

# ECLIPSE - WELCOME TO THE FUTURE OF PROCESS GAS CHROMATOGRAPHY

Typical process gas chromatographs (PGCs) monitor 2-3 analytes isothermally from one process stream. Eclipse PGCs can monitor dozens of analytes by using up to 8 capillary columns sampling up to 16 sample streams. Eclipse chromatographs offer MS, VUV, PDHID, TCD and FID detector combinations controlled by dedicated electronic pressure and flow controllers. The result is an online PGC that can finally deliver lab-quality performance.



Figure 1: Close up of Wasson-ECE patented Micro-Convection Oven for capillary columns.

## Eclipse Technology

- Online MSD, VUV, PDHID, TCD and FID
- Capacity for up to 8 capillary columns
- Full electronic pressure programming
- Two programmable micro-convection ovens
- Two isothermal ovens
- Local 19" touchscreen interface
- MODBUS RTU, TCP and REST automation
- Wasson-ECE's new chromatography data system
- Sample systems with multiplexing for up to 16 sample streams
- Rated Class I, Division 2 and ATEX Zone 2 for hazardous locations

Table 1: Key features enabling lab-quality capillary column chromatography on a process GC.

The efficiency, and thus the value, of a PGC is maximized when the analyses provide as much data as possible in the shortest amount of time. In laboratory settings, this is achieved with the use of high-resolution capillary columns that utilize temperature and pressure programming to produce extensive chromatograms showing the separation and quantification of complex mixtures. Typical PGCs rely on low-resolution packed columns and isothermal ovens which limits their utility in monitoring complex sample streams.

**Eclipse is a new generation of PGC.** The objective in the design of this instrument was to deliver laboratory-caliber capillary column chromatography in an online PGC. To meet this goal, the Wasson-ECE engineering teams combined electronic pressure and flow controls with high-performance convection ovens. Eclipse has two independent, patented Micro-Convection Ovens (MCOs) which provide two unique temperature programmed environments (Fig. 1). There are also two isothermal ovens, each with a separate temperature assignment. This configuration, two independent programmable ovens and two isothermal ovens, delivers the most flexibility and analytical capability available on the PGC market today.

## Super RGA: An example of Eclipse's comprehensive capabilities

The Super RGA (refinery gas analyzer) addresses gas, pressurized liquid, or liquid samples that range from hydrogen to C20. The Super RGA uses four ovens – two temperature programmable and two isothermal – and four detectors – two flame ionization (FID) and two thermal conductivity (TCD). One TCD uses nitrogen carrier gas and quantifies hydrogen. The other TCD uses helium, or hydrogen carrier gas and quantifies carbon dioxide, carbon monoxide, oxygen, nitrogen and hydrogen sulfide. The two TCD signals are summed together so that the resulting single TCD chromatogram encompasses the full range of the TCD analytes (Fig. 2).

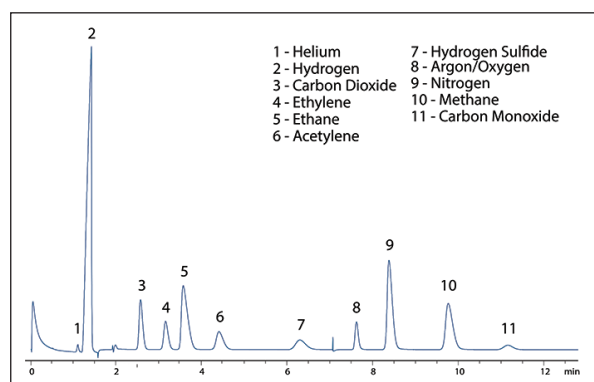


Figure 2: Eclipse TCD chromatogram showing separation of common permanent gases and H2S.

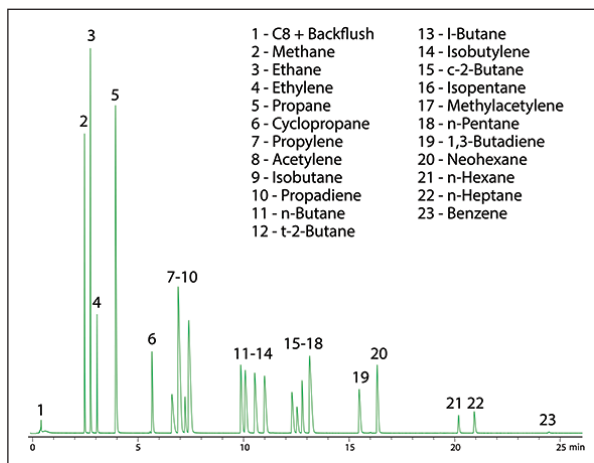


Figure 3: Eclipse FID1 chromatogram showing separation of C1-C7 hydrocarbons and backflush of heavier species.

Both temperature programmable MCOs house capillary columns. One oven has two columns and is connected to one of the FIDs to produce a chromatogram of C1-C7 paraffins and olefins plus a C8+ composite peak (Fig. 3). The second MCO has a capillary column which specifically separates the C8-C20 hydrocarbons (Fig. 4). The two FIDs each produce their own chromatogram and these chromatograms occur at the same time the combined TCDs chromatogram occurs. This comprehensive system produces three chromatograms simultaneously: one combined TCDs and two FID chromatograms. The extensive analyte range covered by this single analyzer makes it the broadest ranging PGC in the world.

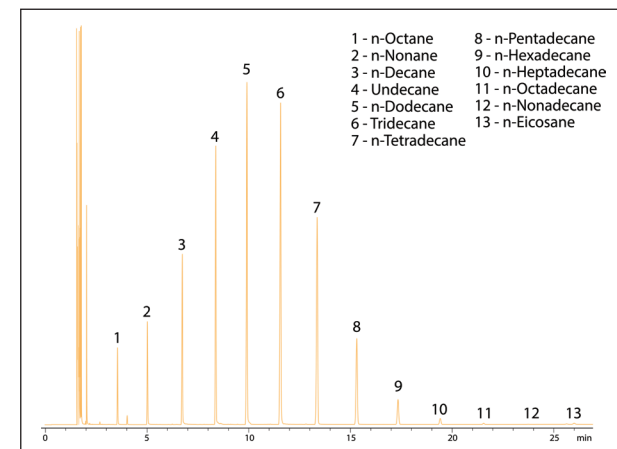


Figure 4: Eclipse FID2 chromatogram showing speciation of C8-C20 hydrocarbons.

Thus, four aliquots of the same sample are injected down parallel paths, each aliquot being directed to the column of choice with its own temperature and pressure program. Simultaneous chromatograms are combined into a single digital report and transmitted as needed. Since this one Super RGA analyzer interrogates a single sample flow, the resulting multidetector data provides greater accuracy and with overall reduced analysis time.

Wasson-ECE Instrumentation has 35 years of experience designing, building and applying the most sophisticated GC systems in the field. With Eclipse, Wasson-ECE is leading a revolution in process gas chromatography.

The Eclipse suite of fully applied PGC analyzers are ready to transform your HPI processes.

More information online: [ilmt.co/PL/4Qzl](http://ilmt.co/PL/4Qzl)

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