



# Chell GMCS

## Domestic Gas Meter Calibration System

Chell's Gas Meter Calibration Systems are the culmination of over 40 years of experience in gas flow calibration and the design of custom systems.

The GMCS is designed to maximise production calibration throughput of gas meters while achieving calibration laboratory grade uncertainties of measurement.

GMCS variants with changeable meter 'nests' are also offered to support calibration of multiple meter types using a single system.

These systems are built around the specific requirements of your process and gas meter type - Meter position 'nests' are designed specifically to suit your gas meter, to support simple, fast and reliable loading and unloading, as well as leak free operation.

The GMCS meter capacity is configurable on ordering, and in many cases a single GMCS system's throughput can replace or exceed all of a site's current gas meter flow calibration capacity, in a fraction of the floor space.

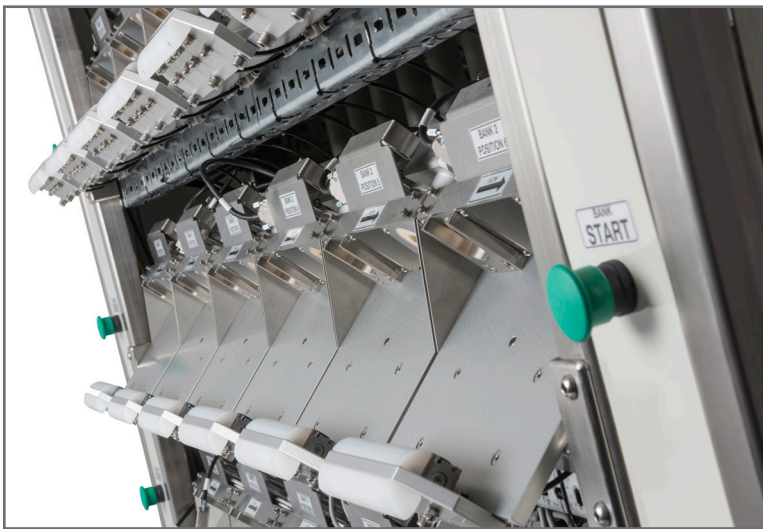
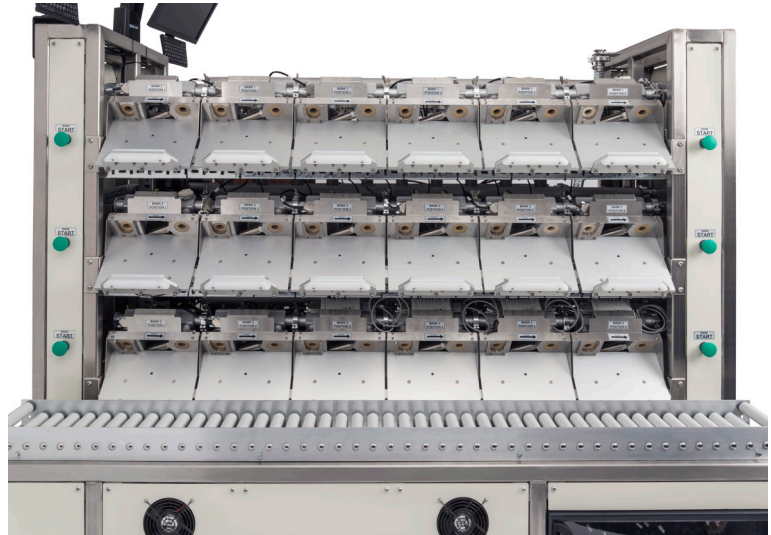
- High accuracy
- High throughput
- Automated operation and data acquisition
- Excellent long-term calibration stability
- Industry regulator approved
- Can be customised for meter type and quantity
- Adaptable designs for simple site integration
- Backed up by full technical support, including staff training and Uncertainty Budget generation
- Built in leak test functionality of both GMCS internals and meters under test.
- No guarding required
- Can be supplied with software tailored to your requirements, or with all information required to integrate into existing site control systems
- Suite of support instrumentation also offered enabling in-house calibration and minimising downtime.



## Principal of Operation

The base flow measurement of the GMCS system is performed using Sonic Nozzles. As well as enabling the very accurate determination of flow rate, sonic nozzles also allow very stable generation of required test flows.

Appropriately sized sonic nozzles are installed to achieve all calibration flow rates required. High accuracy pressure and temperature instrumentation at the nozzle allows calculation of the mass flow through the nozzle.

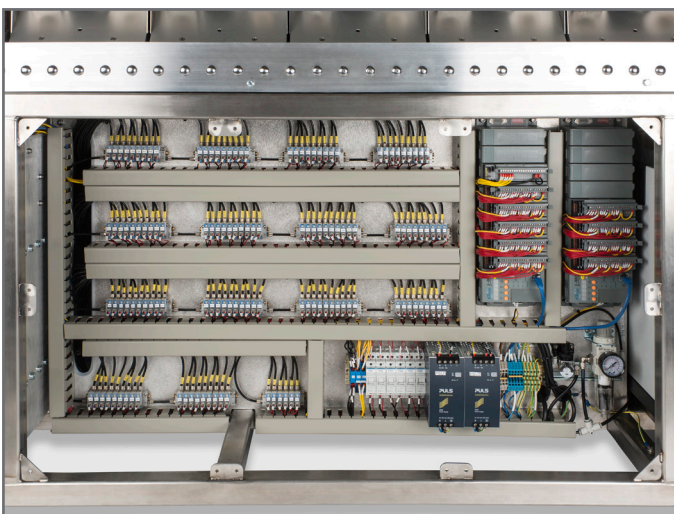


As mass flow downstream of the nozzle is not affected by changes in temperature or pressure, the mass flow rate will be consistent throughout the entire system, including at each meter test position.

Because the gas meters measure volumetric flow, and this is affected by changes in temperature and pressure, high accuracy pressure and temperature instrumentation is built in to each meter 'nest', allowing the calculation of the real time volumetric flow rate at the exact point of interest, the gas meter port. This volumetric flow rate is what is compared to the value reported by the meter.

As multiple sonic nozzles are used, the test meters are loaded in independent sets. The GMCS valves and manifold are multiplexed in such a way that allows each meter set to be running a different flow rate (nozzle) simultaneously, meaning calibration routines can be programmed to cycle through the maximum number of meters in as short a time as possible.

Additional leak test functionality, full technical support, configurability and the considerations made to reliability, ongoing calibration and ease of integration make these GMCS systems an incredibly effective and efficient production calibration system.



GMCS Specifications		
Number of meters	10 to 36	
Achievable uncertainty of measurement	± 0.5% Reading	
Flow range	15 lph to 10,000 lph (0.015m <sup>3</sup> /h to 10m <sup>3</sup> /h)	
Number of flow test points	10	
Example nominal flow test points*	15 lph (±30%) 40 lph (±5%) 80 lph (±5%) 600 lph (±5%) 1200 lph (±5%) 1800 lph (±5%) 4800 lph (±5%) 5400 lph (±5%) 6000 lph (±5%) 7200 lph (±5%)	
* The actual flow achieved will vary in line with atmospheric conditions. The quoted figures are based on conditions of 21.1°C and 101.325 kPa.		
Dimensions (36 position) - LxWxH	1915 x 1275 x 1800mm	
Weight	750 Kg	
Operating temperature range	+5 to+50°C	
Storage temperature range	-20 to+70°C	
Maximum relative humidity	95% at 50°C (non-condensing)	
Warm up time to full accuracy	120 mins	
<b>Services required</b>		
Power	Line voltage	100-200 VAC
	Line frequency	50 to 60Hz
	Consumption	Less than 2200 VA
Vacuum		<30m <sup>3</sup> /h at <100mbar(a)
Compressed air	Clean dry gas	6 to 10bar

## Chell VTS - Volumetric Transfer Standard

The Chell VTS units are designed specifically to act as high accuracy mass and volumetric flow transfer standards, enabling easy and convenient verification of production gas meter calibration systems against your site flow reference.

High accuracy instrumentation and a custom low pressure drop manifold are built into a standard gas meter body, allowing installation onto your gas meter calibration system in place of a standard production meter.



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