

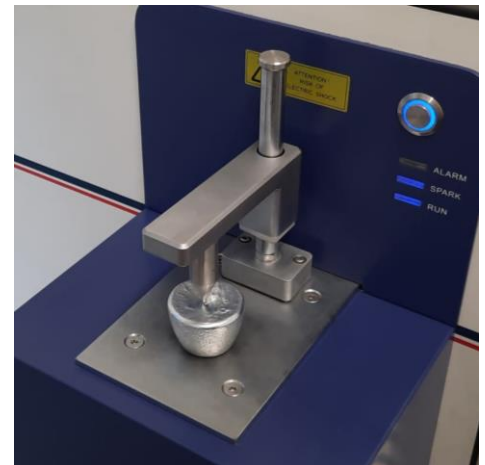
# ARUN TECHNOLOGY APPLICATION NOTE

## TYPE STANDARDISATION



Optical Emission Spectrometry (OES) is a fast and accurate way to measure the exact chemical composition of materials, but this high performance means that spectrometers are also very sensitive. Without regular verification, maintenance and recalibration, OES performance can begin to suffer. When your business is dependent on maintaining tight quality control over the composition of your end products, inaccurate analysis is an issue which must be remedied fast.

Certified Reference Materials (CRMs) are used to calibrate and standardise OES instrument because they use relative rather than absolute measurements, so it is essential to be able to calibrate the device to known compositions in analysed materials. ARUN Technology's range of OES instruments have total wavelength coverage between 146 and 680nm, making early indicators of potentially disruptive drift in instrument sensitivity easy to spot. The spectral positions of all relevant channels are important to monitor, and this procedure is recommended to be performed monthly to maintain performance.



However, in some cases the standard calibration or standardisation method for an instrument may not meet your requirements for accuracy, and a **Type Standardisation** may be needed.

### THE BENEFITS OF TYPE STANDARDISATION

There are several reasons why deviations in accuracy may still be observed despite calibration to CRMs. Firstly, most CRMs are manufactured synthetically, meaning it is not guaranteed that their composition or structure will correspond to that of the samples being analysed. Secondly, alloys on the more extreme end of the spectrum can often deviate from the matrix material. Type Standardisation can help to achieve a large improvement in OES accuracy on top of a standard calibration by using a sample which has been prepared in the same way by the same



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process as the samples being analysed. A correction specific to those samples' composition and structure is generated to optimise results for these samples.

The Type Standardisation process should be run before running the samples of that alloy type, it will fine tune the calibration for these ranges. Note that samples should be correctly and freshly prepared, and that a Type Standardisation should never be used as a global correction method to analyse materials with significantly different chemical compositions. It is only valid for the correction of similar materials in terms of composition and structure.



ARUN Analytical : Fe-8120 Cr-Ni Stainless Steel

General Senior Management System Configuration

Default **Unknown Sample\_1**

	Unit	Avg	SD	RSD(%)
C	%	0	0	0
Si	%	0	0	0
Mn	%	0	0	0
P	%	0	0	0

The ARUN Technology Analytical software for OES comes equipped with a simple and intuitive Type Standardisation routine, accessed directly from the software toolbar. Add or modify type standards and perform Type Standardisation efficiently, allowing the procedure to be carried out with minimum disruption to your

production timeline whilst offering a marked improvement in results.

## CONSISTENTLY ACHIEVE TOP ACCURACY

The key to getting the best performance from your OES is understanding the factors that can affect its performance long term – the sensitivity of this technique is one of its greatest strengths but can also lead to distorted results if performance is not properly monitored.

ARUN Technology OES analysers are built to be stable and durable, using control samples to regularly standardise the results will correct any imbalances in the performance, whilst Type Standardisation can then optimise this performance further for specific materials.

