

HITTEC ZANG



Made-to-measure gas!

Gmix™ - Precision Gas Mixing Device



The universal gas mixing system

Gmix™ was originally developed especially for use within bio-processes of prokaryotic and eukaryotic cultures.

Because of its modular design Gmix™ has also become increasingly established in the areas of chemistry and sensor calibration in addition to its deployment within biotechnological processes.

Today the Gmix™ precision gas mixing device is regarded as a general universally applicable gas mixing system.

Due to the extremely precise gas composition, the gas mixing device can also be deployed in physical technology and trace gas analytics.

Areas of application

- » Inlet gas mixing for aerobic and anaerobic bio-processes
- » Oxygen and pH value control in cell cultures
- » Synthesis gas production for gas fermentation
- » Production of gas mixtures
- » Calibration of gas sensors
- » Trace gas analytics
- » Integration into production processes
- » Application as a pressure monitor
- » Optimal for rapidly changing process requirements due to its universal configuration

What can Gmix™ do for you?

- » Fermentation control through oxygen and pH value regulation via the composition of inlet gases
- » Integration into automation concepts through a remote function
- » Process monitoring and protection in cases of excess outlet pressure
- » Sensor calibration as a result of defined and precise gas composition
- » Process control and development of feed strategies for gas fermentation processes
- » Particularly suited for process optimisation due to the high stability of the gas mixture
- » Deployment for aerobic and anaerobic production processes

Aerobic processes are gassed as standard using sterile-filtered ambient air.

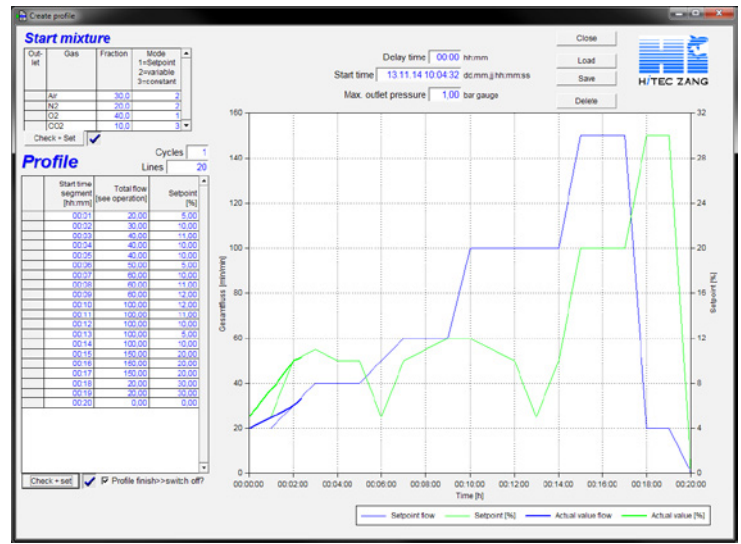
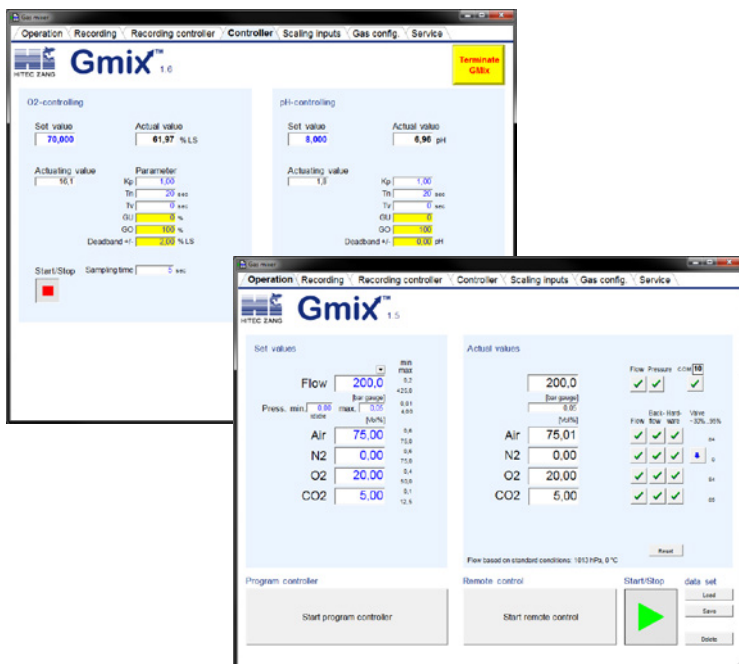
Example of application: For cultures with a high oxygen requirement the only possibility after exhausting the capacity for increasing the OTR (oxygen transfer rate) through the agitator speed is to increase the proportion of oxygen in the inlet gas. This situation can be easily solved using the Gmix™. This example demonstrates just one of the many deployment possibilities of the Gmix™ gas mixing device.

Precise gas compositions are required in numerous other technical areas, e. g. for material balance or sensor calibration.

A particular feature is the modular design of the system so that it is generally applicable universally.

Controllers for the regulation of the oxygen and pH values have been integrated especially for cell culture processes so that they are able to be controlled in a simple fashion by connecting pO₂ and pH probes.

Using software-based pressure monitoring, in the case of excess reactor pressure, triggered for example by blocked exhaust gas filters, the gas supply is stopped until the reactor is once more within the safe pressure range (Note: This function is not a replacement for safety devices such as safety valves).



In this way Gmix™ can be deployed for independent pressure monitoring in a closed process and can transfer the monitored data to a higher process management level via a remote connection.

The device may be manufactured to specific customer requirements through an adjustment of the inlet and outlet pressures. A pressure resistance of up to 11 bar absolute can be guaranteed. The Gmix™ is available as a compact device and can therefore be used in many different applications.

In order to ensure its flexible deployment up to ten gases can be calibrated for each inlet so that the gas mixing device can be used in many processes, in particular in the area of research and development without the necessity of purchasing a new device each time.

Features

- » Mixing of 2-6 inlet gases
- » Calibration of up to 10 gases for each inlet
- » Pressure resistance of up to 11 bar absolute
- » Parts in contact with the media are made of: aluminium, brass nickel-plated, FKM, stainless steel, PUR, Si, Si₃N₄, SiO_x, epoxy resin
- » Remote operation via a COM interface or Windows pipe
- » Stand-alone system (optional)
- » Low uncertainty of measurement as standard < 1.0 % of set point (optional ± 0.3 % of set point, ± 0.5 % of measured value)
- » Best possible reproducibility and long-term stability
- » Compact construction
- » Automatic monitoring
- » Integrated controller for pO₂ and pH
- » Analogue inputs for pO₂ and pH (4...20 mA / 24 VDC)

HiTec Zang GmbH
Ebertstraße 28-32
52134 Herzogenrath
Germany
+49 (0)2407 / 910 100
info@hitec-zang.de
www.hitec-zang.de

