



Cost Savings and Increased Revenue with Simplified GC FID Analysis

Summary

The flame ionization detector (FID) is 60+ year old technology with a very successful history. The FID by all accounts is one of the easiest detectors to operate in any GC configuration. With a fantastic dynamic range, the FID has been a staple in most production and R&D laboratory environments. Even though this wonder detector can analyze a wide range of compounds, it does have its limitations in the type of analytes it can detect.

Problem

Laboratories of all types, shapes, and sizes are constantly being squeezed to do more with labor and resources. The experienced chemists and analysts that have been in the lab for the last 40 years are not being replaced in the numbers that keep up with modern laboratory needs. Newer lab analysts now have less of an instrument and maintenance understanding than previous generations. This has led to technological advances in gas chromatography that in the last 25 years have simplified GC operation, but have not necessarily improved existing inlet performance and detector sensitivity. The GC status quo has remained and this stagnation in technology has not increased sample throughput, production savings, and overall improvements to the company bottom line.

Solution

A unique new post column, pre-FID detector technology released in 2015 is changing the way laboratories utilize the robust FID across all OEM GC designs. [The Polyarc® reactor](#) system converts all carbon containing compounds to methane for a universal FID response over seven orders of magnitude. Allowing all carbon containing components to be converted 99.99% to methane allows a greater application base for the FID opening the opportunity to consolidate GC methods, eliminate up to 99% of calibrations and increase instrument uptime because of

sulfur resistance. Easy to install and operate for a GC user of any experience level, you can incorporate this device without changing your conventional methods saving that valuable method development time.

Conclusion

The Polyarc system put simply, gives your laboratory back time. This time is valuable to all stakeholders looking for cost savings from the bench level chemist, lab manager, sales teams, and the C-level executive. From additional sample throughput, moving up turnaround times, and improvements in go-to-market for products, the Polyarc has been a game changing device for multiple industries and university laboratories. These laboratories are now seeing revenue and time savings of over \$100K per instrument per year. From day one, the Polyarc was designed with non-hazardous catalysts and a stainless-steel 3D printed microreactor that is easy and economical to replace with four simple connections.

Polyarc Cost Savings Example		
Item	Time/Dollars	Total
Calibration Time/Day	1.5hrs @ \$70/hr labor X 280 Days	\$29,400
Additional Samples/Day @ 280 Days	3 @ 30-minute Runtime & \$85/Sample	\$71,400
Total Revenue/Yr/Polyarc		\$100,800

Additional Considerations

Production facilities can benefit as well from the Polyarc by knowing that their complex raw materials are being properly converted into product. Even an error of five percent can mean millions of dollars of lost revenue and waste to the organization. Also, companies who are looking to replicate complex mixtures or identify unknown contaminants are also improving go-to-market with the Polyarc as a competitive advantage by decreasing their laboratory analysis time with the unique coupling of simultaneous identification and quantification in one step from a Polyarc - GC/MSD split.