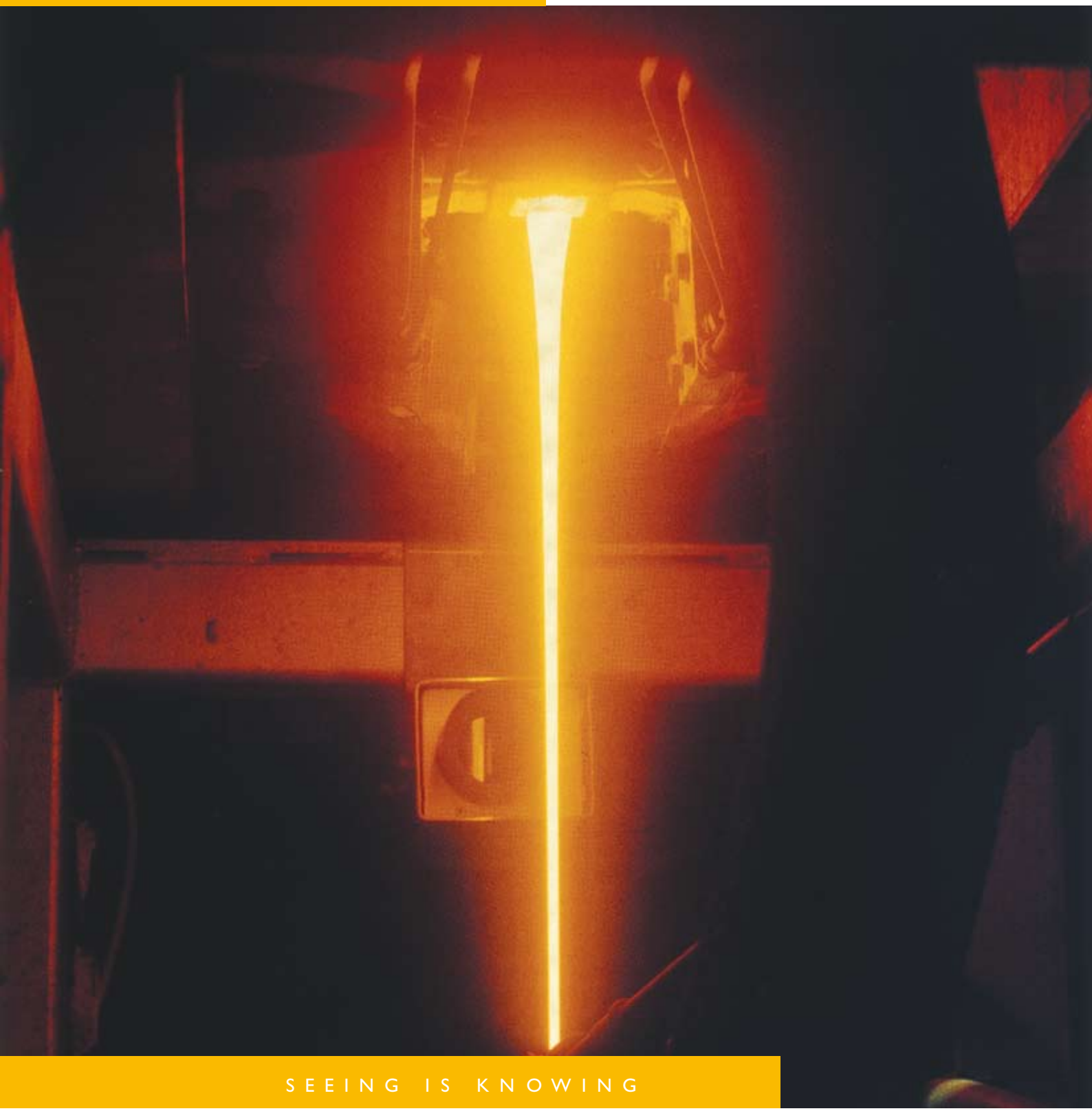
GLASS FLOW METER

for the fiberizer industry



SEEING IS KNOWING

GEDEVELOP

Automatic measurement of the glass flow from bushing to fiberizer

- The Gedevlop glass flow meter is a non-contact, optical measurement system that measures the flow of the molten glass that falls from the bushing into the fiberizer.
- The camera, which is looking at the glass stream, reads information for stream diameter and velocity. Information is sent to the central unit that calculates the actual glass flow.
- The glass flow meter enhances productivity by a continuous measurement of the glass flow individually for each fiberizing unit.
- Connected to the bushing control, the pull can automatically be controlled within ± 0.5%.
- Measuring range 50 – 2000 kg/h (110 – 4400 lbs/h)
- Many installations worldwide have shown that the glass flow measurement is a very profitable investment with a short payback time.

Enhance productivity, profit and quality

GFM gives product density reduction
The production is tuned to minimum excess margins reducing the average density by 2 – 4 %.

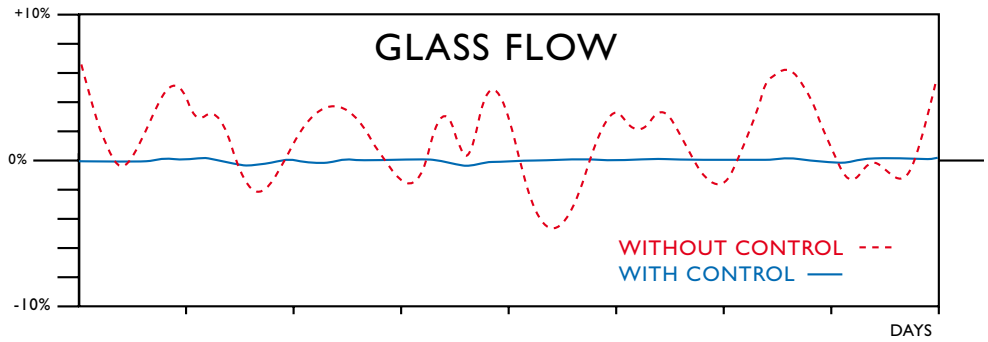
Increased spinner life
Less variation of the glass flow leads to stable fiberizer conditions and the absence of manual pullchecks will increase the spinner life.

Quick pull change
Depending on the control system it is possible to change pull-rate under full control over the whole operating range very quickly.

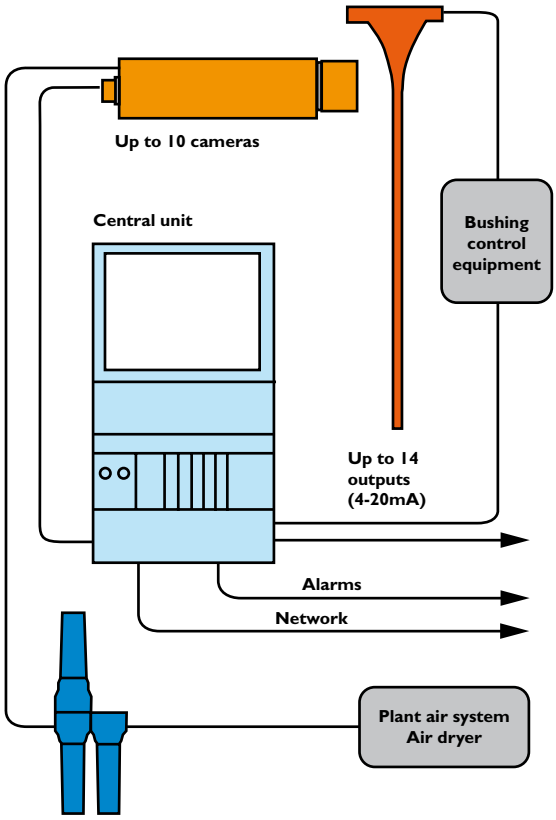
Increased productivity
Less workload on fiberizer zone and product control due to reduced pullchecks and density control.

Less rejects caused by poor fibre quality
Improved quality due to less fibre variations. Less variation in binder content (%) due to constant fibre flow.

Increased furnace and forehearth life
Constant pull will stabilize batch melting and forehearth conditions. Early identification of batch problems

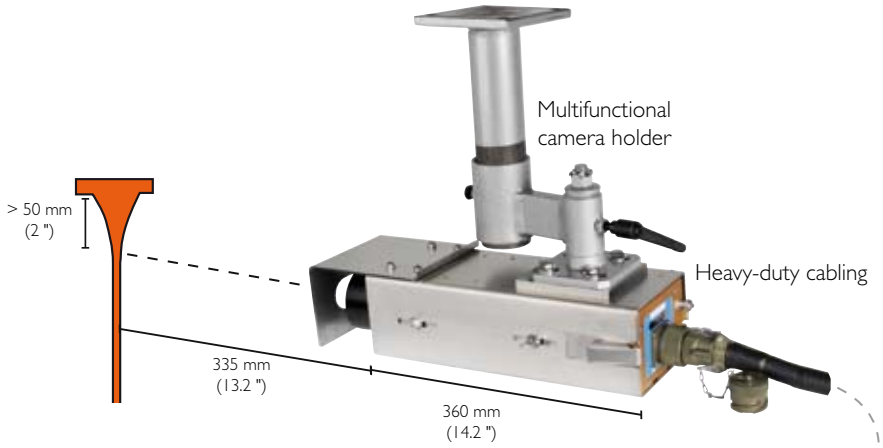


The difference in flow between a manually controlled process and Gedevelop's glass flow meter. The variation off the pull is up to ± 7–8%. The glass flow measurement keeps it within ± 0.5%.



Overview of Gedevelop's glass flow meter

- 1–10 cameras
- Central unit with up to 14 analogue and 32 alarm outputs
- Optical pyrometers are optional



Central unit with
touch screen

The camera

The air-cooled camera is designed to withstand the heat, smoke, moisture and strong magnetic fields that exist in the fiberizer area.

Pneumatic cooling

The electronics is cooled by a pneumatic cooler, which also heats the lens system to prevent condensation. The camera is designed to work in an ambient temperature up to 150°C (302°F). The air supplied to the camera is filtered through a set of filters.

Multifunctional holder

The camera holder not only keeps the camera in position but also acts as a thermal and mechanical protection. The camera slides into the holder, locks in position, and is aligned towards the glass stream with the help of a row of LED's. You can view the LED's through a window at the back of the camera.

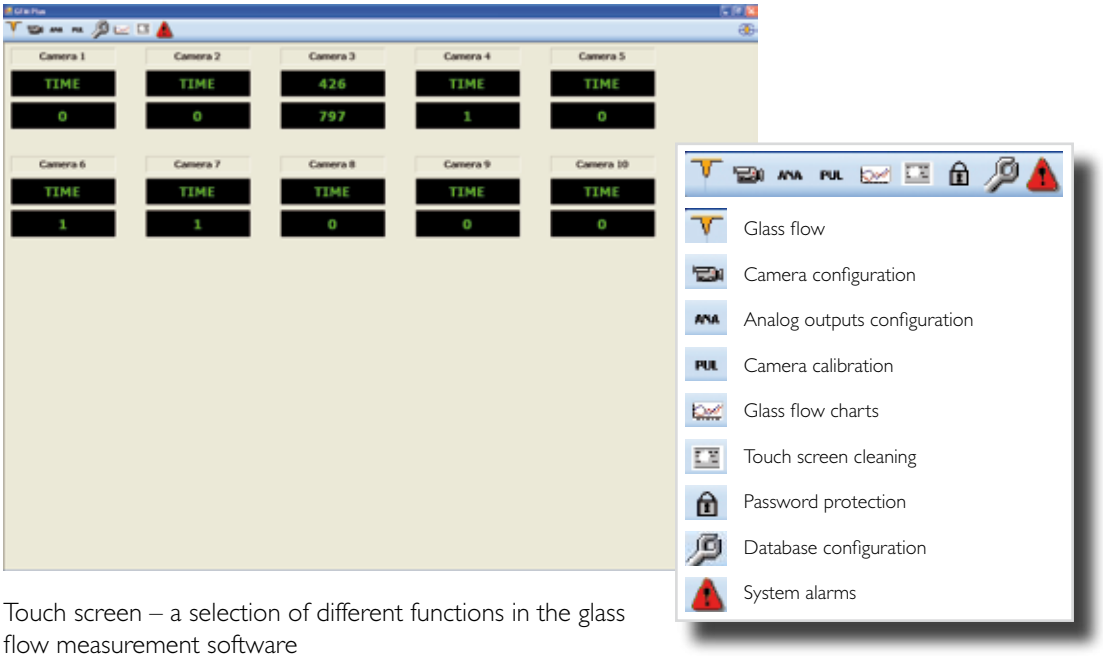
Heavy-duty cabling

The prefabricated cable is supplied with heavy-duty connectors at both ends for easy connection.

The central process unit

All user interaction takes place through the touch screen. Normally, the actual flow and stream temperature (optional) are displayed or flow charts are shown.

- Analogue outputs – one configurable analogue 4–20 mA output per camera
- Digital outputs – 3 relay outputs for different alarms per camera
- Camera interface module –where the primary processing of signals takes place
- Power supplies – plug-in type with overload protection
- Cabinet – the standard central unit is mounted in a 19" floor cabinet with a swing-out frame and a glass door.
  Dimensions 800 x 2100 x 600 mm
  (31.5 x 82.7 x 23.6")



Touch screen – a selection of different functions in the glass flow measurement software

Temperature measurement

Optional integrated features

The glass flow measurement system can be equipped with a built-in pyrometer. The pyrometer measures the temperature of the glass stream at the same time as the glass flow is measured and controlled.

Temperature measurement of the glass stream gives more information and improves the control of glass properties and fibre forming.

Pyrometer principle

The two-colour ratio pyrometer has an inherent insensitivity to changes in emissivity and is specially designed for an accurate glass temperature measurement. It consists of a module fitted inside the standard camera. The temperature is displayed on the touch screen.

Intensity fluctuations caused by varying size and shape of the glass stream or the presence of dust, smoke or gas along the optical path of the pyrometer are eliminated by the ratio detecting principle.

Specifications

Measuring range	900 – 1200° C (1652 – 2192° F)
Target diameter	5 mm (1/5")
Spectral range	0.9 – 1.1 microns
Response time	2 sec
Accuracy	± 3°C (± 4°F)
Repeatability	± 1.5°C (± 2°F)

Who are we?

State-of-the-art solutions and technology

Gedevelop AB was established in 1986. The company is now the world market leader in non-contact measurement systems for hot flowing glass and a leading partner for the major manufacturers of glass fibre and glass containers. Thanks to a dedicated team, the company can offer innovative, state-of-the-art solutions and technology. The close access to production processes engages Gedevelop in the continuous development, manufacture and supply of reliable process measurement and control equipment.

Other products:

Gob Image Analyser for container glass industry

The Gedevelop gob image analyser performs automatic gob measurement and weight control by analysis of properties. The analyser's camera system is a widely accepted concept within the glass container industry. Substantial benefits are achieved in product quality, both practically and financially.

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