Unsurpassed advantages of non-intrusive flow measurement with the FLUXUS® F/G 721:

- No pressure interruption – maintenance-free, no need for frequent work in hazardous areas
- Certified for operation within hazardous areas (ATEX, IECEx Zone 2)
- Fast measuring dynamics also capture highly pulsating flows
- Relatively measurements even of slurries, liquids with gaseous entrainment or gas-entrained liquids
- High operational safety with no risk of leaks
- Independent of pipe material, diameter, wall thickness and internal pressure
- Accurate and repeatable measurement readings – even at extremely low flow rates (high turndown ratio)
- Highly cost efficient in comparison to wired instrumentation

Unique features of the FLUXUS® F/G 721:

- Highly accurate and reliable volume and mass flow measurement of liquids and gases as well as thermal energy
- Accurate and reliable measuring data are built-in hybrid/hybrid mode even of particulate or gas-entrained liquids
- Virtually free of wear and tear with maintenance required due to measurement outside the pipe wall
- Every measurement system is pre-calibrated in-house (traceable to national standards) and delivered with a calibration certificate

Technical facts

- Measurement uncertainty (dynametric flow rates):
  - FLUXUS® F/G 721 (liquids): ± 1% of reading ± 0.005 m/s
  - FLUXUS® G721 (gases): ± 1 ... 3% of reading ± 0.005 m/s
- Transmitters:
  - FLUXUS® F/G 721
  - ATAC/ACCA Zone 2, PM Class 1 / Div 2 available
- Power supply:
  - FLUXUS® F721: 100 – 230 V AC, 24 V DC, 12 V DC
  - FLUXUS® G721: 2 – 20 mA active / passive, 2 – 20 mA HART active / passive, pulse, frequency, binary
- Inputs:
  - FLUXUS® F/G 721: P/P, P/I, I/P, D/I, – 20 mA active / passive, binary, linear
- Digital communication:
  - FLUXUS® F/G 721
  - Modbus RTU/ASCII, Bacnet MSTP/IP, M-Bus, Profinet II, Foundation Fieldbus
- Available transducers:
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- Available transducers:
  - FLUXUS® F/G 721
  - ATAC/ACCA Zone 2 (Zone 1 Class 1 / Div 2)
The FLUXUS® F/G721 is a technological breakthrough in the ultrasonic flow measurement of liquids and gases. With its new hardware design and improved, powerful digital signal processing it offers any other ultrasonic ultrasonic flowmeter in terms of accuracy, reliability and versatility. Highly sophisticated signal filters, faster than ever before processing capacities and substantially improved measurement algorithms make the FLUXUS® F/G721 a state-of-the-art measuring solution even for the most challenging applications.

**Oil & Gas**

From refineries to the gas station - everything is flowing. For the safe and efficient operation of the multitude of processes in production, transport and storage, all these flows need to be monitored. Environmental challenges and legal regulations require tight process monitoring and high diagnosis and thus the highest demands on measuring equipment. FLUXUS® F/G721 excel, where others fail. Fluid measurement is often located inside the pipe and is subject to wear and tear. In conjunction with the patented WaveMover® mounting fixture, FLUXUS® F/G721 offers an unparalleled volumetric flow measurement in an unrivalled temperature range from -170°C up to 400°C. Due to its high accuracy and robustness, the FLUXUS® F/G721 provides reliable measurements even in the most demanding applications such as the measurement of pulsating flows (e.g. mining applications) high solid / gaseous contents or on lines carrying highly aggressive media. As the FLUXUS® F/G721 can also be used for non-intrusive media monitoring it is the ideal solution even for low turbulence.

**Water & Wastewater**

Withstand of water usually begins at wells, reservoirs and large water tanks. Pipes with large nominal diameters also mean high costs for welding instrumentation and for installation work. FLUXUS® F/G721 offers exceptionally precise bidirectional flow measurement over a wide turndown range, which is especially important when capturing very low level or off-peak times for load control. FLUXUS® F/G721 measure independently of the pipe materials and materials. Its advanced technology allows for non-intrusive flow measurement even on pressurised concrete cylinder pipes (PCCP) which may be several meters in diameter. Due to its built-in hybrid Track system, wastewater stations with high speed / pressure contents can also be precisely monitored.

**Chemical Industries**

Modern, automated chemical plants form highly integrated systems of complex energy flows. Safety takes top priority. Continuous monitoring of all relevant process parameters is essential for fault-free operation. FLUXUS® F/G721 measure from the safe side - the outside of the pipe. The principal advantage of non-intrusive flow measurement is obvious: no sensor interference by the medium flowing inside the pipe, no risk of liquid leakage or fugitive gas emissions, no pressure loss and, above all, uncompromising reliability.

**Other Industries**

The FLUXUS® F/G721 is the ideal solution to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiency of an industrial heat exchanger, non-intrusive measurement never affects the safe supply in any way. With its proven reliability, even in low gas flows and high microparticulates, FLUXUS® F/G721 is the perfect tool to measure the gas flow rates in the gigantic headrace pipeline of a hydro power plant or even in the primary circuit of a nuclear power plant. FLUXUS® F/G721 stands for absolutely reliable flow measurement without any compromises to safety. In combination with the WaveMover® FLUXUS® F/G721 also enable non-intrusive flow monitoring in highly aggressive, also concentrated solar power plants. Another typical application is the flow measurement near of hot boiler flues and the identification of asymmetrical flows close to drawn lines of combined cycle power plants.

**Energy Efficiency**

Energy counts. In every respect. Energy is a key factor for human life, work and economy. Saving energy pays off. FLUXUS® F/G721 Energy is the ideal solution to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiency of an industrial heat exchanger, non-intrusive measurement never affects the safe supply in any way. With its proven reliability, even in low gas flows and high microparticulates, FLUXUS® F/G721 Energy is particularly suited to accurate measurement of energy consumption in climatic conditions or for monitoring the efficiency of an industrial heat exchanger. Non-intrusive measurement never affects the safe supply in any way.

**Power**

Safe operation and security of supply are essential in power generation. Therefore it is clear: it better not to touch the pipe. This is what FLUXUS® F/G721 Energy offers. Fluid measurement flow rates in the gigantic headrace pipeline of a hydro power plant or even in the primary circuit of a nuclear power plant. FLUXUS® F/G721 Energy is the ideal solution to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiency of an industrial heat exchanger, non-intrusive measurement never affects the safe supply in any way.

**Ready for Industry 4.0**

The FLUXUS® F/G721 series comes with all common communication protocols (HART, Modbus, Foundation Fieldbus, Profinet) and M-Bus allow indirect field connection, parameterisation and online diagnostics. Further special configurations guarantee optimal customisation to the individual applications. The FLUXUS® F/G721 is also easy to operate and supports of user guidance and diagnostics. It can be easily parameterised via USB. It is Ethernet capable and provides additional bidirectional communication capabilities.

**Pushing the Boundaries**

FLUXUS® F/G721 offers non-intrusive flow measurement of virtually any kind of liquid or gas, from the smallest tubing to the largest penstock, independent of the pressure inside the pipe and over a very large temperature range. Due to its advanced technology, the measurement is unaffected by solid or gaseous entrainments or gas wetness and distinguishes itself by its unrivalled turndown ratio: Even low flows down to only a few liters per hour can be measured. This means, that gaseous entrainments or gas wetness is also possible to compensate for perturbations such as beam dispersal and turbulence. Substantially improved measurement algorithms make the FLUXUS® F/G721 the perfect tool to measure the gas flow rates in the gigantic headrace pipeline of a hydro power plant or even in the primary circuit of a nuclear power plant.

**Energy Counts**

Energy counts. In every respect. Energy is a key factor for human life, work and economy. Saving energy pays off. FLUXUS® F/G721 Energy is the ideal solution to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiency of an industrial heat exchanger, non-intrusive measurement never affects the safe supply in any way. With its proven reliability, even in low gas flows and high microparticulates, FLUXUS® F/G721 Energy is particularly suited to accurate measurement of energy consumption in climatic conditions or for monitoring the efficiency of an industrial heat exchanger. Non-intrusive measurement never affects the safe supply in any way.
Unrivalled advantages of non-intrusive flow measurement with the FLUXUS® F/G721:

- No process interruption - maintenance-free (no need for frequent work in hazardous areas)
- Certified for operation within hazardous areas (ATEX, IECEx Zone 2)
- Fast measuring dynamics also capture highly pulsating flows
- Reliable measurements even of slurries, liquids with gaseous entrainment or even getting big (up to 5%)
- High operational safety with no risk of leaks
- Independent of pipe material, wall thickness and internal pressure and temperature
- Accurate and repeatable measurement readings - even capturing low flow rates (high turndown ratios)
- Highly cost efficient in comparison to other technologies
- Accurate and reliable measurement even of built-in hybrid/F721 mode over particle loaded or gas entrained liquids
- Virtually free of wear and tear with no maintenance required due to measurement outside the pipe wall
- Every measurement system is pre-calibrated in-factory (traceable to national standards) and delivered with a calibration certificate
- Matched transducers, integrated temperature compensation (according to ANSI/ASME MFC-5.1-2011 regulations) and digital signal processing
- Permanent coupling guarantees even under varying internal pressure and temperature
- Digital communication as well as remote parameterization and diagnostic capabilities

Unique features of the FLUXUS® F/G721:

- Highly accurate and reliable volume and mass flow measurement of liquids and gasses as well as thermal energy
- Accurate and reliable measurement even of particle loaded or gas entrained liquids
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- Every measurement system is pre-calibrated in-factory (traceable to national standards) and delivered with a calibration certificate
- Matched transducers, integrated temperature compensation (according to ANSI/ASME MFC-5.1-2011 regulations) and digital signal processing
- Permanent coupling with unique contact pads, transmitting secure measurement between transmitter and receiver in pipe submersion or even outside
- Digital communication as well as remote parameterisation and diagnostic capabilities

FLUXUS® is an active leader in many areas of process instrumentation. As a worldwide pioneer in the non-intrusive flow measurement of liquids and gasses, FLUXUS has been leading the way in ultrasonic clamp-on flow metering for more than 25 years. In addition to non-intrusive flow measurement, FLUXUS specializes in innovation online process analysis using ultrasonic technology and refractometry. Year after year, the Berlin-based company continues its substantial investment in research and development in order to maintain and further improve its position as an industry leader. In keeping with its core principles, FLUXUS aims to develop products that meet and exceed customer and industry needs.

The FLUXIM Commitment to Customer Service

FLUXIM considers itself not only a manufacturer of measuring instruments, but also a provider of technical and consulting services. These services include on-site measurements, laboratory analysis, project-handling, training, commissioning, instrument rental and consulting services. The company’s focus and dedication is directed towards providing the highest quality equipment with the best service and support possible. Our aim is to set standards in all what we are doing.
The FLUXUS® F/G721 is a technological breakthrough in the ultrasonic flow measurement of liquids and gases. With its non-intrusive design and improved, powerful digital signal processing it surpasses any other non-intrusive ultrasonic flowmeter in terms of accuracy, reliability and robustness.

Highly sophisticated signal filters, faster than ever processing capacities and substantially improved measurement algorithms make the FLUXUS® F/G721 a state-of-the-art measuring solution even for the most challenging applications. The measurement is unaffected by structure-borne noise, allowing for even more precise and reliable measurements. Extensive fault measurement cycles allow for real time monitoring of highly dynamic processes.

Pushing the Boundaries

FLUXUS® F/G721 offers non-intrusive flow measurement of virtually any kind of liquid or gas, from the smallest tubing to the largest penstock, independent of the pressure inside the pipe and over a very large temperature range. Due to its advanced technology, the measurement is unaffected by solid or gaseous entrainment or gas weld and distinguishes itself by its univalued turndown ratio. Even low flows down to only a few liters per hour can be reliably measured.

As the flowmeter of choice for a very wide range of applications in virtually any industrial sector, the FLUXUS® F/G721 is available with two different enclosure structures: aluminium housing for standard applications and stainless steel housing for operations in highly corrosive environments. The stainless steel housing can be used for explosion hazard areas (e.g. for refinery applications). Due to its sophisticated signal processing, the FLUXUS® F/G721 provides reliable measurement even in the most demanding applications such as the measurement of cavitation flows, extreme velocity contents or on lines carrying highly abrasive fluids. As the FLUXUS® F/G721 can also be used for non-intrusive leak detection, it is the ideal solution meter for leak benchmarking.

Chemical Industries

Modern, integrated chemical plants form highly complex networks of mass and energy flows. Safety takes top priority. Continuous monitoring of all relevant process parameters is essential for fault free operation. FLUXUS® F/G721 measures from the safe sites - the outside of the pipe. The practical advantages of non-intrusive measurement are obvious: no wear and tear by the medium flowing inside the pipe, no risk of liquid leakage or fugitive gas emissions, no pressure loss and, above all, unimpeded availability.

Versatile Applications

Oil & Gas

From worldwide gas stations — everything is flowing. For the safe and effective operation of the multitude of processes in oil exploration, production, treatment and transport, all these flows need to be in constant, steady envelopes, challenging process conditions and highly dynamic flows reaching the highest demands on measuring equipment.

FLUXUS® F/G721 solves, where others fail. Flow measurement far outside the pipe is independent of the pressure inside and not subject to wear and tear. In combination with the patented WAVE-HEX® measuring head, FLUXUS® F/G721 is an unmatched and unrivalled flowmeter from 20 l/min up to 40°C degrees (for rotary applications). Due to its univalued turndown ratio, the FLUXUS® F/G721 provides reliable measurement even in the most demanding applications such as the measurement of cavitation flows, extreme velocity contents or on lines carrying highly abrasive fluids. As the FLUXUS® F/G721 can also be used for non-intrusive leak detection, it is the ideal solution for leak benchmarking.

Water & Wastewater

Withdrawal of water usually begins at wells, reservoirs and large water tanks. Piping with large nominal diameters also mean high costs for welding instruments and for installation work. This is not the case with FLUXUS® F/G721. Moreover, the FLUXUS® F/G721 offers exceptionally precise bidirectional flow measurement over a wide turndown range, which is especially important when capturing flow/rotation at off-peak times for back control.

FLUXUS® F/G721 measures independently of the pipe diameter and material. Its advanced technology allows for non-intrusive flow measurement even on compressed concrete cylinder pipes (CPVC) which may be subjected to high pressure. Due to its built-in hybrid evaluation, wastewater stations with high head and strong contents can also be precisely monitored.

Energy Efficiency

Energy counts. In every respect. Energy is a key factor for human life, work and economy. Saving energy pays off. The FLUXUS® F721 Energy is the ideal solution to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiencies of an industrial heat exchanger, non-intrusive measurement never affects the safety supply in any way. With its proven reliability for low flows and high accuracy, FLUXUS® F/G721 can be applied on high flow rates and high temperature ranges, such as in district heating networks or for monitoring the efficiency of an industrial heat exchanger. FLUXUS® F721 Energy is particularly suited to accurate measurement of energy consumption in climatisation systems. With regard to gases, the FLUXUS® F721 is the perfect tool to reduce the consumption of costly compressed air - non-intrusively without any potential for failure issues.

Power

Safe operation and security of supply are essential in power generation. Therefore it’s clear that better is better - both on the pump. That’s where FLUXUS® F/G721 becomes crucial. If your application has flow measurement requirements in the gigawatt range, a perfect solution for the solution power plant or even the primary circuit of a nuclear power plant. FLUXUS® F/G721 offers absolutely reliable flow measurement without any compromise to safety. In combination with the WAVE-HEX® measuring head, FLUXUS® F/G721 is the ideal tool to tap energy efficiency potentials non-intrusively, in HVAC applications as well as in industrial processes. Whether it is used for thermal power measurement in district heating networks or for monitoring the efficiencies of an industrial heat exchanger, non-intrusive measurement never affects the safety supply in any way. With its proven reliability for low flows and high accuracy, FLUXUS® F/G721 can be applied on high flow rates and high temperature ranges, such as in district heating networks or for monitoring the efficiency of an industrial heat exchanger. FLUXUS® F721 Energy is particularly suited to accurate measurement of energy consumption in climatisation systems. With regard to gases, the FLUXUS® F721 is the perfect tool to reduce the consumption of costly compressed air - non-intrusively without any potential for failure issues.

Other Industries

The application range of FLUXUS® is vast. The non-intrusive measurement principle also plays out in the food processing, beverage industries, such as in the pharmaceutical, food, beverage or in the semiconductor industries. By measuring from outside of the pipe wall, back analysis can be achieved of industrial processes. The FLUXUS® F/G721 can be used for flow measurement in highly corrosive gases and liquids. Different application fields include the measurement of mineral slurries or acid-loaded media. Other applications include the measurement of highly corrosive – acid-loaded media. The FLUXUS® F/G721 is the perfect tool for the measurement of highly corrosive – acid-loaded media.
The FLUXUS® F/G721 is a technological breakthrough in the ultrasonic clamp-on flow measurement of liquids and gases. With its new hardware design and improved, powerful digital signal processing it offers any other non-intrusive ultrasonic flowmeter in terms of accuracy, reliability and versatility.

Highly sophisticated signal filters, faster than ever processing capacities and substantially improved measurement algorithms make the FLUXUS® F/G721 a state-of-the-art measuring solution even for the most challenging applications and system requirements, as well as for highly variable and highly dynamic conditions and for compensation of perturbations such as turbulence and flow-induced disturbances. Extreme fast measurement cycles allow for real-time monitoring of highly dynamic processes.

Pushing the Boundaries
FLUXUS® F/G721 offers non-intrusive flow measurement of virtually any kind of liquid or gas, from the smallest tubing to the largest penstock, independent of the pressure inside the pipe and over a very large temperature range. These flow rates need not include the most extreme weather challenges and the most extreme environmental conditions and for compensation of perturbations such as turbulence and flow-induced disturbances. Extreme fast measurement cycles allow for real-time monitoring of highly dynamic processes.

Setting Standards
FLUXUS® F/G721 excels where others fail. Flow measurement from outside the pipe is independent of the pipe size and not subject to wear and tear. In conjunction with the patented WaveInjector® mounting fixture, FLUXUS® G721 is an uncompromising ultrasonic flowmeter with an unrivalled temperature range from -10°C to +185°C (backup application). Due to its unique mounting principle, the FLUXUS® F/G721 provides reliable measurement even in the most applications such as the measurement of pulsating flows with solid/gaseous inclusions or on lines carrying heavily moisturized gas. As the FLUXUS® F/G721 can also be used for non-intrusive media monitoring it is the ideal solution even for Tartanic challenges.

Ready for Industry 4.0
The FLUXUS® F721 comes with all common communication protocols (HART, Modbus Foundation Fieldbus, Profibus PA and Modbus) and fieldbus technology, parameterisation and online diagnostics. Further special configurations guarantee optimised customisation to the individual applications. The FLUXUS® F/G721 is also easy to install and demonstrates user guidance and diagnostics. It can be easily parameterised via USB. Ethernet connectivity adds additional advanced communication capabilities.

Reliable - Safe Efficient
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- Certified for operation within hazardous areas (ATEX, IECEx Zone 1, Zone 2)
- Fast measuring dynamics also captures highly pulsating flows
- Reliable measurements even of very low flows
- High operational safety with no risk of leaks
- Independent of pipe material, wall-thickness and internal pressure and temperature
- Removable measurement readings - even at extremely low flow rates (high turndown ratio)
- Highly cost efficient in comparison to wetted instrumentation

Technical facts

Measurement uncertainty (absolute flow rate):
FLUXUS® F/G 721 [l/s]: ± 1% of reading ± 0.005 m/s
FLUXUS® F/G 721 [m³/h]: ± 1% of reading ± 0.005 m³/h

Transmitter

Examination protection:
FLUXUS® F/G 721 ATEX (gas)/IECEx Zone 1/Zone 2
Power supply:
FLUXUS® F/G 721: 10...230 V AC, 24 V DC, 12 V DC

Inputs:
FLUXUS® F/G 721: 4-20 mA active/passive, 4-20 mA HART active/passive, pulse, frequency, binary

Outputs:
FLUXUS® F/G 721: Modbus RTU/TCP, BACnet MSTP/IP, M-Bus, Hybrid M-BUS, Foundation Fieldbus

Unique features of the FLUXUS® F/G 721:

- Highly accurate and reliable volumetric and mass flow measurement of liquids and gases as well as thermal energy
- Accurate and reliable measuring even at extremely low flow rates (high turndown ratio)
- Highly cost efficient in comparison to wetted instrumentation

The FLUXUS Commitment to Customer Service

FLUXIM considers itself not only a manufacturer of measuring instruments, but also a provider of technical and consulting services. These services include on-site measurements, laboratory analysis, project planning, training, commissioning, instrument rental and consulting services. The company’s focus and dedication is directed towards providing the highest quality equipment with the best support and service possible. Our aim is to set standards in all what we are doing.

FLUXIM is an active leader in many areas of process instrumentation. As a worldwide pioneer in the non-intrusive flow measurement of liquids and gases, FLUXIM has been leading the way in ultrasonic clamp-on flow metering for more than 25 years. In addition to ultrasonic flow measurement, FLUXIM operates in innovation driven process analysis using ultrasonic technology and refractometry. Year after year, the Berlin-based company continues its substantial investment in research and development in order to maintain and further improve its position as an industry leader. In keeping with its core principles, FLUXIM offers customer feedback very seriously. Every generation of FLUXIM products is directly driven by customer and industry needs.

For more detailed information please download the Technical Specifications here: www.flexim.com.