



### Upgrade kit for GFM - Glass Flow Meter

The GFM system has been on the market for more than twenty years. The concept is a success and it is implemented in most glass wool manufacturing plants around the world. Over the years the system is undergoing continuous development to adopt it to the latest technology and to demands.

The GFM system with hand held terminal and printer is today an overdue version and, even though it still perform well in many plants, time to get replaced.

A number of components used in this version, are no longer in production and are hard to find on the replacement market. As a result it is hard to get this version repaired if needed.

To minimise the risk for interruption in production it is recommended to upgrade the former GFM version to the latest standard.



The upgrade kit will not only upgrade the former GFM system to latest standard and secure the support/measurement from the GFM, it will as well improve the performance of the system and add new functions.

The upgrade will be made by changing the CPU rack and equip it with updated computer boards. The display and printer panel will be exchanged to a 19" TFT touch screen panel.

Each camera will be equipped with updated mother and array boards. All other existing parts of the GFM system can be kept intact and used as earlier.

## GFM – Glass Flow Meter System

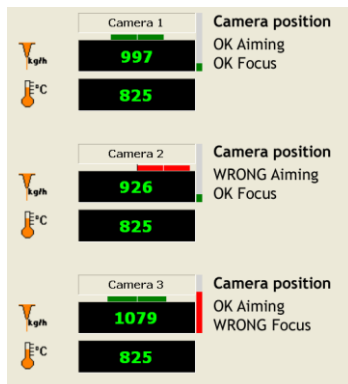
The GFM upgrade kit will give the following advantages:

- Increase sensitivity reading bubbles in the glass
- Minimise risk of condensation related problems in the camera
- Increase accuracy of measurement
- Improved communication interface (Operator's Interface - HMI)
- New function CMM – Camera Maintenance Manager

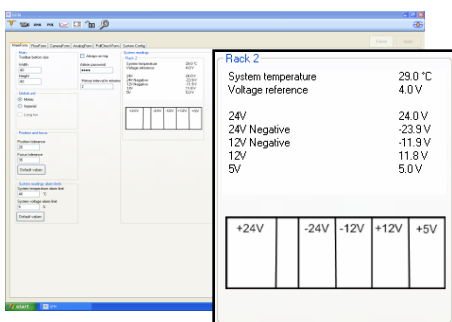


With the upgraded system following information will be made available from the Operator's Interface:

- Glass Flow in lbs, kg or tonnes/day
- Glass Flow charts – displays 24 h glass flow trends
- Pull check / Camera calibration
- Camera, Analogue outputs and Database configuration
- Camera positioning and rack status (see CMM)
- Glass stream temperature, if pyrometers are installed



CMM – Camera Maintenance Manager gives information related to the position of the cameras, both laterally (aiming) and depthwise (focus). It also detects where the front lens of the camera is dirty. The information is presented graphically through green/red bars on the system's touch screen HMI.



CMM – Camera Maintenance Manager also gives information about the temperature within the CPU rack and the status of the voltage of the power supplies. This will ensure optimal performance and extend the life time of the equipment.

An upgraded GFM system minimise the risk of production interruptions.