

Countum Group

# SATAM

Metering Solutions

# Aviation

## Metering Solutions



[www.satam.eu](http://www.satam.eu)

# Satam equipment

Your best available solution  
for aviation fuel metering



# Welcome to Satam

We are experts in hydrocarbon metering solutions. We develop, manufacture, market, maintain and renovate metering systems for the hydrocarbon supply chain. Specifically designed for custody transfer metering of liquid petroleum products and non corrosive chemicals, all our metering systems are made in France.

They are used in oil depots, on aircraft refuellers, oil road tankers and fuel dispensers for loading, unloading, transfer, blending and additive injection operations. Satam also provides turnkey solutions for oil depots including metering systems, flow computers, data acquisition systems, automation and supervisory systems.

## An international sales network

Satam has a wide distribution network with 64 agents in 55 countries. Our agents are trained in the use and maintenance of Satam metering systems. They provide the end-user with the best technical support available.

## Worldwide certified metering systems

Satam equipment is designed for custody transfer and fiscal metering of liquid hydrocarbons. Metering systems have pattern approvals subject to European regulations (Measuring Instruments Directive) and international recommendations (OIML R117).

Many national approvals are also available to satisfy country-specific requirements. ISO 9001 and ATEX certifications, electrical and chemical work authorisations and on-site verification approvals ensure our expertise is genuinely comprehensive.

- **ISO9001** for the design, manufacturing and sales of flowmeters and metering systems for the distribution and measured reception of fuels and liquids other than water.
- **EN ISO/IEC 80079-34** for the production of equipment, protection systems or components intended to be used in explosive atmospheres according to 2014/34/EU ATEX Directive.
- **MID 2014/32/EU** compliance certificates for the manufacturing of custody transfer metering systems for liquids other than water according to European regulations.

## Meter calibration

Each meter and metering system leaving the factory is subjected to wet calibration by direct volume comparison for full compliance with international standards. Each Satam calibration rig is traceable to national standards.





**Positive displacement meter**



**Gas extractor device**

**Characteristics of Satam PD meters**

Model	Size	Flow rate	Accuracy	Repeatability
ZC17-12	2"	20 - 200 L/mn	0,15%	0,02%
ZC17-24	2"	40 - 400 L/mn	0,15%	0,02%
ZC17-48	2"	80 - 800 L/mn	0,15%	0,02%
ZC17-80	3"	133 - 1333 L/mn	0,15%	0,02%
ZC17-150	4"	250 - 2500 L/mn	0,15%	0,02%
ZC17-250	6"	416 - 4166 L/mn	0,15%	0,02%
ZC17-330	8"	550 - 5500 L/mn	0,15%	0,02%

# Satam Solutions

## Aircraft refuellers and hydrant dispensers

### ➤ Positive displacement meter: a robust and proven technology



With more than 60 years of experience in manufacturing Positive Displacement meters (PD meters), Satam has developed a comprehensive product range dedicated to jet fuel measurements with specific materials and connections.

Backed by its technical know-how, Satam is able to deliver a high accuracy PD meter that remains stable year after year with almost no need for periodic adjustment.

Its simple design using only two pairs of blades and one moving rotor guarantees an exceptionally robust device and generates significant savings on maintenance costs. All the Satam PD meters are custody transfer approved according to European regulation (MID 2014/32/UE) and to international standard OIML R117-1.

### ➤ Automatic densitomer for an optimised density measurement

In order to replace traditional manual density measurement, Satam has developed a real-time fuel density measuring system for the automatic monitoring and registration of jet-fuel density. Temperature and density measurements are continuously processed by the Equalis batch controller during the fuelling operation. At the end of the loading, Equalis calculates the average density and the loaded quantity in volume and in mass.



### ➤ Gas extractor device

XAD20-150 is a gas extractor device dedicated to aircraft refuelling measuring systems. It can be mounted on horizontal or vertical micro filter gas separator.

It is custody transfer approved up to 150 m<sup>3</sup>/h according to European regulation MID 2014/32/UE and to international standard OIML R117-1.



# Satam Solutions

## Aircraft refuellers and hydrant dispensers

### ➤ Batch controller: powerful and versatile



The Satam Equalis S batch controller is a powerful and versatile field batch controller designed for aircraft refuelling vehicles and road tanker loading stations. It meets all the requirements in terms of security and accuracy for installation on fuel transport vehicles or hydrant dispensers. Equalis S is custody transfer certified and compatible with the entire range of volumetric meters used in this industrial sector. It can directly interface with most cab mounted data capture systems.

#### Key Points

- Compact or remote design for easy installation
- Ability to manage fuelling and defuelling operations
- Can be connected to one or two meters
- Direct connection with automatic densitometer
- Calculation and display of average density of loaded fuel
- Loaded quantities in volume, corrected volume and masse
- On screen browsing of stored transactions

### ➤ Large display unit

DIR 12 is a large display unit for indication of volume or mass. It is designed for installation on aircraft refuellers, hydrant dispensers and road tanker loading stations. DIR 12 can be connected directly to the flow computer via data bus or via frequency input. It operates as a flow computer displayed volume repeater. With its configurable pulses input, DIR 12 can also directly display the volume or mass measured by a flowmeter.



#### Key Points

- Total quantity displayed in real time with six digit technology
- Direct connection to a batch controller without the need for any configuration software
- Flame proof housing for a maximum ruggedness





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## Airport fuel farm

### ➤ Measuring unit for refueller loading stations

Satam vertical or horizontal metering units are designed for refueller loading stations in a top or bottom loading configuration. Their space-saving configuration enables easy installation in smaller facilities and in compact pipeline networks. All Satam measuring units are approved for commercial transactions according to European regulation MID 2014/32/UE and to international standard OIML R117-1.



Horizontal metering system ZCE5

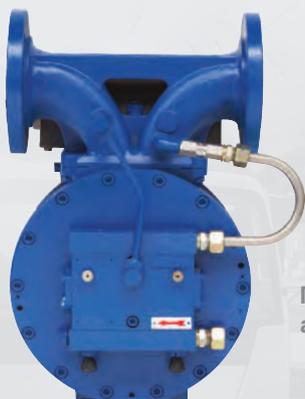


Vertical metering system ZCE6

### ➤ Additive injection in aviation fuels

Satam offers comprehensive solutions for aviation fuel additive injection such as anti icing, corrosion inhibitor, antistatic and thermal stabiliser additives.

Injection of the additives can be electronically controlled by the Equalis batch controller. It can also be mechanically controlled by an injection piston pump directly linked to the PD meter rotor.



Mechanically controlled additive injection



Additive injection modules controlled by flow computer

### Measuring systems for petroleum product balances on the fuel farm

A wide range of Satam measuring systems is dedicated to pipeline and product reception applications. The inflow and the outflow into the airport fuel farm can be measured with a high level of accuracy. This allows the depot operator to draw up a reliable balance of its product movements.

# Satam Solutions

## Refuelling of small airplanes and helicopters

### ➤ Satam aircraft refuelling cabinets

This complete aviation fuel distribution unit is dedicated to the fuelling of small airplanes and helicopters. It is delivered ready for use. It includes a custody transfer approved metering system with mechanical or electronic register, a micro-filter separator, a pump and a fuel distribution hose and nozzle. The version fitted with electronic register provides a secured back-up of each transaction and a direct data transmission to the Customer's administration and management information system.



## Meter calibration

### ➤ Master meter for periodic meter field calibration

According to international aviation standards, meters operating on aviation fuels need to be periodically field calibrated.

Satam offers a master meter operating as a working standard. It can be used regularly to check and calibrate measuring instruments or measuring systems. With minimal dimensions, it can easily be moved to several different sites without the requirement for lifting tools.





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# SATAM

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## World wide Location Chart

### Headquarters and Sales Department

PARIS NORD II  
Bat. le Gauguin - 47, allée des Impressionnistes  
BP 85012 Villepinte  
95931 Roissy CDG Cedex FRANCE  
Phone: +33 (0)1 48 63 02 11  
Fax: +33 (0)1 49 38 41 01  
E-mail: sales@satam.eu

### Manufacturing facility

Avenue de Verdun - CS 60129  
14700 Falaise FRANCE  
Phone: +33 (0)2 31 41 41 41  
Fax: +33 (0)2 31 40 75 61



As Satam regularly improves its products to ever better respond to evolving market and regulatory requirements, it reserves the right to change any of the specifications of these products, and this without prior notice.

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