



**SMART FOAM**

**FOR**

**SIMPLE FOAM  
APPLICATIONS**

# FOAM DETECTION

The SmartFoam Sensor is the latest addition to Hycontrol's foam detection range, designed to detect and control foam in a single unit for simple foam applications. Within its head the SmartFoam has its own built-in transmitter so that foam detection and control are managed without the need for an external controller. This integrated Sensor shows reliability, resilience, and complete immunity to fouling.

Constructed from 316 Stainless steel and PVDF with a polypropylene head, it offers an erobust solution for foam control which is very easily installed into an existing process system.

The SmartFoam can be connected directly to a PLC or process controller without the need for any additional instrumentation. The sensor includes a 3/4" BSP or NPT tapered fitting to enable it to screw into a process tank. Alternatively it can be fitted by means of a bracket over an open tank. It is easily cleaned and fully weatherproof for outdoor situations with IP66/67 enclosure.



## FEATURES, ADVANTAGES AND BENEFITS

- REDUCE ANTI-FOAM COSTS
- REDUCE PROCESS DOWN TIME
- REDUCE WASTE AND PRODUCT LOSS
- INCREASE BATCH SIZE CAPACITY
- IMPROVE PLANT EFFICIENCY
- AVOID ENVIRONMENTAL POLLUTION
- INCREASE PRODUCTION CAPACITY
- IMMUNE TO PROBE FOULING

## FOAM PROBLEMS OCCUR IN MANY INDUSTRIES AND APPLICATIONS



- Paper mills
- Water and waste
- Activated sludge
- Effluent



- Food Processing
- Beverages
- Pressure cookers
- Digesters

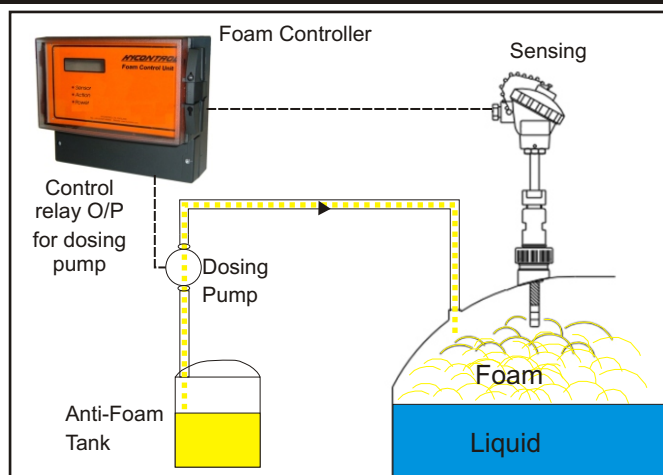


## INSTALLATION

The SmartFoam sensor is purely designed for foam detection only. As the sensor detects foam, the SmartFoam will provide a relay output which can then be vitalised for controlling an anti-foam dosing system.

I.e. The sensor will detect foam and provide an output which can then switch on and off an optional dosing system or just provide an alarm to take further action unless foam is present such as switching on/off aeration pumps etc.

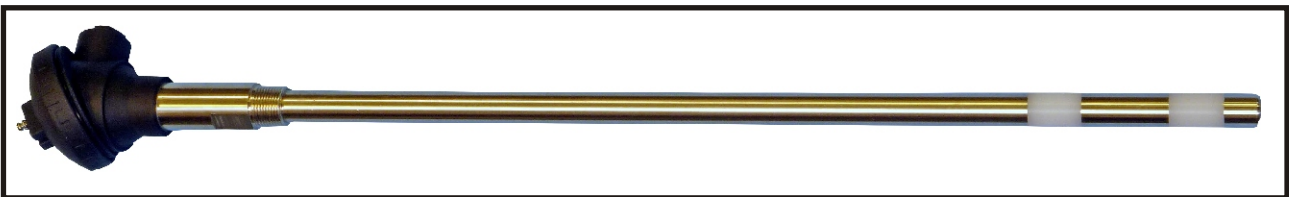
SmartFoam is a lower cost solution designed to detect foam only & reduce anti-foam usage in OEM applications.



## SMARTFOAM - FOAM DETECTION

The SmartFoam transmitter allows for the accurate control of aqueous foam by sensing when the foam reaches the end of the probe. This device has excellent resistance to fouling from build up on the measuring probe and still continues to operate reliably with large deposits on the sensing element. The SmartFoam has a single volt free contact set point and can be used extensively for reducing the amount of chemical anti-foam agent used in the process. The SmartFoam is a stand alone device and does not require a separate controller. The SmartFoam can be mounted vertically or horizontally in the tank.

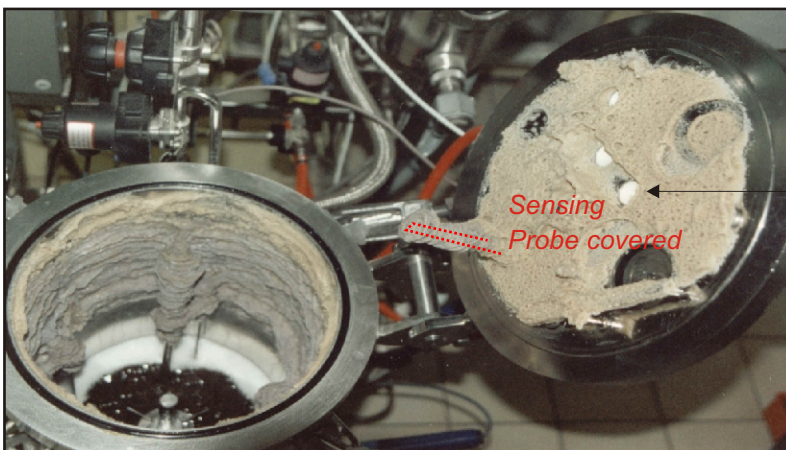
- Reliable, robust and long life
- Completely immune to fouling
- Unique IMA® sensing technology
- 24V DC supply
- Low installation cost
- Integral electronics



## UNIQUE FOULING IMMUNITY WITH IMA SENSING

Product fouling and deposits on a measuring probe are often associated with many foaming applications. The high sensitivity required to detect light foam products is essential but equally important is the ability to differentiate between product coating and product rising in a tank. This is where Hycontrol IMA (Intelligent Multi Action) sensing leaps ahead of all other 'foam' detecting technologies, as it will operate efficiently and repeatably even when the probe becomes fouled with residual product.

Hycontrol foam control systems utilise IMA sensing technology incorporating a special guard electrode shown on the diagram opposite (in blue). This guard electrode disrupts the signal produced from the accumulated fouling on the probe which has a desensitising effect on the switch. This then enables the main foam sensor (in red) to ignore this product build up and to only monitor the foam within the process. Withstanding highly dense and sticky product around it, the foam sensor will continue to function giving accurate and reliable foam control.



*A small batch reactor still operating efficiently with the probe covered and totally hidden!*

*IMA principal displaying the guard probe and the measuring probe*



# SMARTFOAM DETECTION SPECIFICATIONS

## OPERATING PRINCIPLE

The new SmartFoam sensor measures the impedance of foam using our unique IMA Sensing® technology which has an impeccable operating history. The sensor passes a small alternating current through the foam into the liquid below which responds to the density of the foam. When the measurement passes a preset level the sensor then recognises that foam is present.

Some foam sensors are defeated by the build up of a sticky layer of product on the surface. This 'fouling' is a constant problem in foam measurement since the sticky layer will either trigger a false alarm or active foam can be missed. The distinctive feature of IMA Sensing® technology is its ability to distinguish the presence of active foam from the build up of a sticky 'fouling' layer on the surface of the sensor. The technology overcomes this problem by the use of a guard electrode which isolates and compensates for the effect of any fouling layers.

The Sensor also has a built-in time delay which can be set at 4 seconds for a normal response and enables the sensor to reject splashing and other spurious events. Some applications require a faster response; this can be reduced to 1 second by the user, as required.

The SmartFoam has a volt-free output which can be connected directly to a PLC or can be used to switch a low voltage signal e.g. 24V dc. There are two small indicators in the head, one to show power and one for foam detection.

## ELECTRICAL

<b>Power Supply</b>	24 V d.c. 25mA
<b>Indicators</b>	Power : Indicators power to unit. Foam : Indicates foam present.
<b>Response Time</b>	1, 6, or 25 seconds. Selectable.
<b>Sensitivity</b>	0 – 9 [0 = dense foam, 9 = light foam]
<b>Fouling Immunity</b>	Sensitivity to fouling <2% of sensitivity to foam
<b>Output</b>	'Volt-free' contact rated at 24 Volts d.c.400 mA.
<b>Electrical Connections</b>	Screw terminals.
<b>Cable</b>	4 core screened cable.

## MECHANICAL

<b>Housing Material</b>	Polypropylene head
<b>Ingres Protection</b>	IP66
<b>Probe Diameter</b>	20mm
<b>Standard Lengths</b>	500/750/1000/1500mm <i>*optional lengths available</i>
<b>Process Connections</b>	¾" BSP (R3/4)
<b>Body Insulation</b>	Body – 316 Stainless steel, Insulators – PVDF
<b>Temperature Range</b>	0 - 70°C max
<b>Pressure Rating</b>	1.5 bar max.





## TYPICAL APPLICATIONS & USERS



**GlaxoSmithKline**  
**Antibiotic production**  
**Fermentation**

Client

Industry

Application

GSK, A well-known British pharmaceutical company installed Hycontrol Foam Controls in its antibiotic production fermenters. The improved foam controls gave a reduction in the headspace volume and a resulting increase in production volume. The payback time for this application was a matter of days.



**Monarch**  
**Chemical**  
**Chemical Storage**

Client

Industry

Application

Monarch are a commodity chemical manufacturer in Skeerness, Kent. They make products which have a tendency to create large amounts of foam that travels into the sewers, causing problems to neighbors. Hycontrol have supplied a foam tendency analyser as well as SmartFoam to help prevent this problem occurring again.



**Vivergo (BP)**  
**Biofuel**  
**Gas stripping**

Client

Industry

Application

Vivergo provides home grown, renewable energy to support the UK economy, producing bioethanol for cars and animal feed for cows. They had taken scale bio-fuel production from using fermentation process and fermentation can cause a high amount of foaming issues



**NAVY**

**Australian Navy**  
**Armed Forces**  
**Effluent Treatment**

Client

Industry

Application

The Royal Australian Navy contacted our Australian distributor in search of a solution for the effluent treatment works on-board their ships. It is illegal to drop waste straight into the sea, industrial ships now must treat the water on-board and either recycle it or at least treat it to a certain level before released into the ocean. Unfortunately, compact effluent treatment applications tend to create high levels of foam.



The Chemical Company

**BASF**  
**Chemical**  
**Chemical Storage**

Client

Industry

Application

BASF, a leading raw material supplier to the construction industry, has used a number of UK projects to demonstrate it's solutions for sustainable construction. Hycontrol provided SmartFoam sensors for their chemical storage tanks.



**Centipharm**  
**Pharmaceutical**  
**Fermentation**

Client

Industry

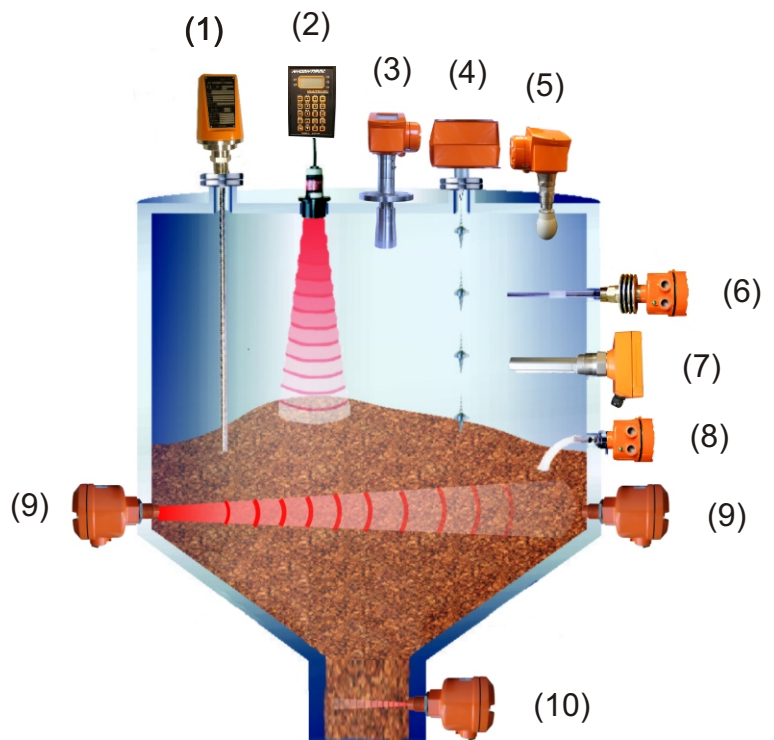
Application

Centipharm is located in Alpes Maritimes, France. In addition to it's three production workshops, Centipharm has a development laboratory and pilot plant. Being in the pharmaceutical industry, much chemical research is conducted on-site. Fermentation process being one of them which produces foaming issues.

# HYCONTROL LEVEL TECHNOLOGIES

## Product Range For Solids :-

- (1) TDR Radar For Solids
- (2) Ultrasonic, 'Through Air'
- (2) 2 Wire Ultrasonic Transmitter
- (3) FMCW 2 Wire Radar
- (4) Continuous 'Servo' Level Indicator
- (5) FMCW 2 Wire Radar
- (6) Capacitance Level Switch
- (7) Vibrating Probe Level Switch
- (8) Rotating Paddle Level switch
- (9) Microwave Level Switch
- (10) Doppler Flow Switch



## Product Range For Liquids :-

- (1) By-Pass Level Indicator With Radar
- (2) TDR Radar For Liquids
- (3) 2 Wire Ultrasonic Transmitter
- (4) FMCW 'Horn' Radar 2 Wire
- (5) Magnetic Float Switches
- (6) FMCW 2 Wire Radar
- (7) Foam Level Switch
- (8) Capacitance Level Switch
- (9) RF Admittance Level Switch
- (10) Side Mounting 316 SS Float Switch
- (11) Tuning Fork Level Switch
- (11) Tuning Fork Level Switch
- (12) Ultrasonics 'Through Wall'
- (13) Mini Magnetic Float Level Switch

