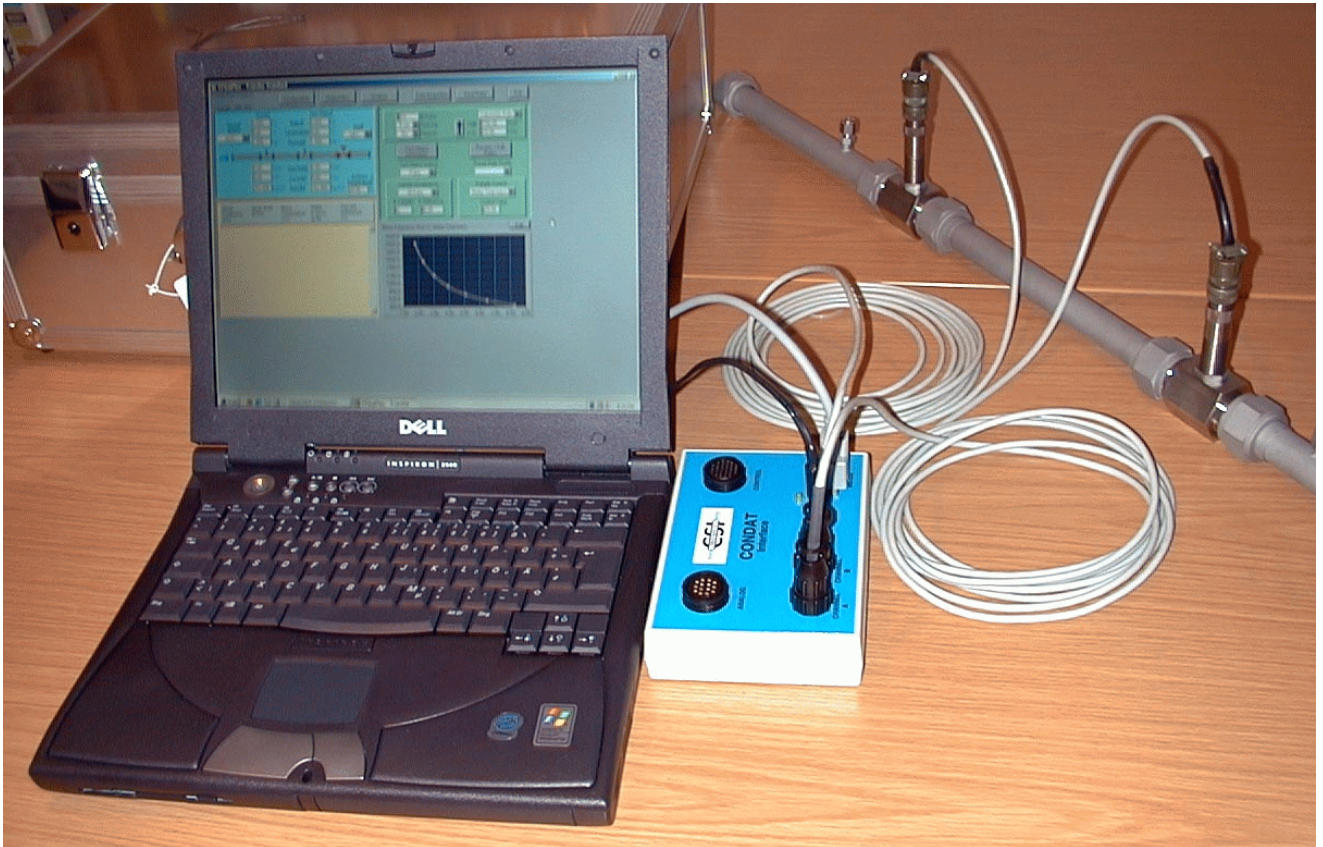


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## Transfer Standard Flow Calibrator and Prover System



The Transfer Standard (TS) Flowmeter Calibration and Proving System offers an ideal blend of high performance and low cost. It relies on accurate Master flowmeters which are used as standards against which other Liquid or Gas flowmeters are being tested.

The TS concept affords a high degree of portability and is equally well suited to be used in a laboratory or in-situ as an in-line proving system.

With the miniature Condat data acquisition hardware, which communicates via serial port with a laptop PC (any desk top PC can be used as well), this is truly a portable flow calibrator which can literally be carried in a suitcase.

The tried and proven CFlow+ LabView/Windows based data acquisition operating software ensures optimal man-machine interface and ease of operation.

Traceability to National and International Standards (PTB, BNM, NIST) is easily maintained through the use of appropriately calibrated master meters.

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## Data Acquisition Features

Our **CFlow+**, LabVIEW/Windows-based, Flow Calibration software is used. This is a visual, natural and easy to use interface for any flow calibration environment.

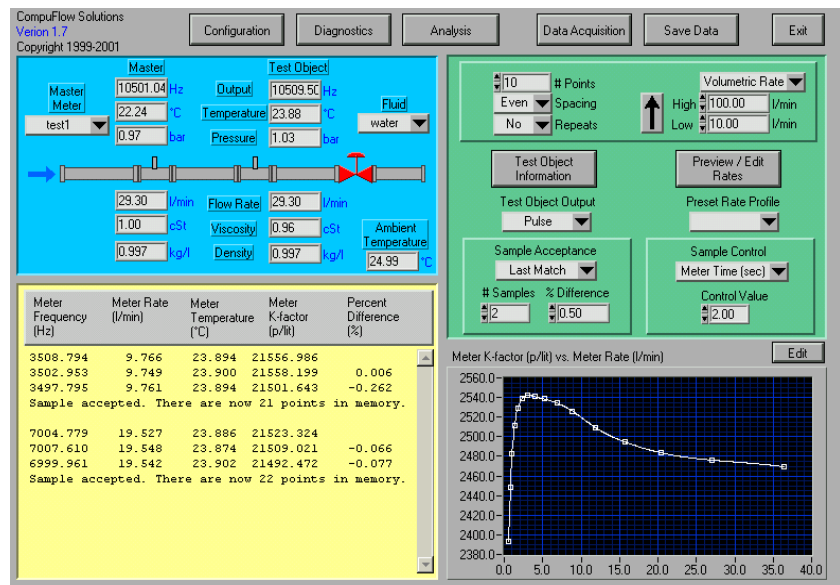
**CFlow+** is the culmination of years of effort and extensive testing to ensure a simple and intuitive user interface behind which the most accurate flow calculation algorithms operate seamlessly and efficiently.

On the Data Acquisition User Interface all crucial information is readily viewable on a single screen.

In the process mimic (upper left), the values of all critical parameters can be viewed at a glance.

The calibration settings (upper right) configure the software to automatically select and record the desired flowrates in any sequence.

As data are collected, they can be observed in realtime in numerical as well as graphical forms (bottom).



Calibration files are stored in spreadsheet compatible format for easy importation into other programs and customization.

Cubic Spline curve fitting is employed for compensation for the non-linearity of master meters for optimal accuracy.

Density correction for mass flow applications is a standard feature.

Viscosity correction based on UVC (Universal Viscosity Curve), Reynolds Number as well as Roshko and Strouhal Number methods are included.

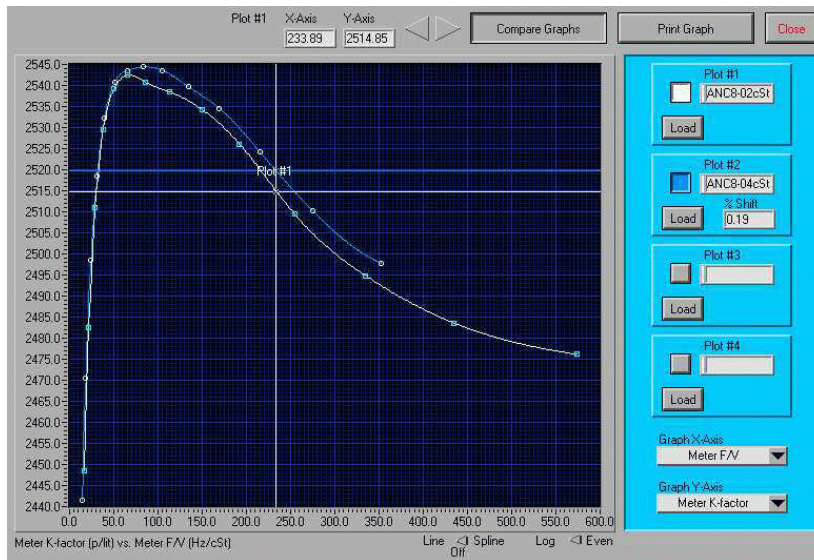
Our exclusive UVC Editor utility is used to simplify the generation of UVC turbine flowmeter master meter files

Dual Master meter capability is built in. Drift in the performance of the master flowmeters can be immediately detected alerting the operator that the master meter needs to be re-calibrated.

Both Liquid and Gas calibrations can be performed. Temperature correction is used for changes in viscosity and density of liquids. Pressure correction adds capability for compensation of the effects of compressibility (deviations from the ideal gas law) in gas applications.

## Advanced Analysis tools

The Analysis portion of **CFlow+** displays calibration data in a wide assortment of formats. Advanced graphical presentations of a multitude of variables can easily be generated.



Multiple graphing capability allows for easy comparison of historical data and evaluation of process changes over time.

Editing routines are built in and kept under password control.

Reports in a wide variety of configurations can be printed with the push of a button

## Hardware Features

The TS Calibrator hardware has been designed to be accurate and robust with a standard Notebook or Desktop PC serving as control console.

- **Digital and analog (12 or 16 bit) signal processing** is performed within the hardware interface unit which communicates with the PC via serial link. It has built in capability to accept input from any flowmeter or transducer that generates frequency (TTL) or analog (0-5 VDC or 4-20 mA) output.
- **Smart Cables** (with built-in amplifiers) are available for flowmeters with non-TTL compatible frequency outputs (Magnetic, Modulated Carrier, etc.).
- **Double Chronometry** is employed as a method to eliminate timing errors and improve overall accuracy.
- **Temperature inputs** available for flow rate correction:
  - Ambient Temperature
  - Calibrator Temperature
  - Meter Under Test Temperature
- **Pressure inputs** available for flow rate correction:
  - Calibrator Pressure
  - Meter Under Test Pressure
- **Portable** and lightweight configurations available for in-situ proving of flowmeters in the field.



## Flow Meter Input capability

Practically any flowmeter can be calibrated or used as a Master meter.

### Master meters

Frequency generating (\*) volumetric or mass  
(Turbines, Coriolis, Vortex, etc.)

Analog (\*\*) mass or volumetric  
(Sonic Nozzles, LFEs, Thermal Mass,  
DP, etc.)



### Meters under test

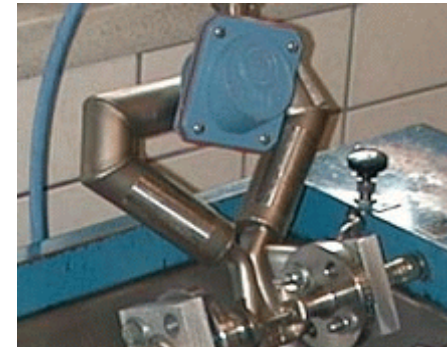
Frequency generating (\*)

Analog (\*\*)

Visual (rotameter, etc.)

\* TTL or 0-10 V pulse.  
For other types (Magnetic, Modulated Carrier,  
etc.) Smart Cables are used.

\*\* 4-20 mA (6 channels) and/or 0-5/0-10 VDC (2  
channels)



## Specifications

The TS system inherently offers immense flexibility since different types of master meters can be selected to optimally match the conditions of the actual process. Our Application Engineers will consult with you to determine the best master meters for your application.

Flow Ranges: Depends on master meter used.  
Practically any type of flowmeter can be used.

Accuracy: As good as  $\nabla$  0.10 % of Reading, depending on the type of master meter used and the application conditions.

Repeatability: As good as  $\nabla$  0.02% of Reading, depending on the type of master meter used and the application conditions.

Pressure Range: Up to 700 bar or more, depending on the type of flow meters used

Temp. Range: Up to 500 °C or more, depending on the type of flow meters used



ISO 9001:2008 CERTIFIED

ISO 17025:2005 ACCREDITED

**For Flow Measurement and Calibration**

[www.trigasfi.com](http://www.trigasfi.com)

