

Increased Headspace Sample Capacity on the GERSTEL MPS 2.

Keith Summerhill, Anatune Ltd., Hardwick, Cambridgeshire, UK.

Introduction

As laboratories have to analyse increasing numbers of samples using more efficient chromatographic methods, it is important that the sample capacity of an autosampler is sufficient to allow continuous operation.

This note describes an accessory that can be fitted to a GERSTEL MPS 2 that increases the sample capacity of the autosampler for 10 and 20ml vials from 96 to 160 positions.

Instrumentation

- GERSTEL Multi-Purpose Sampler (MPS 2) configured with Headspace option and 160-position sample tray.

Description

The Anatune Fast VOC method has an injection-to-injection cycle time of 8.75 minutes. A standard MPS 2 can accommodate a maximum of three 32-position vial trays when configured for headspace analysis giving a maximum of 96 samples before the autosampler trays have to be replenished. As a result the theoretical maximum unattended run time is 14 hours. While this is only just suitable during the working week for overnight operation, it can mean that the instrument can be idle for the major part of every weekend.

In practice, this run time is exceeded because there is a time overhead at the start of the autosampler sequence equivalent to the sample incubation time (15 minutes in the Anatune Fast VOC method) and also between the individual sample trays since the MPS 2 treats individual trays as separate jobs, where one job is completed before the next job is started. This also requires an additional 15-minute overhead between individual trays yielding a run time for 96 samples of almost 15 hours.

A modification to the MPS 2 that both increases the basic sample capacity of the MPS 2 and can be treated as a single tray allows increased unattended sample throughput. This modification increases the size of the single sample tray to 160 positions without the need to use the XL sample beam on the MPS 2. This will allow unattended operation for just less than 24 hours, using the Anatune Fast VOC method as a benchmark.

The ability to run for a 24-hour period allows instrument operation to be synchronised with the working day, which has the potential for reducing sample scheduling problems.

Conclusion

Increasing the sample capacity of the MPS 2 when operated in the headspace mode, is an effective way of increasing instrument utilisation. In the situation where short GC run times mean that the standard 96-vial sample capacity is exhausted, the additional capacity of the 160-position tray can significantly increase the productivity of an instrument.

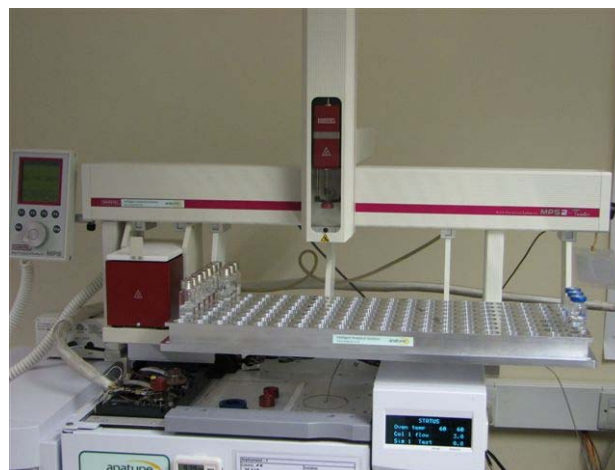


Fig.1. GERSTEL MPS 2 configured for Headspace operation, fitted with the 160-position tray.