

AlyTech GASMIX

On-site Customized Gas Preparation - Accurate and Repeatable

Alytech GasMix™ Bridging the Gap between Productivity and Cost Savings!

International Standards Organizations are publishing methods that require the use of Multipoint Calibration Standards by Dynamic Mixing in the validation of specific Gas Standards Testing Methods.



There was a time when a zero and a high concentration standard were enough to draw a calibration curve, but the fact is that more and more, International Standards organizations are advocating multipoint calibration standards to calibrate analytical instruments such as EN 14211 for ambient air quality analysis determining nitrogen dioxide and nitrogen monoxide in which a six point calibration is required. EN 14212 for analysis of sulphur dioxide by ultraviolet fluorescence requires seven point calibration. The new (April 1st 2011) CEN method EN15984 to determine the thermal pollution of a refinery and the output of carbon dioxide 'greenhouse gas' requires a linearity check of detectors; this check requires three to five point calibrations.

Multipoint calibrations are becoming more expensive as more calibration points require more calibration gases; the procedure becomes more time consuming, compared to the elegant alternative of Dynamic Mixing which uses in-line preparation of calibration gases with precise thermal mass flow controllers. For example the ISO method ISO 6145 is specifically targeted for the preparation of calibration gases. In part 7 of this method they describe the preparation of gas standards by dynamic mixing. In the ISO 6974 method for the analysis of natural gas there is a similar chapter that describes the use of Dynamic Mixing. Dynamic Mixing is not only a faster and more flexible procedure it also provides substantial cost savings and a good return on investment.

AlyTech GasMix™ - An Innovative Cost Effective Solution for Gas Standard Preparation

The AlyTech GasMix provides an on-site Gas Standard Preparation System for analytical laboratories that need to prepare gas standards for virtually all kinds of analytical instruments, Gas Chromatography and Gas Spectroscopy systems, Refinery Gas Analyzers, On-line Gas Analyzers and calibration labs that need to analyze sulphur traces.

Comply with International Standards using the AlyTech GasMix™ and at the same time achieve a Return on Investment payback in a one year period. GasMix™ does this by:

1. Reducing Gas Consumption

A minimum of three different concentrations are required for a multi-point calibration. That means 3 gas cylinders, thus 3 cylinder rentals, higher delivery costs and 3 pressure regulators.

2. Optimizing the Efficiency of Gas Cylinders

Most of low concentration standards have a validity period of 6 months to 1 year. In respect to International Standards, you may need to reorder the standard before the cylinder is empty. A high concentration standard has a longer life time (generally 3 years). The beauty of the GasMix is that it only uses the high concentration standards and dilutes that to the needed lower concentrations.

Some very low concentration standards can only be obtained by dilution, because otherwise they would be unstable.

An added benefit for GasMix users as well is that you can make low concentration standards on-site for immediate use.

3. Reduce the Number of necessary Gas Standards

The example below shows a calibration based on 5 different concentrations. However, the GasMix will be able to create more than 5 concentrations on the entire scale, continuously.

Another example would be multi-component mixtures.

Components in cylinder mixtures have a fixed and defined ratio.

A different ratio automatically implies a different gas cylinder.

The use of the GasMix provides flexibility in the laboratory.

Two (or more) gas standards can be mixed with different ratios.

4. Reduction of Bench Time

Manual Gas injection requires lots of user intervention as there is no 'automatic injector' for gas samples.

The GasMix CalibrateIT 12C software automates the steps that an operator has to do by creating an automated pre-programmed sequence. GasMix handles the gas delivery time, controls the flow rates, and launches the start of an analyzer, rotates the injection valve (in option), waits for the end of the analysis and starts automatically the next line. The use of the GasMix saves time for the operator.

5. Manage Cylinder Expiration Dates

The GasMix CalibrateIT 12C software has a feature for the automatic surveillance of gas standard expiration dates (according to gas standard certificates). The users can set notifications days/weeks or months before the expiration date of a cylinder to ensure procurement of a new gas standard before the cylinder is empty.

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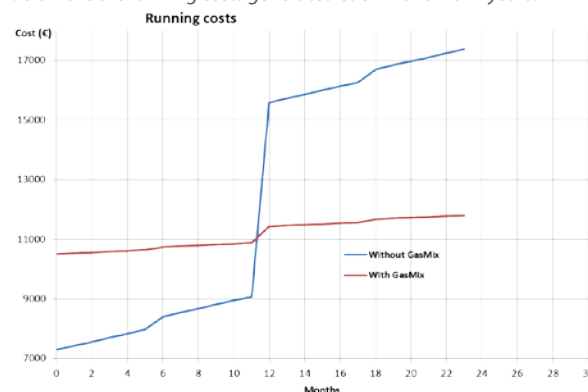
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Return on Investment Example:

A laboratory has to calibrate 3 analyzers on several compounds (SO₂, NO_x & CO for example) from 0 to 100 ppm. Generally, mixtures are warranted for one year for concentrations below 100 ppm, and three years above 100 ppm. Our example is based on 24 months, low concentration standards that should be purchased twice. Without the GasMix, the user will need to invest more time to monitor their cylinder stock (check the expiration dates, purchase request) to perform calibrations.

The amount of wasted gas needs to be taken into account, since the cylinder will be returned to the gas supplier before the cylinder is empty. With the GasMix CalibrateIT 12C software both time and gases are saved.

Below are the running costs generated each month for 2 years.



GasMix has a greater investment at the beginning than the cylinder rental, but will pay for itself in less than 1 year.



WITHOUT GasMix™	Euros	WITH GasMix™	Euros
1 gas cylinder SO ₂ [C] = 100ppm	300	GasMix™ 2 channels	9 000
1 gas cylinder NO [C] = 100ppm	300	1 gas cylinder SO ₂ [C] = 100ppm	300
1 gas cylinder CO [C] = 100ppm	300	1 gas cylinder NO [C] = 100ppm	300
4 gas cylinders SO ₂ [C] < 100ppm	8 x 300	1 gas cylinder CO [C] = 100ppm	300
4 gas cylinders NO [C] < 100ppm	8 x 300		
4 gas cylinders CO [C] < 100ppm	8 x 300		
Monthly rental of 15 cylinders	135	Monthly rental of 3 cylinders	27
Pressure regulators (paying off in 5 years)	15 x 300	Pressure regulators (paying off in 5 years)	3 x 300
Transport/Handling charges	330	Transport/Handling charges	55
Total for material on 24 months	16 170	Total for material on 24 months	11 503
Mean hourly user cost	25	Mean hourly user cost	25
Mean user cost on 24 months	1 200	Mean user cost on 24 months	300
Total on 24 months	17 370	Total on 24 months	11 803



Technical specifications:

Dimensions:	L x W x H (cm) : 45 x 22 x 46
Weight:	14 kg – 30 pounds
Connection:	Swagelok 1/8"
Accuracy:	less than 2% of the flow all over the scale
Dilution:	from 0,5 to 100% of the initial concentration
USB Communication	Designed for Windows™ XP
Power Supply:	220 VAC / 2A / 50-60 Hz (110V available)
Enter Pressure:	Gas 3 bar –LPG 1 bar
Max Exit Pressure:	2 mm Hg to 800 m Hg absolute

* Note Specifications subject to change without notice



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