

**Flokalglobe® vacuum measurement & control**

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We are ISO 9001: 2000 certified



**Flokalglobe® vacuum measurement and control**

- ✓ Flokalglobe® service "Vacuum measurement and control"!
- ✓ Flokalglobe® products for vacuum measurement and control"!

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ABOUT US

**FLOKAL® - the ultimate resource for:**

- ✓ **MFC's** accessories - **Valves & Accessories** - **Gas-systems & Accessories**;
- ✓ **Thermo-elements** (spike and profile)
- ✓ Gas/Liquid Filtration and Purification & Accessories
- ✓ **Vacuum** measure and control devices

**Flokalglobe® service "Vacuum measurement and control"!**

All microelectronic devices today are developing on the base of vacuum technologies. Only vacuum technologies can provide manufactures of microelectronic devices with necessary level of precision and purities of the process.

Statistics tell us then nearly 70 percent of the process steps in semiconductor industry take place in vacuum. Precise vacuum measurement and control is critical in all thin film processes to ensure the highest level of device quality.

Rapid growing of the modern industry needs more and more precise technologies and equipment. That's why vacuum units are so important for semiconductor processes.

As Flokalglobe is always moves forward in hi-tech direction, so we offer new quality service "Vacuum measurement and control" and we provide our customers with reliable and precise equipments from best world brands in vacuum technologies.

Our Metrological department specialists built new Vacuum measurement and control system (FVMC). Our complete system provides total measurement, diagnostic and control of different types of vacuum equipment in our clean room facilities.

FVMC is based on the Mykrolis capacitance diaphragm gauge (XacTorr™ CDG). Mykrolis CDG provide the highest level of performance in the industry. Patented vacuum sensor design provides superior resistance to contamination in addition to thermal stability. This results in enhanced process stability and minimal maintenance leading to improved device yields and tool productivity.

XacTorr™ CDG is the first truly digital CDG. Several of the XacTorr product's benefits include:

- Total pressure measurement independent of gas composition;
- Advanced digital architecture;
- Multiple temperature ranges for all process conditions: 45° C, 100° C & 160°C;
- Embedded diagnostics;
- Flexible communications interface: Analog 0-10 VDC, RS-485 and DeviceNet™;
- Upgrades for older analog capacitance manometers.



Used as the vacuum gauge of choice for thin-film processes, Capacitance Diaphragm Gauges (CDG) provides accurate total pressure measurement independent of gas composition.

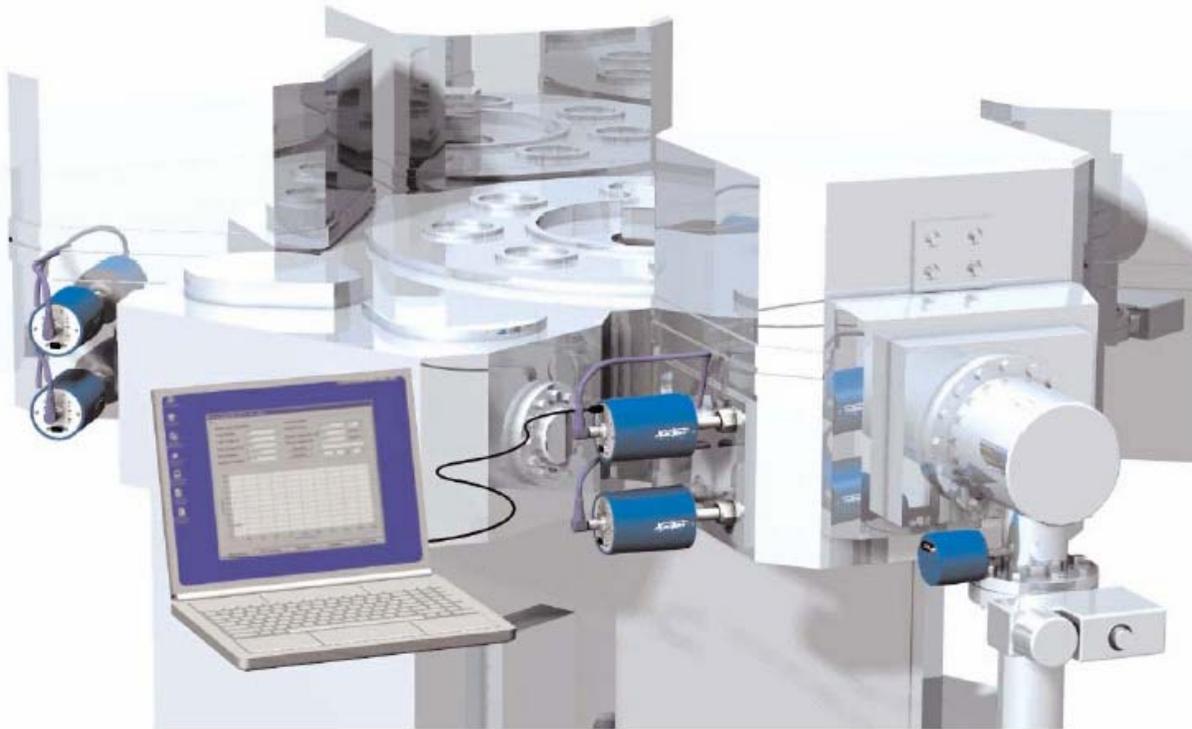
With advances in digital signal processing, the analog CDG has been updated to enable new features, better accuracy, and a reduction in the drift associated with the aging of old-style analog electronics. By combining Mykrolis's patented sensor technology with new ultrastable digital electronics, the XacTorr Digital CDG sets new standards in long-term stability, even in the most aggressive thin-film processes.

XacTorr is offered in multiple operating temperatures for optimum process compatibility, and supports industry standard electrical interfaces, ensuring an upgrade path from legacy analog Capacitance Manometers.

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**Independent Communications and Diagnostic Interface**

The XacTorr's RS-485 diagnostic port provides a unique, independent means of communicating with the gauge without having to "interrupt" tool communications. This allows monitoring and data acquisition capabilities simultaneously with gauge operation, for chamber and tool matching along with "real-time" advanced troubleshooting.

**FlokAl® products for vacuum measurement and control”!**

We also offer a wide range of products from Mykrolis® for vacuum measurement and control. Amongst them:

**AdapTorr® ACX 3200/3400 Series Adaptive Vacuum Controllers**

Stable and repeatable control of the process chamber pressure is critical for uniform etch and deposition rates in Thin-Film processes. The design of the vacuum system, the gas load and position of the vacuum pumps place significant demands on the down stream pressure control system.



The AdapTorr ACX 3000 Series of control electronics and the robust, high-torque MDVX series of "Butterfly-style" Throttle Valves work as a system to deliver precise and repeatable control of the process chamber pressure in Etch and CVD processes. In unison, the Throttle Valve and ACX

Electronics control the effective pumping speed to regulate the chamber pressure, providing consistent down stream pressure control. The AdapTorr ACX Family provides patented multiple control algorithms and up to ten programmable setpoints to accommodate the most demanding of processes. Flexible, user friendly and adaptive to multi-step processes, this system delivers precise and repeatable process pressure control.

**AdapTorr® AC2/AC4/ACR28 Downstream Pressure Control System**



The AdapTorr system is an automated adaptive downstream pressure controller and display module for use with a 0-10 VDC signal, such as a capacitance diaphragm gauge, and a throttle valve. The AdapTorr system is comprised of either the AC2 or the AC4 controller, and the

ACR28 display module. The AC controllers provide power to and read pressure signals from capacitance diaphragm gauges while they control pressure by adjusting the position of the throttle valve between the vacuum pump and process chamber. The AC2's and AC4's advanced features are available via either an RS-232 interface or external relay closures. The companion ACR28 display module offers complete user/system interface in a rack mounted package. The AC2/AC4 controller can also be used as a "buried box" without the ACR28 display module if panel space is at a premium.

**AdapTorr® ACX2200**

**Adaptive Pressure Controllers**

The ACX adaptive downstream pressure controller modules provide state-of-the-art control technology in a small package.



These pressure controllers are unique in utilizing truly adaptive intelligence to adjust pressure without time consuming manual tuning or tedious "learning schemes." There is no need for the operator to tune to a specific operating pressure, flow rate or any other system parameter. For systems with difficult time constants and transfer functions, the AdapTorr ACX provides the flexibility of programmable PID and a PID-learning mode to automatically determine the PID parameters for optimal system performance. Each of the ten setpoints have associated programmable PID values and may be configured for any pressure setpoint. A hybrid mode combines the flexibility of PID with the convenience of the adaptive control. These pressure controllers can accept 0-10 VDC inputs from 2 separate sensors of different ranges. In the case of CDGs, the sensors can be up to three decades apart; this broadens the total dynamic range of pressure control up to seven decades. The AdapTorr ACX is used in conjunction with an MDVX valve to produce a complete closed-loop pressure control system.

**CDH Series Capacitance Diaphragm Gauges**

"Capacitance diaphragm gauge"(CDG) is a term used to describe a pressure measuring instrument which senses the deflection of a diaphragm by means of a change in capacitance between an electrode (or electrodes) and a diaphragm which deflects under forces due to pressure.



CDGs are characterized by high precision, excellent stability and a wide dynamic range. CDGs are reliable replacements for

many other types of vacuum gauges.

The CDH series gauges employ a precision heater and oven which surrounds the sensor assembly. The heater keeps the sensor at a constant 45° C or 80° C so that ambient temperature fluctuations have no effect on the output signal. This high zero stability makes the CDH series an excellent choice for low pressure applications such as highdensity plasma etching and CVD. This heated sensor also helps to minimize deposition of process contaminants inside the CDH series.

**CMH/CMHT Series Capacitance Diaphragm Gauges**

CMH gauges employ a temperature-controlled environment surrounding the mechanical sensor assembly to keep the sensor at a constant temperature above ambient.



This minimizes any fluctuations in the device's output signal so that ambient temperature fluctuations have minimal effect on the output signal. This stability makes the CMH an excellent choice for low pressure applications such as high density plasma etching and CVD. For applications where condensable deposits can present a problem, CMHT gauges are available with a controlled operating temperature of 75°C.

**Intellisys™ Smart Butterfly Valve**

Designed for thin-film processing equipment, the Intellisys Smart Butterfly Valve is a high performance integrated downstream chamber pressure control system that expands Mykrolis's range of advanced process-critical measurement and control products.



Combining a "true adaptive control algorithm" with a direct-drive micro stepped motor and patented closed loop motor feedback, the Intellisys is suitable for both high throughput systems with extremely short process cycles and processes requiring a slower controlled rate of pressure change. By integrating the Digital Signal Processor (DSP) based electronics on to the valve body, the Intellisys SB Series requires 80% less space than traditional separate control box and valve packages. This integrated solution greatly simplifies installation and minimizes cabling.

**MDVX/MDVHX Series  
 Motor Driven Throttle  
 Valves**

Mykrolis's Motor Driven Throttle Valves (MDVX/MDVHX) provide a dependable, cost-effective method to control process pressure. This control is independent of upstream gas flow, thereby establishing process repeatability.



Available in both heated and unheated designs, these valves deliver unmatched performance by providing a wide dynamic range, fast response, and compatibility with virtually all process pumping systems. The MDVX/MDVHX Series "butterfly" throttle valves are designed for accurate, repeatable control of chamber pressures. Pressure control is achieved by the controlled rotation of a throttle plate within the throttle body, sized to fit the particular system. The MDVX/MDVHX shaped throttle plate provides a gradual conductance change as the valve begins to open, as opposed to the abrupt change that can occur with competing designs.

**XacTorr® CMX160  
 Digital Capacitance  
 Diaphragm Gauge**



The XacTorr CMX160 is a compact heated vacuum gauge providing accurate total pressure measurement independent of gas composition. XacTorr's digital architecture delivers improved performance, enables in-situ diagnostics and data logging facilities while maintaining an industry standard analog interface. Designed for demanding thin-film processes such as LPCVD Nitride and Metal-CVD, the XacTorr CMX160 provides superior reliability by combining Mykrolis's patented shielded sensor technology and patent pending digital temperature control, greatly reducing the buildup of process condensable byproducts that lead to process drift and premature failure of the gauge. XacTorr is offered in multiple ranges and supports industry standard electrical interfaces, ensuring an upgrade path from legacy analog Capacitance Manometers.

**XacTorr® Digital  
 Capacitance Diaphragm  
 Gauge**



Used as the vacuum gauge of choice for thin-film processes, Capacitance Diaphragm Gauges (CDG) provide accurate total pressure measurement independent of gas composition. With advances in digital signal processing, the analog CDG has been updated to enable new features, better accuracy, and a reduction in the drift associated with the aging of old-style analog electronics. By combining Mykrolis's patented sensor technology with new ultrastable digital electronics, the XacTorr Digital CDG sets new standards in long-term stability, even in the most aggressive thin-film processes. XacTorr is offered in multiple operating temperatures for optimum process compatibility, and supports industry standard electrical interfaces, ensuring an upgrade path from legacy analog Capacitance Manometers.

**We invite you into the world of our services!**

We provide Products and services for the front end Semiconductor Market (Diffusion/ LPCVD / APCVD / PECVD / MOCVD and epitaxial processes), for Fiber Optical Manufacturing and for various processes in the petrochemical and chemical industry. We focus on product and service excellence. We offer:

**For the semiconductor industry**

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- ✓ LPCVD-PECVD-systems
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- ✓ Spin-coater
- ✓ Hot-plates
- ✓ Temperature controller
- ✓ Clean room equipment
- ✓ Dry &Wet etch & clean
- ✓ Photochemical filtration and dispense systems
- ✓ Thermal control systems
- ✓ Gas systems
- ✓ MFC's & Valves
- ✓ Pressure and Vacuum measurement & control
- ✓ Gas flow standards
- ✓ Gas/Liquid purification and filtration
- ✓ Vacuum products
- ✓ Vacuum inlet and waste gas collision traps
- ✓ Chemical blending and delivery modules
- ✓ Power supply/readout
- ✓ Accredited calibrations (flow, temperature, pressure, geometry)
- ✓ Cleaning, repair and maintenance
- ✓ Automation and Software
- ✓ Humidity sensors
- ✓ Specialty gases, liquids, solids
- ✓ Heating elements
- ✓ Thermocouples
- ✓ Precursor delivery technology
- ✓ Process Analysis
- ✓ Quartz; Tungsten; Molybdenum; Tantalum; Graphite; Platinum; Others

**For the process industry**

- ✓ Gas / liquid flow measurement & display
- ✓ Temperature measurement & display
- ✓ Pressure measurement & display
- ✓ Valve positioners & control valves
- ✓ Level measurement & display
- ✓ Turbidity measurement & display
- ✓ Humidity measurement & display
- ✓ Accredited calibrations (flow, temperature, pressure, level)
- ✓ Process Analytical solutions
- ✓ Automation and Software
- ✓ Flow meters

**For the pharmaceutical industry**

- ✓ Cryotechnology
- ✓ Gas / liquid flow measurement & display
- ✓ Temperature measurement & display
- ✓ Pressure measurement & display
- ✓ Accredited calibrations (flow, temperature, pressure, level)
- ✓ in-line particle analyzers
- ✓ Fluid dispensers & metering pumps
- ✓ Filter and separation systems
- ✓ Process Analytical solutions
- ✓ Automation and Software

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