

Chromatography Corner

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upcoming events

- May 20: Free Blender Webinar
Time: 9:00am MST
- June 24: Free Automator Webinar
Time: 9:00am MST

To register for one of Wasson-ECE's webinars visit:
www.wasson-ece.com/events
or call (970)221-9179

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Wasson-ECE Introduces the Automator

Wasson-ECE Instrumentation introduces the Automator; a new way to automate your lab hardware. The Automator allows the user to easily configure and automate hardware without the use of expensive software or knowledge of a programming language. Runtime tables and logical control are easily configured using the configuration and method design wizards, reducing development time from days to minutes. The Automator is operating system (OS) independent and can be accessed through the internet for remote configuration.

The easy to use configuration wizard allows for quick setup times. Hardware is connected to the Automator by a standardized pin set. The configuration editor is then used to configure the system I/O to match the hardware connected. Once configured, the user moves directly to method development. The method editor allows the user to design a method based on the existing hardware configuration. By setting timing, flow, temperature, and voltage the user gains complete control over the hardware. The method and corresponding hardware configuration can then be saved for later use.



Product Features:

- Fully configurable digital and analog I/O
- Proportional integral derivative (PID) control
- Standalone controller with configurable IP address
- Temperature, pressure, flow and voltage control
- Hardware state editor with runtime event table
- Touch screen controller interface
- Four PID configurable loops
- 24 digital I/O, expandable to 55 digital I/O
- 16 channels of 16-bit A/D
- Four channels of 12-bit D/A
- Client software accessible from internet
- No additional software needed
- Operating system (OS) independent



Engineered Solutions, Guaranteed Results.

Analyzing Oxygenates, Hydrocarbons, and Permanent Gases in Alternative Fuels

Over the past few years, there has been an increase in the need for alternative fuels to replace petroleum products. Many of these alternative fuel processes (including fermentation, pyrolysis, and Fisher-Tropsch) generate large fractions of oxygenates. These processes require analyses which not only include typical refinery gas impurities, but also oxygenates. This poses a unique analytical challenge, as traditional refinery gas type analyzers are not designed to handle high concentrations of oxygenates.

In response to this need, Wasson-ECE developed a modified refinery gas analyzer that includes the analysis of oxygenates while still analyzing hydrocarbons and permanent gas components.

With the use of valve timing and pressure control, Wasson-ECE was able to achieve oxygenate and hydrocarbon analysis on a single flame ionization detector (FID).

Hydrocarbons were measured to a lower detection limit of 1 part-per-million (ppm). Oxygenates were measured to a lower detection limit of 20 ppm. The instrument coupled dual thermal conductivity detectors (TCD/TCD) to capture the permanent gas including helium, hydrogen, oxygen, nitrogen, carbon monoxide, carbon dioxide, ethane, ethylene, acetylene, argon/oxygen composite, hydrogen sulfide and methane. The total run time for the complete analysis is less than 30 minutes.

With the introduction of alternative fuels came the need to not only analyze the typical fuel components (hydrocarbons, permanent gases), but also oxygenates. Wasson-ECE developed a complete solution that provides hydrocarbons, permanent gases, and oxygenates with a single injection in less than 30 minutes.

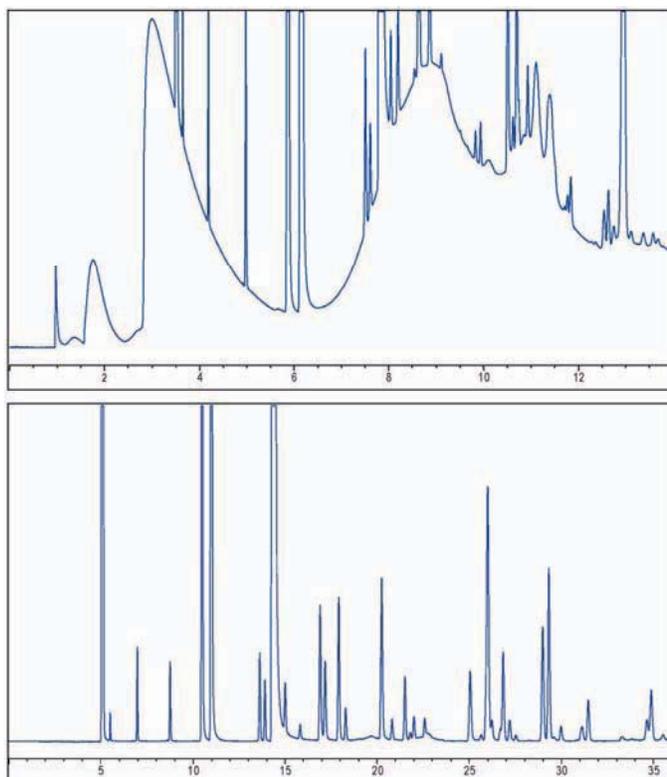


Figure 1 and 2: The top chromatogram shows oxygenate contamination of the hydrocarbon analytical column. The bottom chromatogram shows the same analysis with the oxygenates removed by a guard column.

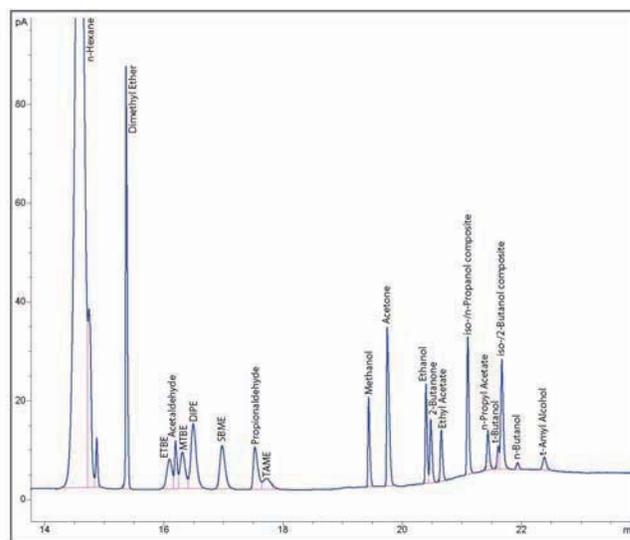
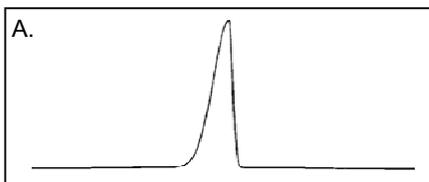


Figure 3: Enlarged oxygenate portion of the hydrocarbon and oxygenate analysis using a single FID.

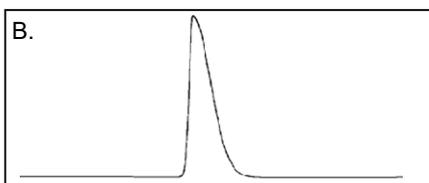
Chromatography Tips and Tricks

Good peak shape is an important part of GC analysis. Ideally peaks should be Gaussian in shape with very little asymmetry. However, when this is not the case it is important to recognize some common problems from the shape of your peaks. By doing so problems may be corrected with little to no lost time.

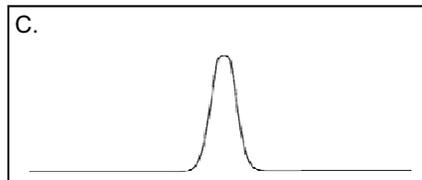
A peak that initially rises normally and then quickly drops to the baseline (Figure A) is most likely caused by column overload. This can easily be corrected by diluting the sample or injecting a smaller volume of sample.



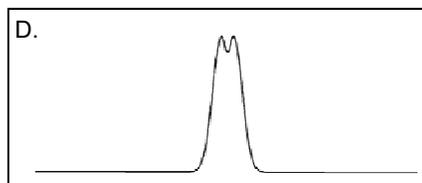
A peak that rises sharply and then falls normally to the baseline (Figure B) is a little more complicated to diagnose. Most commonly this type of peak is caused by an interaction of the sample with the column material. If so you may need to switch your column to one that matches your sample more closely. If your sample is gas phase this could simply be column overload and can be corrected by injecting less sample.



Peaks that show apex deformities (Figure C) are often caused by detector overload. Apex deformities can be corrected by injecting less sample or diluting the sample. In most cases sample dilution is the best approach because the detector is at the upper limit of its response. Try a dilution of 100 times or more to get the sample well within the operating range of the detector.



A peak with a split apex (Figure D) can be one of two problems. It could mean that two peaks have merged together and are not separating completely. The separation can be improved by reducing the oven temperature or slowing the temperature ramp. A split apex could also indicate that the detector is being overloaded. In this case, check the gas flows since overload is more likely when flows are too low. If this does not work the sample may need to be diluted.



Additional questions? Contact our service department at (970)221-9179 or service@wasson-ece.com.

Question of the Month

Q: Choose the correct hardware options for the following scenario. A laboratory is performing detailed hydrocarbon analysis. They need as much data as possible with minimal co-elutions. The samples are mostly light end components and contain olefins at approximately 10%, along with ethanol.

- **Initial oven temperature:**
 - Ambient OR Cryogenic
- **Carrier gas:**
 - Hydrogen OR Helium



- **Column configuration:**
 - Pre-column OR no Pre-column
 - 40 meter OR 100 meter column

Enter for a chance to win a digital camera for your lab. One winner will be chosen quarterly from a random drawing from the correct answers received. Answers to the monthly question can be faxed to 970-221-9364, emailed to QOM@wasson-ece.com or mailed to 101 Rome Court, Fort Collins, CO, 80524, Attention: Marketing.

Events Calendar



Wasson-ECE Instrumentation

specializes in configuring and modifying new or existing Agilent Technologies gas chromatographs.

Our systems are guaranteed, turn-key analytical solutions, with the installation, warranty and service plan on us. Contact us for your custom GC analysis needs and find out what a difference 20 years of experience can make.

May 20: Free Blender Webinar

June 24: Free Automator Webinar

July 29-30: Basic GC Course at Wasson-ECE in Fort Collins, CO

August 26: Free PNA Webinar

September 16-17: Lab Managers Training at Wasson-ECE in Fort Collins, CO

September 23: Free Oxy RGA Webinar

October 21-22: Basic GC Course at Wasson-ECE in Fort Collins, CO

October 28: Free Webinar TBD

Want a custom training course for your company? Need training at your site? Contact Wasson-ECE for your quote today at training@wasson-ece.com or call (970)221-9179.