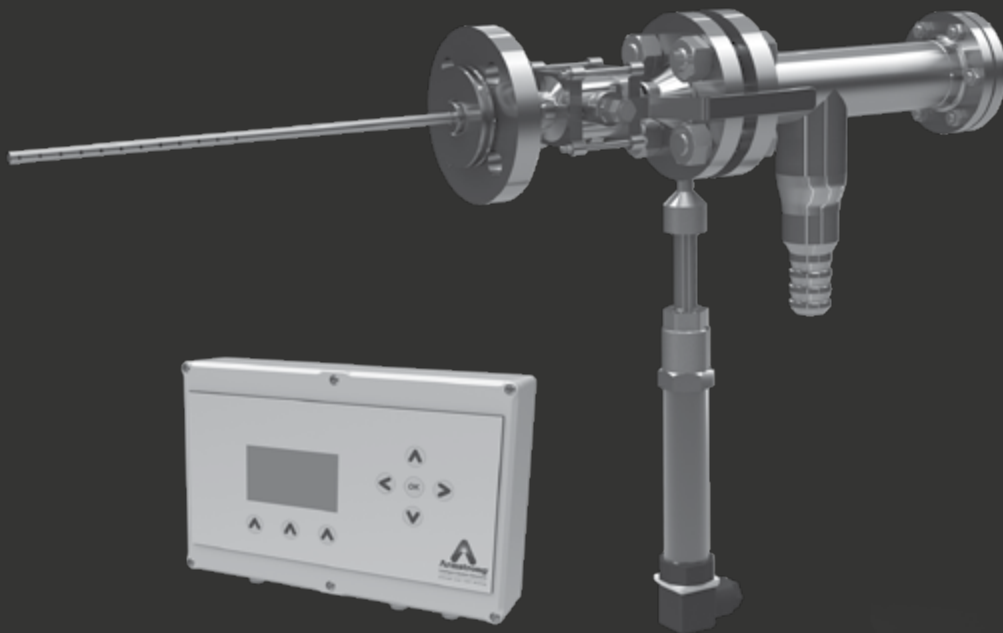




STEAM QM-1

STEAM QUALITY MONITORING

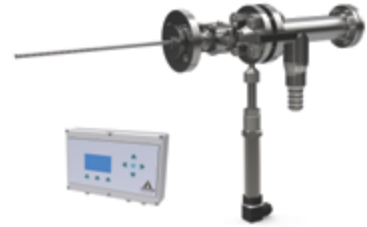




Armstrong® Steam Quality Monitor – Steam QM-1

Wet steam is a costly problem across many industries causing damages and product quality issues:

- Batch rejection, wet packs and wet loads in sterilizers.
- Food grade quality of steam not achievable.
- Carbon dioxide with water creates carbonic acid that damages pipes.
- Slug of water causes water hammering which is destructive.
- Flow meters are inaccurate.
- Water abrades like sand and will erode pipes, elbows, valves...
- Lower latent heat available reduces heat transfer.
- Blade erosion on saturated steam turbines.
- Thermal stress as condensate cools down.



In fact, steam quality typically refers to the amount of water in the steam which is also known as “dryness fraction”. Saturated steam is a biphasic mixture of steam and water where the water is in the form of un-vaporized micro-droplets.

The dryness fraction (X) quantifies the ratio of the mass of steam to the mass of the biphasic mixture:

$$X = \frac{\text{Mass of Steam}}{\text{Mass of Steam} + \text{Mass of Water}}$$

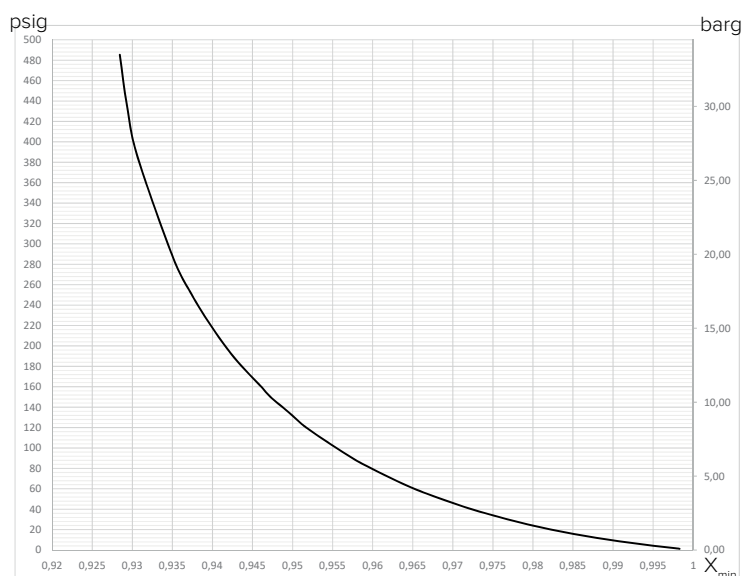
Part of the difficulty in monitoring the steam dryness fraction is that steam systems are dynamic. The steam is moving through the components and conditions change, second by second. Within this complex system, there are many things that contribute to water in the steam.

Monitoring the dryness fraction of steam has long been a manual process – time consuming, inconsistent, unreliable, and presents inherent safety and accuracy risks.

The Steam QM-1 is an automatic steam quality monitor that safely and reliably determines and communicates the dryness fraction of plant and culinary steam; allowing you to continuously and efficiently monitor your steam system.

The Steam QM-1 makes it easy, safe and precise to monitor steam quality when the highest quality steam is needed.

Minimum Dryness Fraction Measurable



Steam QM-1 Specifications

Steam Operating Pressure Range	43 - 465 psig (3 - 32 barg)
Voltage	12 VAC or 15 - 24 VDC

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

Steam Quality Monitor – Steam QM-1

Manual Versus Automatic

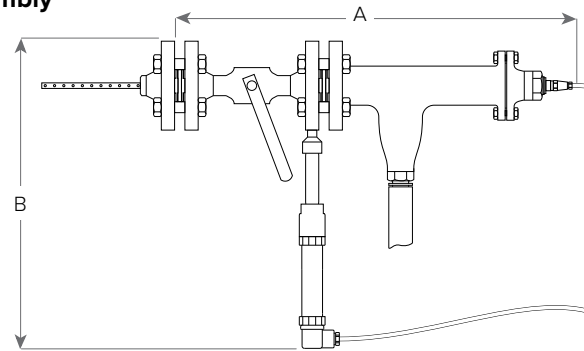
Until now steam dryness fraction measurement has been a time-intensive, unreliable and potentially unsafe process. Steam QM-1 is not only more reliable and safer than manual testing, the unit is also portable, so it can be easily transported to multiple points on your steam line.

When you compare Steam QM-1 to manual testing methods the choice is clear:

Manual Method	Automatic Method	
Description		
<ul style="list-style-type: none"> A sample of the steam is condensed during a limited time frame. Temperature and mass measurements allow calculation of the steam dryness. 	<ul style="list-style-type: none"> Reducing steam pressure to atmosphere allows measurement of steam dryness. 	
Disadvantages		
<ul style="list-style-type: none"> Time Consuming: Typically manual steam quality measurement requires two people, and can take up to one hour per measurement point. This does not include additional time required to complete necessary reports. Trending: Unable to trend steam dryness over a period of time. Unsafe: There are inherent safety risks involved in sampling live steam and condensate in a water receiver. Unreliable: Measurement results depend on the skill of the technician conducting the test. 	Advantages	
<ul style="list-style-type: none"> Quick and Easy: Steam QM-1 is simple to install. Trending: Continuous measurements provide trending data over time. Safe: Once QM-1 is installed it is much safer than manual measurement methods. Reliable: Steam QM-1 is both reliable and accurate. 		

Steam QM-1 Dimensions & Weight		
	in	mm
A – Assembly Width	20	500
B – Assembly Height	15	375
C – Cabinet Width	10	250
D – Cabinet Height	6.5	160
E – Cabinet Depth	2.5	60
Assembly Weight	20 lb	9 kg
Cabinet Weight	2 lb	0,9 kg

Assembly



Steam QM-1 Package Includes:

Insulation Cover • All Necessary Accessories

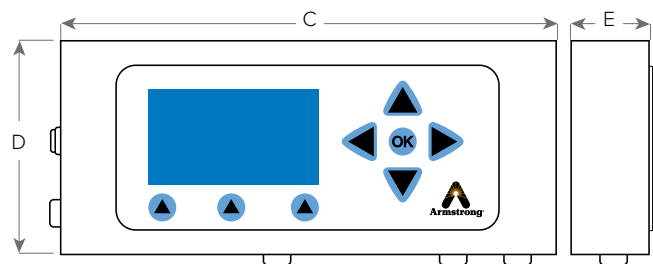
Optional Feature:

Data Logger

More Information:



Cabinet



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INTELLIGENT SOLUTIONS IN STEAM, AIR AND HOT WATER

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