



# HSS 86.50 PLUS

STATIC HEADSPACE SAMPLER

AFFORDABLE EXCELLENCE

RUGGED, HIGH-QUALITY DESIGN

EASY TO USE

EXCELLENT PERFORMANCE

UNEQUALLED QUALITY/PRICE RATIO

(30)

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**AFFORDABLE EXCELLENCE**

## HIGH PRECISION WITH EXCEPTIONAL SIMPLICITY AND ROBUSTNESS

DANI HSS 86.50 Plus Static Headspace Sampler is the ideal solution for the efficient extraction and introduction of volatile compounds from any non-volatile matrix directly into the gas chromatograph in your day-to-day routine work.

Excellent analytical precision and accuracy are achieved with complete automation and extreme simplicity. The reliable Valve & Loop configuration delivers high sensitivity and outstanding analytical performance, meeting and exceeding the specifications given in an array of regulatory standards.

Liquid or solid samples can be placed in sealed vials and thermostatted in a temperature controlled oven. Vial shaking is also available to speed up phase equilibration time and increase efficiency. The vial is pressurized and the volatiles are then swept from the sample headspace into the fixed volume sampling loop. The use of the carrier gas flow through the loop enables the transfer of the volatiles into the gas chromatographic column.

The HSS 86.50 Plus is the technique of choice for the determination of volatile compounds in solid and liquid matrices, supporting a wide range of applications such as pharmaceutical, forensics, food and beverage, flavor and fragrance, packaging, water, and soil.

Moreover, the HSS 86.50 Plus offers an easy and flexible management of all operating parameters and analytical conditions permitting the unattended analysis of up to 44 samples.

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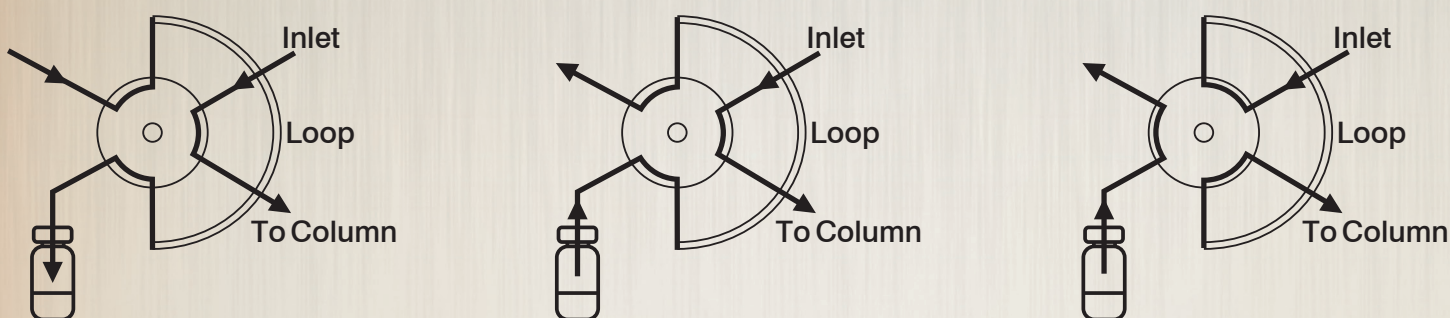
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## WELL ESTABLISHED "VALVE&LOOP" SAMPLING TECHNIQUE

DANI HSS 86.50 Plus applies the "Valve&Loop" technique, which is a renewed and proven headspace sampling technique able to merge robustness with reliability. In the Valve & Loop system the carrier gas flow rate is uninterruptedly maintained, keeping the initial part of the chromatogram unaffected. The HSS 86.50 Plus effectively overcomes sample quantitation issues. The transfer of a known and accurate sample volume is enabled without the need to monitor vial pressurization and sample volume is enabled without the need to monitor vial pressurization and sample transfer time achieving superior repeatability and precision.

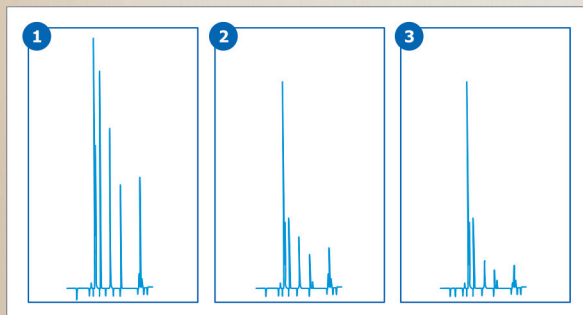
Unlike gas-tight syringe headspace systems, in the HSS 86.50 Plus the entire sample path is uniformly thermostatted preserving sample integrity. Moreover, during injection, the robust Valve&Loop technique permits the sample to flow continuously from the vial to the GC column, without any connections or path interruptions.



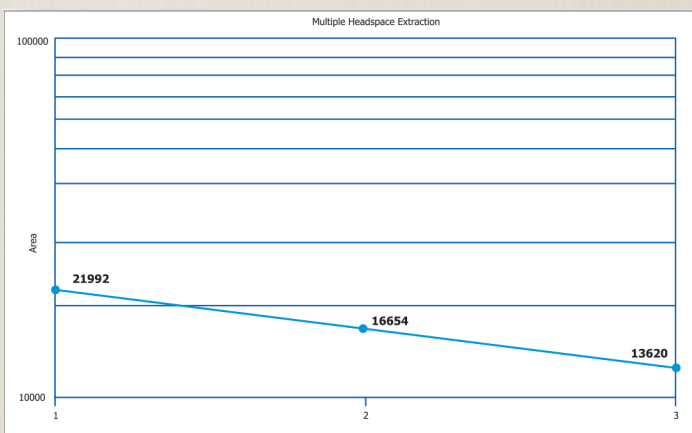
## INCREASED RELIABILITY AND PRECISION

The inert material of the entire sample flow path prevents carryover effects, corrosion, and sample degradation or loss caused by adsorption or reactivity.

The oven, manifold, and transfer line temperatures are also controlled to avoid sample condensation and increase sensitivity of the method. The automatic Multiple Headspace Extraction (MHE) is a necessary tool to compensate matrix effects when the use of external standards is not applicable. This widely accepted quantitative approach deals with successive analyte extractions followed by headspace equilibration in each step. The system provides up to ten successive samplings from the same vial using single or multiple septum punctures. During the series of extraction steps the analyte concentration in the headspace decreases exponentially and the use of semi-logarithmic plots of MHE raw data enables to quantify the total amount of analyte present in the original sample.



Automatic MHE enables successive analyte extraction followed by headspace equilibration. The analyte concentration in the headspace decreases exponentially during the series of extraction steps; semi-algorithmic plots of MHE raw data permit to quantify the analyte concentration in the original sample.



## EASY METHOD SET-UP AND OPTIMIZATION

Minimal operator experience is needed: the negligible sample handling and the complete automation of all process steps offer increased sample throughput and ensure highly reliable results.

Operating parameters can be easily set up and stored through the easy-to-use keypad. Up to four methods can be linked, expanding system flexibility. In addition, the oven temperature and the vial equilibration time can be automatically incremented to determine the best sampling parameters and to assist method development.

An intuitive and easy control of all parameters and the highly precise regulation of gas flow rate, time, and temperature provide an unsurpassed repeatability and accuracy of the analytical results.

No time-consuming glassware cleaning is requested. The sample is placed in a disposable 10-mL or 20-mL headspace vials thus eliminating any risk of carry-over effects.

Since no sample preparation is required and all processes are automatized, the HSS 86.50 Plus is the ideal solution for laboratories involved in volatiles analysis, requiring minimal expertise and training time.

## SIMPLE AND FAST INSTALLATION ON ANY GC

The installation of the HSS 86.50 Plus does not require a specific GC injector type or any GC hardware modification. The transfer line can be easily connected leaving the injector free for direct syringe injection. The DANI HSS 86.50 Plus unit can be easily hyphenated to the DANI Master GC or to any other GC on the market.

## 44 SEAT SAMPLE TRAY

The HSS 86.50 Plus allows to process up to 44 vials sequentially with enhanced precision and accuracy, providing increased sample throughput and decreased cost per sample.

## CONSTANT INCUBATION TIME AND SAMPLE OVERLAPPING CAPABILITIES

The incubation oven equipped with a built-in shaker not only speeds up the sample gas-liquid equilibration time but also reduces analytical cycle run times. Superior repeatability is guaranteed by uniform and constant heating and shaking.

The constant incubation time allows time saving sample overlapping and increased laboratory productivity: the system automatically controls that the next sample is thermostatted during the GC analysis of the previous one.

## EASY CONNECTIVITY AND FAST OPERATOR RAMP-UP

Control of the DANI HSS 86.50 Plus can be achieved using the intuitive user interface or the dedicated control software. Connection with a PC is through USB port or RS232.

The overall user interaction of the HSS 86.50 Plus is designed to mimic the analytical workflow of the HS-GC analysis allowing less experienced or sporadic users a smooth and error-free interaction.

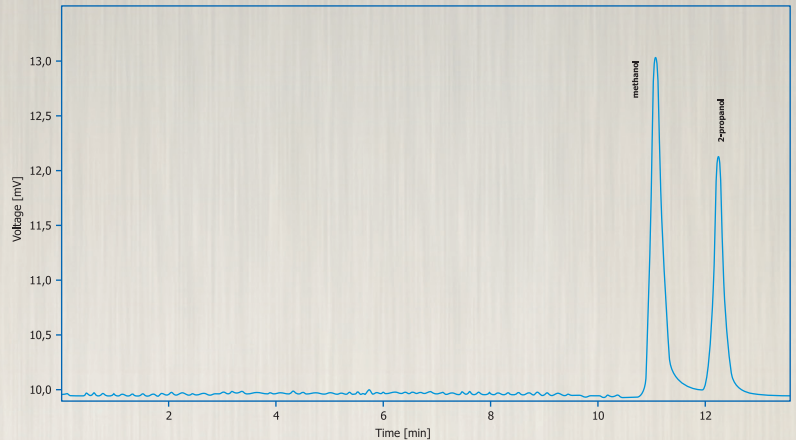
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SUPERIOR REPEATABILITY AND RELIABILITY FOR A BROAD RANGE OF APPLICATIONS

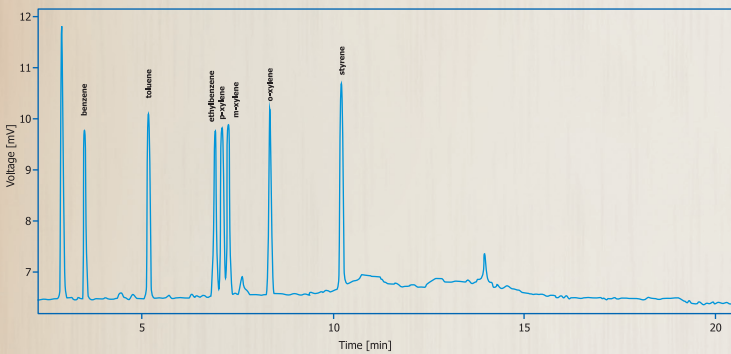
## BIODIESEL QUALITY DETERMINATION

The determination of residual methanol in pure biodiesel can be successfully performed using the DANI HSS 86.50 combined with the DANI MASTER GC in compliance with the European Biodiesel Standard DIN EN 14110. The automated and unattended processing of a large number of samples is enabled and the high sample throughput is ensured by the unattended processing of up to 44 vials.



## STRAIGHTFORWARD DETECTION OF VOCs IN WATER

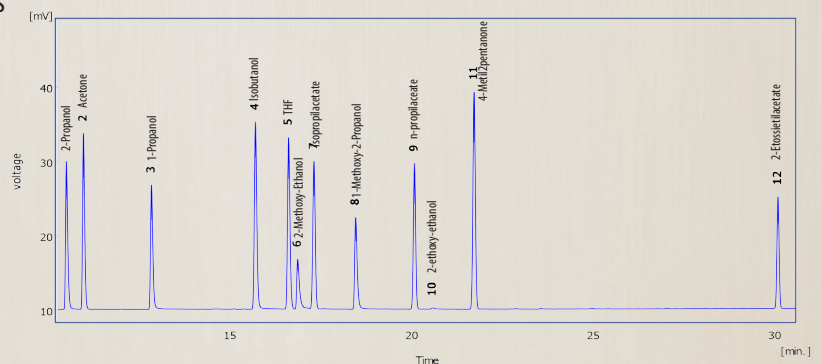
Headspace sampling is the ideal approach for modern laboratories to handle the increasing demand for the detection of Volatile Organic Compounds (VOCs) in drinking and raw source water. The detection of BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) and other substituted benzenes at ppb levels is achieved. The HSS 86.50 Plus features superior sensitivity with ease of use and robustness.



## RESIDUAL SOLVENTS IN FOOD PACKAGING MATERIAL

Residual solvents have become a concern both in food products and in food packaging materials and their monitoring is therefore of utmost importance.

The advantageous HSS 86.50 Plus permits consistent and automated sampling and permits to achieve minimum detectable levels below currently recommended limits (EN 13628-2:2002 norm).

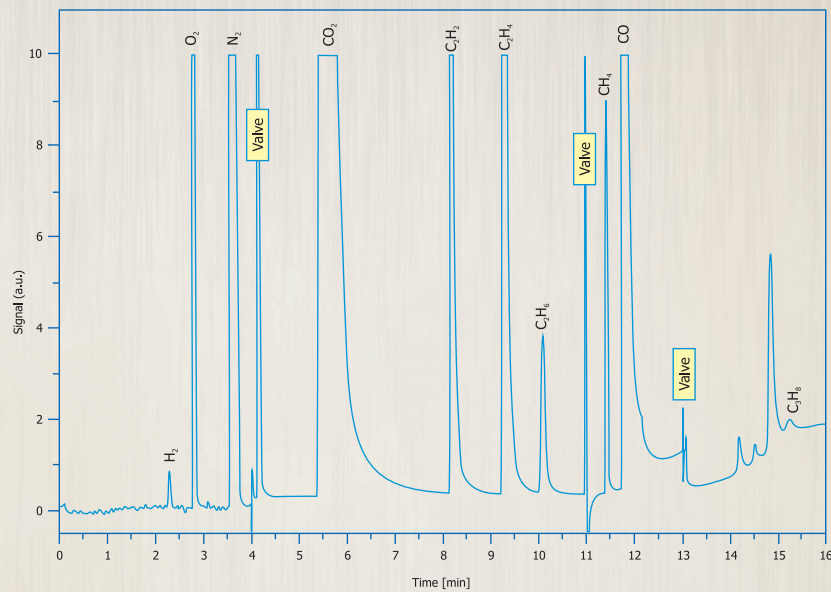


## TRANSFORMER OIL GAS ANALYSIS

Care and maintenance of expensive transformers is facilitated by monitoring the fluctuations in the concentration of gases dissolved in the transformer oil.

The efficient HSS 86.50 combined with the DANI MASTER GC equipped with a Micro Thermal Conductivity Detector ( $\mu$ TCD) and a Flame Ionization Detector (FID) with methanizer is an outstanding solution for transformer oil gas analysis providing easy and reliable quantification.

The headspace solution complies with most standard test methods such as the ASTM D-3612 (Method C).



### KEY TECHNICAL POINTS

HSS 86.50 Plus

The unit is equipped with a 44 vial sample tray

Standard 10 mL or 20 mL vials with crimped cap

Incubation oven with 6-vial capacity and vial shaking capability

Sample overlapping with constant incubation time

Several sample loop volumes available

High Temperature oven, valve, and transfer line

Inert sample flow path

MHE with up to ten successive samplings from each vial

Compatibility with most of the commercially available GC and GC/MS systems



A SCENT OF FUTURE

AUTHORIZED DEALER

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