



Rosemount™ 470XA Gas Chromatograph

Performance, Stability
and Reliability

Application Note

The Rosemount 470XA Gas Chromatograph is a compact, reliable, and price competitive solution designed to simplify natural gas analysis in fiscal and custody transfer applications. During the design and development of the Rosemount 470XA extensive testing was performed to verify the robustness of the design and its long-term stability.

Performance Equivalent to Rosemount Model 500 Gas Chromatograph

The Rosemount Model 500 GC is known world-wide for its rock-solid performance, accuracy, stability, and need for minimal maintenance. A gas chromatograph can be a complicated and expensive instrument; operators want to minimize their costs using this type of instrumentation. Lower up-front costs, longer run times between needed repairs or maintenance, and quicker repair times all contribute to a lower cost of ownership. The Rosemount 470XA is a worthy successor to the Model 500, demonstrating the same virtues – stability over time, long run times between service, reliable accuracy, easy to work on – and adds a new dimension: the affordability of the Rosemount 370XA.

The Rosemount 470XA features an oven design that is a space-optimized version of the Rosemount 770XA, another well-regarded model in the industry. By utilizing the same TCD detector, XA-series valves, solenoids, and columns, the 470XA achieves high levels of performance typically associated with higher tier gas chromatographs, all within a smaller form factor.



Figure 2 Design verification testing of the Rosemount 470XA at the Houston, Texas factory.

To verify that the design of the 470XA lived up to our customers' expectations of performance and Rosemount's internal design goals, the 470XA was subjected to some of the most extensive, rigorous, and long term testing ever performed on a Rosemount GC design. Twenty prototype 470XA units underwent long term factory testing, each running a continuous C6+ analysis. No intervention was done on any unit for the first 90 days, including no calibrations. After 90 days, each unit was allowed to auto calibrate every two weeks. Performance data from each GC was collected daily, and over half the units were allowed to run for over one year without maintenance intervention (some units were stopped and disassembled during the test period to verify component performance or to test other design parameters).



Figure 1 The oven assembly of the Rosemount 470XA showing its similarity to that of the high performance Rosemount 770XA.

Stable C6+ Analysis without Intervention

The chromatogram in Figure 1 shows typical results for the units under test, with chromatograms taken near the start of the test, after approximately six months under test, and after approximately one year of testing as described above. The stability of component measurements over the test period is very clearly demonstrated by the alignment of the component peaks over the analysis cycle.

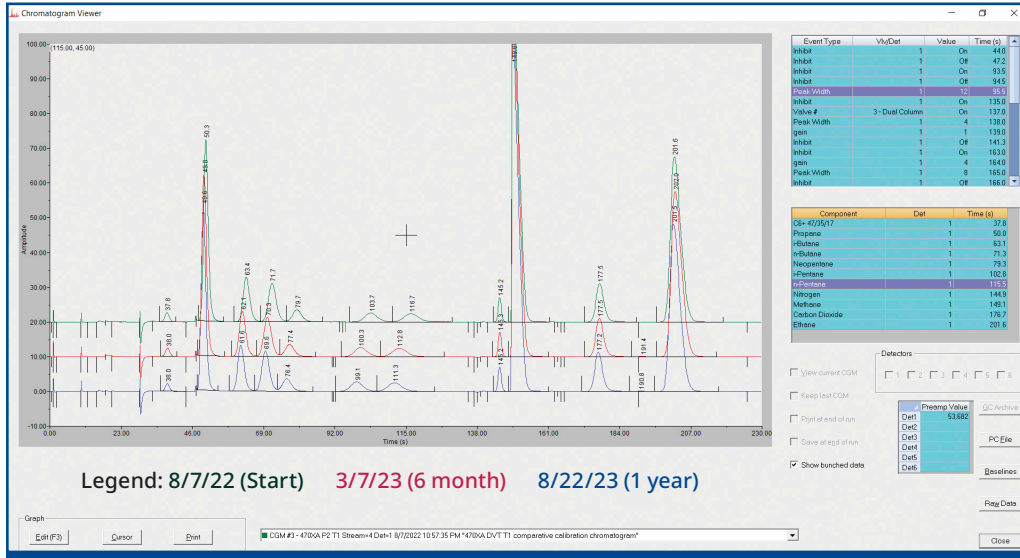


Figure 3 Comparison chromatograms taken from a unit under long term test at the start (green), six month (red) and one year (blue) evaluation points, as documented by the Rosemount MON2020 software.

Real World Testing and Verification Supports Factory Test Results

In addition to testing as part of the design process, the 470XA proved itself in field trials with customers, in real-world installations, indoors, outdoors, sheltered and unsheltered, with helium carrier and hydrogen carrier options. Positive feedback included comments on how quickly the unit started up out of the box and how it “runs like a clock”.

As is the case with all Rosemount BTU GCs, every 470XA with a BTU application is verified in an 18 hour hot/cold environmental chamber test to ensure the product meets specifications before it leaves the factory.

We’re confident that the design and testing of the 470XA have resulted in a highly reliable product. Built to meet your needs and expectations, the 470XA ensures dependable performance across various conditions and setups.

For more information, visit [Emerson.com/Rosemount470XA](https://www.emerson.com/Rosemount470XA)

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Figure 4 Rosemount prototypes in field testing (left) and cold temperature soak environment chamber testing (right).