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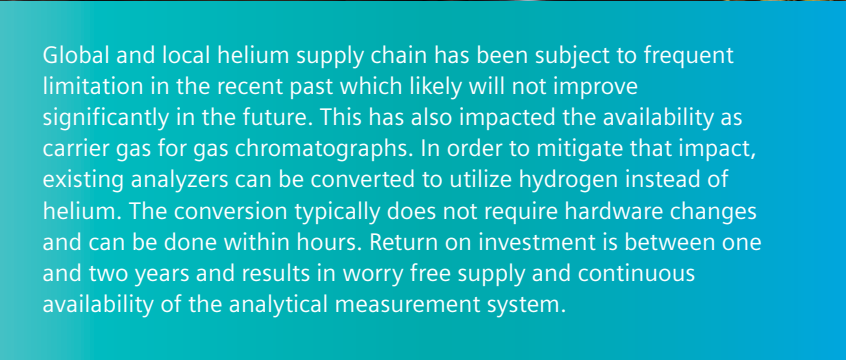


Analytical Products and Solutions



Mitigating Helium Dependency

Convert and utilize hydrogen



Global and local helium supply chain has been subject to frequent limitation in the recent past which likely will not improve significantly in the future. This has also impacted the availability as carrier gas for gas chromatographs. In order to mitigate that impact, existing analyzers can be converted to utilize hydrogen instead of helium. The conversion typically does not require hardware changes and can be done within hours. Return on investment is between one and two years and results in worry free supply and continuous availability of the analytical measurement system.



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Challenge

Over the last years global and local helium shortage continues to squeeze the supply chain reliability to a point where uninterrupted analyzer utilization was momentarily endangered. With increasing quantities of helium required and supply limited, it is prudent to consider alternatives when utilizing helium as a gas chromatographic carrier gas.

Considerations for continuous helium utilization:

- Helium supply reliability
- Quantity of helium supplies meeting industry demands
- Higher and faster price increase compared to hydrogen
- Price spikes during shortage

Solution

Let Siemens Analytical Products and Solutions help you convert your Siemens Gas Chromatograph from helium to hydrogen. We assist in auditing and identifying those analyzers that are candidates for conversion.

- Review your analyzer application drawings to determine suitability for conversion
- Perform detailed on-site study to determine what analyzers are suitable for the conversion, if necessary
- Identify safety issues associated with conversion of your specific applications
- Identify parts change out/additions required to convert your application
- Provide marked up drawings to reflect conversion

Conversion can be executed by a knowledgeable technician on-site or we can provide turn-key conversions

- Revamp application including adapting chromatography and analytical method
- Calibrate analyzer and document new chromatograms
- Markup site records and return analyzer to service

For more information, please contact:

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There are significant benefits for you:

- Turn-key conversion ready to perform
- Reduced cost of carrier gas by approximately 50%
- Average ROI (return on investment) is 1-2 years
- Hydrogen supplies are stable, both short and long term, due to abundant presence and local purification
- Reduced analytical cycle times in most instances and hence more frequent measuring data update.

Projected ROI

Maxum/Optichrom Single Column Train			
Units	Annual Savings	Conversion Cost	Projected ROI
5	\$2,700	\$4,900	1.8
10	\$5,400	\$8,400	1.6
20	\$10,800	\$15,400	1.4
30	\$16,200	\$22,400	1.4
40	\$21,600	\$29,400	1.4

Note: ROI projections are based on the following:

- Flow rate of 120cc/min average per analyzer
- Installed base of analyzer at a single site
- Mix of Optichrom and MAXUM analyzers at each site
- Price difference between helium and hydrogen in today's market place

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