



GUIDANT

# Sening® MultiFlow

Tank truck electronic register and meter



# Sening MultiFlow



## Features

- Developed for delivery of heating oil, diesel, kerosene, gasoline, biofuels, and liquefied petroleum gas (LPG)
- Complements the Sening and Smith Meter positive displacement (PD) meters, as well as other measuring systems
- Manages up to 30 products, each with four correction factors
- 23 language versions available (English and two additional languages; supports Western and Eastern European characters as well as Cyrillic characters)
- Offers price entry for measured products invoicing
- Provides optional currency and tax rate configuration
- Stores data for the 100 most recent deliveries
- Controls additive injection by using the Sening additive pump
- Can be expanded with other Sening components using controlled area network-BUS technology (I/O- and sensor interface as well as wireless overfill prevention, and MultiControl
- Transmits data by open Sening EMIS interface

**Sening MultiFlow is a state-of-the-art electronic register that incorporates Sening's best practices gained from many years of experience in electronic measurement systems development.**

Sening has been developing and producing tank truck products for over 100 years. Today, Sening offers innovative and customer-oriented solutions in the field of tank truck equipment.

Sening MultiFlow is an electronic register that delivers exact volumetric measurement by implementing correction factors and compensation tables embedded in its software.

Developed per the Organisation Internationale de Métrologie Légale (OIML) directive, the Sening MultiFlow fulfills the legal requirements of the Office of Weights and Measures.

MultiFlow is an important part of the Sening tank truck measurement system, which corresponds with the European Measuring Instrument Directive 2004/22/EC (MID).

The MultiFlow is the ideal electronic register for tank trucks in the petrochemicals industry, particularly when it comes to measurement for heating fuel, service station, and aircraft refueling deliveries.

The MultiFlow is optimally adapted for metering systems such as Sening GMVT 805 or GMVZ 1004 and the Smith Meter T11, T20, and T40 Series.

With the added remote control feature MultiControl, the MultiFlow can also be operated remotely, thereby saving time and distance for the operator and increasing safety during the delivery process as a result of the emergency off function on the control unit.

In combination with the data communication interfaces Sening EMIS 2 or EMIS 4, the MultiFlow can be connected to office software either with an OBC or directly via general packet radio service (GPRS)/general system for mobile (GSM).

## Benefits

- Field-proven hardware with over 14,000 units in the field worldwide
- Modular system with versatile expansions
- 30 different manageable products with four meter factors for each product
- Faster-than-light (FTL) data communication
- Different operator and print report languages available
- Sensor and additional input/output (I/O) interfaces

## Monitoring

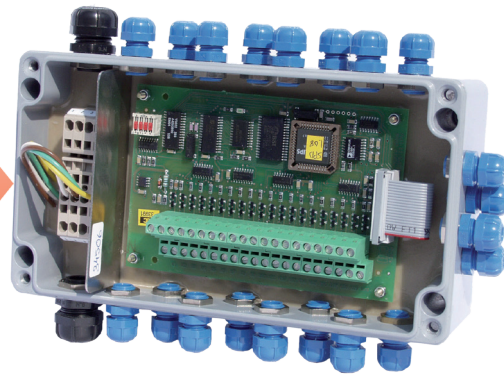
A sensor interface allows MultiFlow to perform additional monitoring functions to reduce product loss. The following truck components can be monitored:

- Manlid
- Foot valve
- Line valve
- API coupling
- Cabinet door

## Input and Output Expansion

An input and output expansion is available for applications that require additional control outputs, such as:

- Selection of multiple additive storage tanks
- Foot valve
- More than two discharge hoses
- Others



## MultiFlow Technical Data

### Electrical Connection

- 15-30 volts
- 1.5 amp maximum

### Pulse Input

12 volts, two-channel encoder (positive negative positive (pnp) or negative positive negative (npn) signal output)

### Pulse Frequency

10 kilohertz (kHz) maximum

### Outputs

Seven 12 volts/500 milliamps (mA) switch outputs are electronically fused against short circuits

### Inputs

Four intrinsically safe model for switch contacts as per Eex ib IIB

### Temperature Sensor

Pt 100 as per IEC 7511/3 DIN class B

### Communication

RS-232/RS-485 controller area network (CAN bus)

### Operating Temperature

-25 to 55 °C

### Protection Class

Ingress protection (IP65)

### Dimensions

#### Explosion-proof housing

Display: 240 wide (W) by 85 high (H) by 160 mm deep (D)

Main unit: Diameter (Ø) 150 by 275 mm

Junction box: 170 W by 130 H by 90 mm D

#### General purpose enclosure

240 W by 120 H by 160 mm D  
(9.5 W by 4.7 H by 6.3 in D)

#### Weight: Measured in kilograms (kg)

Explosion-proof enclosure: 12 kg  
General purpose enclosure: 4 kg

# Sening MultiControl—Remote Control and Overfill Prevention

Sening MultiControl is a combination of a remote control and wireless overfill prevention system with a number of control and display functions.

## Remote Control

MultiControl enables tank truck operators to control the discharge process from the remote position at the customer's tank. The remote control unit offers multiple wireless operating features and benefits.

In combination with the electronic register Sening MultiFlow, multiple functions can be controlled and displayed on the remote control unit such as flow rate and discharged volume.

## Overfill Prevention

The wireless overfill prevention amplifier, MultiControl, is plugged into the socket for the thermistor-type overfill sensor. An extension cable is available for difficult connection positions which guarantees full functionality even under the most difficult conditions.

The operating status is displayed on the wireless overfill prevention operational (OP) amplifier using light-emitting diodes (LEDs) and transferred to the MultiControl base station. The base station permanently monitors the wireless connection with the OP amplifier and controls the discharging process. On reaching the maximum fill level in the tank, the overfill prevention system automatically stops the discharge.

MultiControl automatically switches between wireless and cable mode when detecting a cable being connected to the overfill sensor.

## Benefits

- Easy-to-operate, lightweight remote controller
- Highly reliable
- Large transmission range
- Long battery life
- Integrated torch
- Flexible handling as result of additional cable connection in the event of difficult wireless connections
- Integrated overfill prevention amplifier with automatic detection, when using an overfill prevention cable, increases system flexibility and enables operation in rough environment

## Features

- Engine start and stop
- Discharge start and stop
- Starts, pauses, or stops the discharge process
- Ends the discharge process and switches off the engine
- Engine speed adjustment
- Optimal control of the pump capacity through the infinitely adjustable engine speed
- Discharge volume entry
- Hose reel control for winding and unwinding of the hose
- Dead man function:
  - The operator has to regularly activate a button when the discharge is in process
  - The dead man switch is automatically operated to stop the discharge in case the operator becomes incapacitated
  - The event is stored as an entry in the system log book



# Sening ASE—Overspill Prevention Amplifier

The Sening ASE overspill prevention amplifier meets the requirements of TRbF (Technical Rules for Flammable Liquids) 512 and is approved for connection with overfill prevention systems according to TRbF 511. The filling safety enhancer can also be used with vehicles fitted with MultiControl.

Its ATEX approval means it can be installed in road tankers with Zone 1 approval.

The Sening filling safety enhancer replaces the previous models ASE-E-MF or ASE-E-MV and ASE-D-MF or ASE-D-MV.

## Benefits

- Visual display of operating status
- Small and lightweight
- Based on the proven technology of the Sening overspill prevention amplifier
- Frequency input for connection to the Sening MultiFlow
- Can be used with a separate solenoid valve

## Technical Data

### Dimensions

177 W by 57 H by 80 mm D

### Weight

Approximately 800 grams (g)

### Approval

ATEX Ex 2 II (1)  
2G Ex mb eb (ia) IIB T4

### Power Supply

15-30 volts

### Temperature Range

-25 to 50 °C

### Order Number

ASE

### Accessories

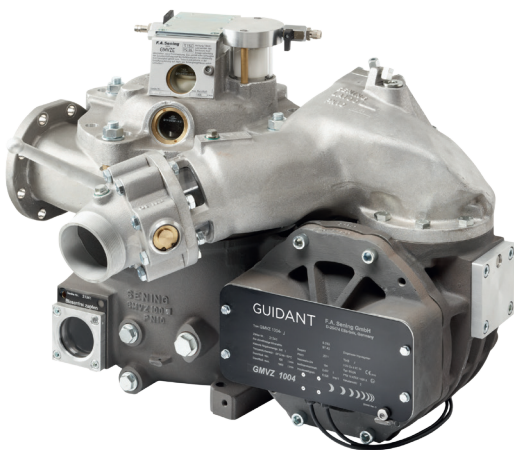
Solenoid valve—model number MV-ASE-DE



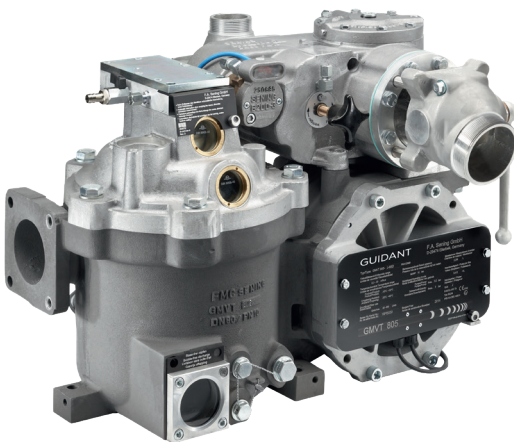
# MID-Approved Metering System

In combination with the MultiFlow electronic register, Sening's metering packages combine the highly precise Smith Meter rotary vane PD meter technology with the highly efficient Sening special gas extractor technology into an economical solution for metering hydrocarbon liquids such as fuel oil and gasolines from road tankers.

The gas extractor and meter are combined in one aluminum housing to save space and to reduce weight of the tank truck.



**GMVZ 1004 gas extractor and metering package**

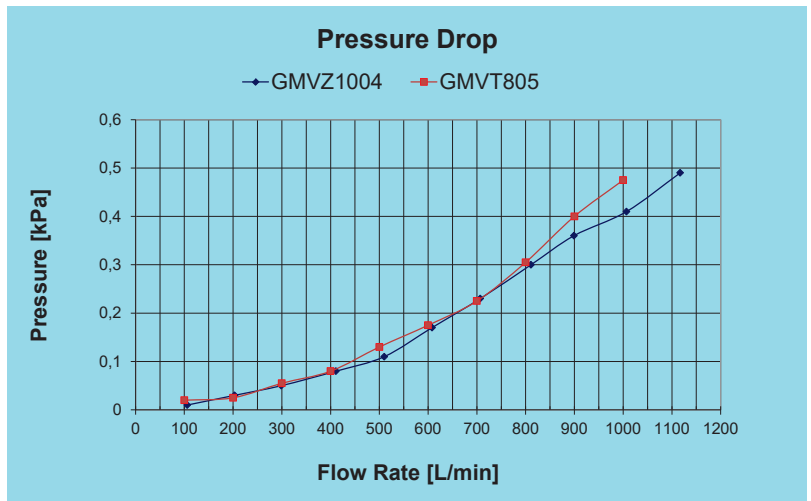


**GMVT 805 gas extractor and metering package**

## Technical Data

Gas Extractor and Metering Package	GMVT 805-J	GMVZ 1004
Flow rate, maximum	800 L/min	1000 L/min
Accuracy, standard	±0.15%	±0.15%
Viscosity	maximum 20 mPa·s	maximum 20 mPa·s
Operating pressure	maximum 10 bar	maximum 10 bar
Working pressure	3-7.5 bar	3-7.5 bar
Discharge temperature	-25 to 55 °C	-25 to 55 °C
Weight, approximate	66-76 kg	76-88 kg
Sizes, approximate	590 L by 400 W by 552 mm H	650 L by 530 W by 565 mm H

The weight and sizes depend on configuration. For detailed information about Guidant's Sening products, go to the Guidant Knowledge Base.



**Pressure drop for GMVT 805 and GMVZ 1004**

# Smith Meter T-Meter Packages

T-meter packages are available in various configurations. These configurations range from a basic version, including air eliminator or strainer and mechanical counter, to an MID-approved system with Sening special gas extractor and valve combinations.

The metering packages are developed for pressure and gravity discharge and meet the requirements of efficient metering systems. Integrated control valves support the requirements for compact and lightweight components on road tankers, thus improving the performance of the vehicle.

The Sening truck metering system integrates a compact and high-performance flowmeter with the intelligent flow computer MultiFlow and the ADD additive injection pump into a highly efficient and economic package for gasoline and petroleum tank trucks.

There are a wide variety of applications for these metering systems, including fuel oil, diesel, gasoline, biofuels, and aviation fuels.



**T-20 meter with integrated pulse transmitters and no packing gland**

## Technical Data

Metering Package	T-11	T-20	T-40
Flow rate, maximum	400 L/min	750 L/min	1500 L/min
Standard accuracy	±0.15%	±0.15%	±0.15%
Viscosity	50 mPa·s	50 mPa·s	50 mPa·s
Operating pressure	10 bar, max.	10 bar, max.	10 bar, max.*
Working pressure	3-7.5 bar	3-7.5 bar	0-25 bar
Discharge temperature	-29 to 65 °C	-29 to 65 °C	-29 to 65 °C
Weight, approximate	42-53 kg	54-64 kg	75-87 kg
Size, approximate	523 L by 399 W by 523 mm H mm	594 L by 408 W by 536 mm H	737 L by 608 W by 550 mm H

\*Maximum pressure is 2.5 bar with T4A for gravity applications only.

## Benefits

- Compact design
- Premium accuracy
- Integrated pulse transmitter without packing gland
- Highly efficient gas extractor with an integrated strainer for meter protection and proper function under most severe conditions
- Long life, high precision, and high performance Smith Meter rotary vane metering element
- Low pressure drop and excellent flow rate performance
- Pressure and gravity discharge with integrated wet and dry hose valve combinations

# W&M-Approved Product Drain and Return System

The product drain and return system can be used in combination with a drain pump to reduce the retained product volume in the flow metering system to a maximum of one liter. This allows smallest batch sizes, maximum of 200 liters, independent from the product to be delivered. When using the Sening MultiFlow, the need to drain the retained volume is indicated when changing the product.

The float-operated control device reduces the retained liquid volume when changing the product, for example from fuel oil to gasoline. Prior to changing product, the gas extractor, flow meter and the discharge valve are drained by using an air driven pump. The product is returned into the tank truck's compartment.

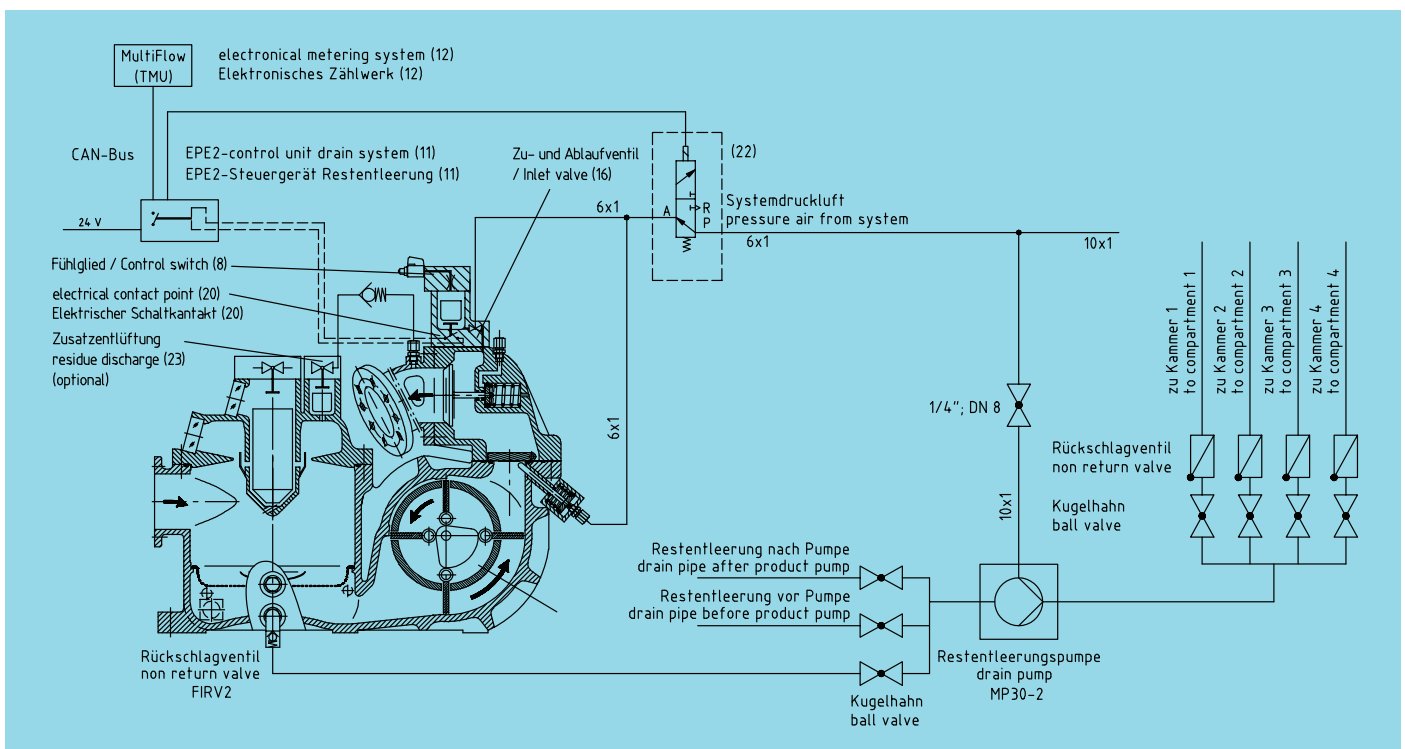
During the draining process and while the measuring system is empty, the discharge valve cannot be opened and the electronic register is deactivated. Prior to the next discharge process, the gas extractor, flow meter, and discharge valve are refilled with the new product.



**GMVT805-SE gas extractor and meter package**

## Benefits

- Reduces minimum batch size, after product change, to 200 liters
- Vehicle operation for fuel oil and gasoline products
- Reduces investment for metering equipment on the vehicle

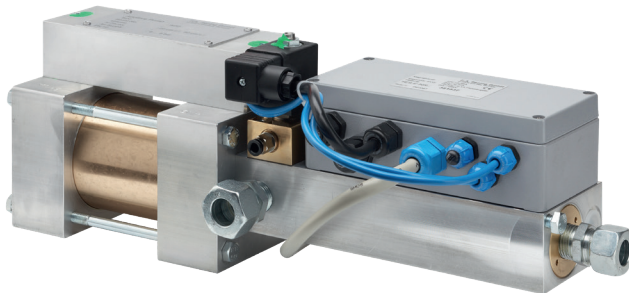




# Sening ADD 150 and ADD 350 Additive Injection Pumps

The Sening additive injection pump is a pneumatically actuated piston-type metering pump which facilitates the accurate and reliable on-truck continuous injection of additives to heating fuel.

Sening ADD 150 is used for additivation of A-1 (hazardous zone) additives on Zone-1 trucks. ADD 350 is for the use on diesel and heating oil trucks (A-3).



## Accessories

- Sight glass with flow indicator ADD-SG
- Vent valve VAK for additive storage tank
- Non-return valve ADD-RVP
- Strainer ADDFI

## Technical Data

### Injection Volume

50 cm<sup>3</sup>

### Air Supply Pressure

400-800 kPa

### Operating Pressure

900 kPa

### Power Supply

12-24 volts

### Materials

Aluminum, brass, Buna-N, FKM, and polyoxymethylene (POM)

### Inlet Connection

DN 18

### Outlet Connection

DN 15

### Limit Switch

Two inductive sensors

### Solenoid Valve

12-24 volts and 6 watts

### Size

443 L by 154 W by 115 mm H

### Weight

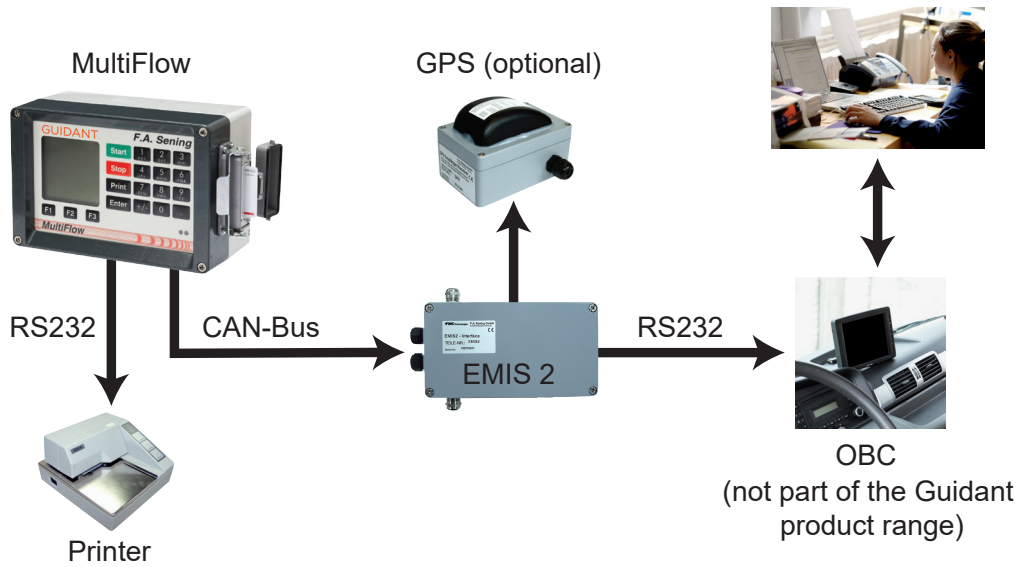
Approximately 12 kg

## Features

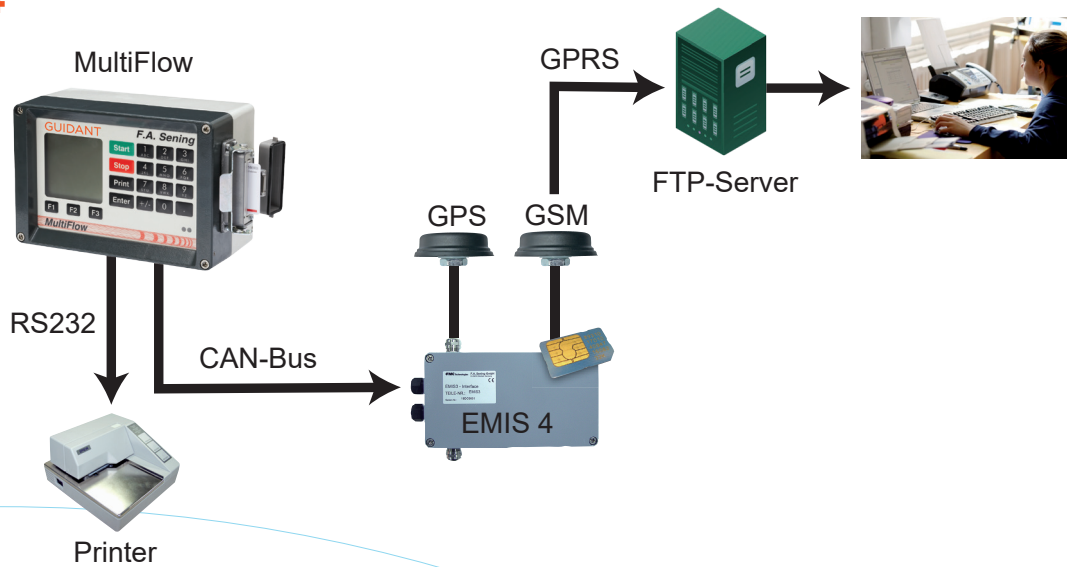
- The pump avoids the use and disposal of small size additive cans or bottles
- Continuous accurate injection ensures delivery of high-quality fuel
- Enables delivery of different grades of fuels from the same truck
- Provides variable injection ratios between 1:500 and 1:4000
- Integrated sensors constantly monitor pump functions
- The Sening pump is monitored and controlled by an electronic flow computer (MultiFlow)
- While connected to the MultiFlow flow computer, critical functions of the injector area are monitored and should a malfunction occur the flow computer will display and alarm, and if required, the discharge is interrupted
- A level sensor monitors the additive volume in the onboard additive storage tank—in case of insufficient additive, the system will alarm and shut down
- The pump is self-priming and has a compact design that enables variable installation positions

# Sensing Data Communication Modules

## EMIS 2



## EMIS 4



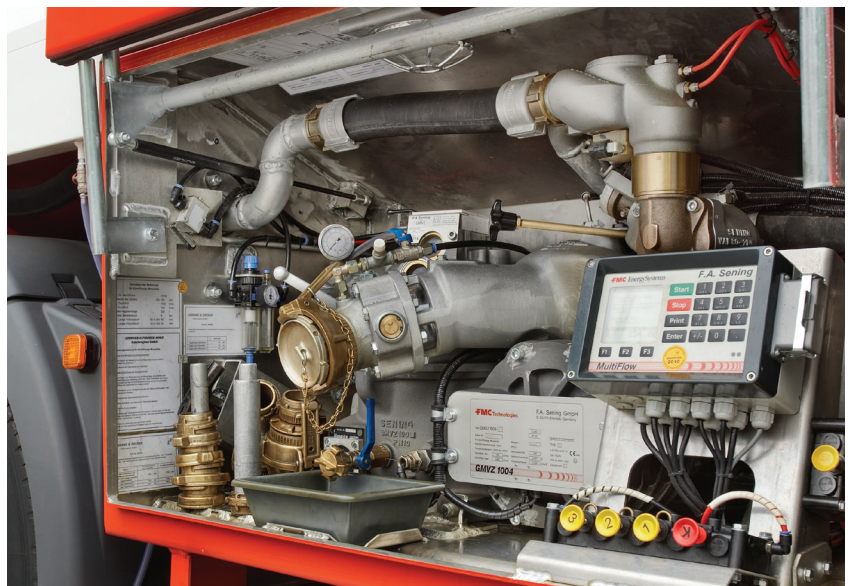
# Applications of MultiFlow Electronic Register and Meter



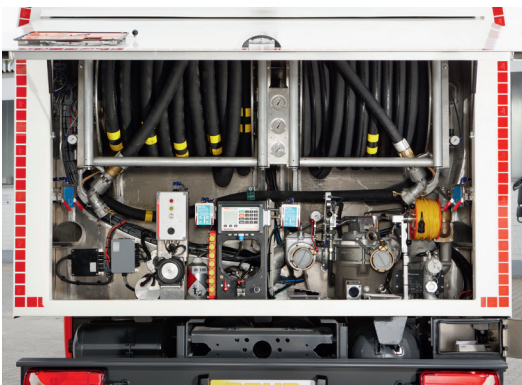
MultiFlow with GMVZ1004 meter gas extractor package in combination with MultiSeal (SPD) on a service station delivery truck in Bulgaria



MultiFlow with turbine meter on an aircraft refueling truck (dispenser unit)



MultiFlow with GMVZ1004 meter gas extractor package on a heating fuel delivery truck in Germany



MultiFlow with GMVT805 meter gas extractor package on a heating fuel truck in Switzerland



MultiFlow with dual GMVZ1004 meter gas extractor package in combination with NoMix (COP) on a service station delivery truck in Germany

## About Guidant

As the undisputed leader in liquid and gas custody transfer solutions with the largest global install base, Guidant's legacy is built on more than 80 years of expertise, accuracy, reliability, and best-in-class technologies. We are a private company focused on the measurement solutions business, serving emerging and established energy markets across the globe.

### Corporate Website

[GuidantMeasurement.com](https://GuidantMeasurement.com)

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