

## The Next Quantum Leap for Gas Flow Measurement and Control



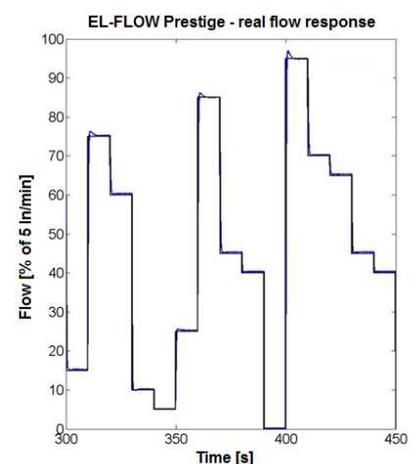
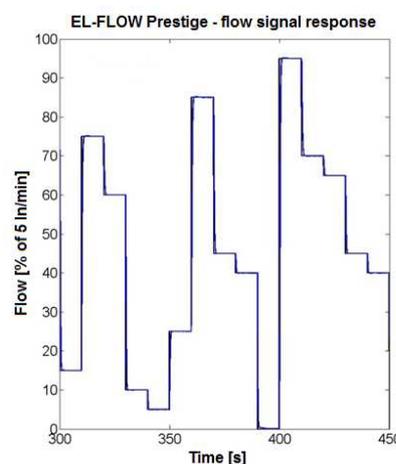
Bronkhorst® has successfully supplied gas, liquid and vapour flow/pressure measurement and control instrumentation to numerous industries for over 34 years. This success, entirely based upon close collaboration with their customers, has resulted in countless industry-changing advances in both measurement technology and its implementation within continuous process improvement. The latest generation EL-Flow **Prestige** thermal mass flow meters and controllers represents a truly ground-breaking shift in versatility and user-friendliness.

Whilst further technical details can be seen below, the principal customer benefits are based upon

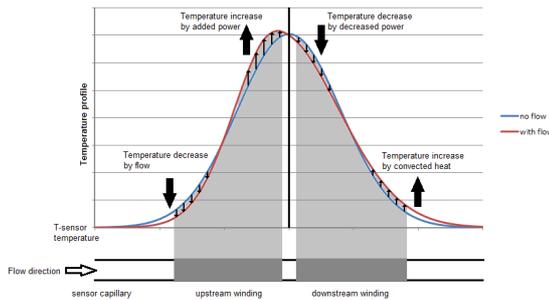
- Further advances in flow-signal processing
- Highly stable flow control regime virtually impervious to process fluctuations
- Advanced control valve design
- An on-board gas conversion model
- Significantly reduced power consumption
- A user configurable device with a multitude of additional features and benefits

These benefits were developed in answer to the specific needs of industry to constantly improve both the technological and commercial basis upon which economic success is based. The close collaboration mentioned above highlighted very clear requirements to **increase** – yield, profitability, process stability, quality, flexibility, lifetime and MTBF. At the same time, these benefits would be required to **decrease** – waste, energy, re-work, inventory, cost, down-time and complexity. The Bronkhorst EL-Flow **Prestige** has answered each and every one of these needs and a few more besides !

A fundamental corner-stone of the Bronkhorst ethos is *constant improvement in all that we do* and this dedication to excellence has, over many years, realised a number of world class innovations. Within the field of thermal mass flow measurement, Bronkhorst has applied its vast R&D capability to further technological advances based upon the following five core developments :



**The Sensor.** Now benefits from the enhancement of the Differential Temperature Balancing technique whereby the two sensor windings are power regulated to the same temperature above the gas stream ambient. Upon flow, the difference in power between these two windings to maintain the same measured temperature is directly proportional to the mass flow. This technique, and the sensor design, provides significantly increased reproducibility, linearity within the calorimetric flow regime, insensitivity to humidity fluctuation and the eradication of signal fold-over upon flow **saturation**.



**The PC-Board.** Whilst being completely re-designed for increased speed and processing power also includes an on-board EEPROM for data storage and enhanced temperature measurement for sensor signal steering and optimization, together with the support of multiple fieldbus communications and user selectable in/out options accessible via a dedicated pin on the electrical connector. These improvements have been achieved whilst also significantly decreasing the power consumption of the device.

**The Laminar Flow Element.** At the very heart of the Bronkhorst El-Flow *Prestige* is the LFE or “shunt” that determines the proportion of flow between the bypass sensor and the main flow channel. Engineering improvements have been applied to enhance the empirical instrument accuracy as well as further improving flow-pressure drop linearity.

**The Control Valve.** Advanced re-engineering has resulted in smooth and frictionless control characteristics that have a direct positive impact on stability, longevity of response and MTBF.

**The Electrical Housing.** The solid metal housing is now more user friendly than previously, has yet further increased EMF stability, is now UL approved and is common across all fieldbus options

Further technical advancements include an extremely fast dynamic response, an on-board gas conversion model, 25 selectable gases together with the on-board calculation of mixtures with up to five components, user selectable full-scale flow range-ability within 40% and 120% of the nominal capacity, downturn of 150:1 in digital mode, user configurable control characteristics, various on-board alarm and counter functions and an optional integrated shut-off valve.

The Bronkhorst EI-Flow **Prestige** Series has been developed to meet the ever more stringent needs of industry for greater process precision, stability and cost control whilst eliminating down-time, waste and re-work. Close working relationships and collaborations have been seen within applications for the Compound Semiconductor, Nanotechnology, Glass Coating, Optical Fibre Manufacturing, Specialty Gas, Pharmaceutical, Chemical, Analytical, R&D and University Research industries to name but a few.

**Bronkhorst UK Ltd**

1 Kings Court

Willie Snaith Road

Newmarket

Suffolk

CB8 7TG

[www.bronkhorst.co.uk](http://www.bronkhorst.co.uk)

Tel : 01223 833222

Email : [sales@bronkhorst.co.uk](mailto:sales@bronkhorst.co.uk)

