Lodders Croklaan use JONGIA mixing equipment in their production facilities. Installations are up and running world-wide from as far back as the early seventies.

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## Product information

Jongia meets the challenge of modern-day high productivity requirements with its novel gas-inducing system. In a simple reactor a gas-inducing coil the so-called sparger is installed for the primary gas supply. The gas from the head space of the reactor is recirculated through the hollow shaft and re-induced through the gas inductors mounted below.

The main mixing element creates an under-pressure at the gas inductors to disperse the gas into the reaction media. Depending on the batch sizes required one or more combinations of mixing elements and gas inductors can be installed.

Thanks to recirculation of unconverted gas in the headspace of the reactor complete utilization of the reaction gas is achieved without the need for an external compressor. Jongia's self-inducing mixer ensures high operating safety and reliability as the

gas and catalysts are contained within the reactor. Instrumentation and control costs are limited and productivity is boosted thanks to high mass transfer rates as shown in the  $K_La$  values. The JONGIA design concept permits a low agitator speed so that the agitator-inducer system is operated below its critical speed and irregular loads on the shaft and bearings are avoided.

In short Jongia's gas-inducing mixer combines:

- A high induced gas flow rate
- A fine dispersion of the gas and therefore a large interfacial area
- Accurately predicted excellent mass transfer also on large scale
- Stable mechanical operation at moderate (sub-critical) stirrer speed
- Recirculation of the unused gas



## Process consultancy & testing

In synergy with you, our client, we envision the most efficient solution for your mixing application. Mixing techniques are put to the test in our in-house laboratory by our processing experts or on site with our rental test units.

## Engineering, manufacturing & quality

Our engineering team is dedicated to designing robust and reliable, leading edge mixing equipment. The equipment is manufactured by skilled craftsmen on state of the art machinery. Every step is controlled by international quality standards.

## Installation & global service

Installation, supervision and commissioning are performed by experienced field engineers. Rely on Jongia's 24/7 global service to assist you.

## Jongia N.V.

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