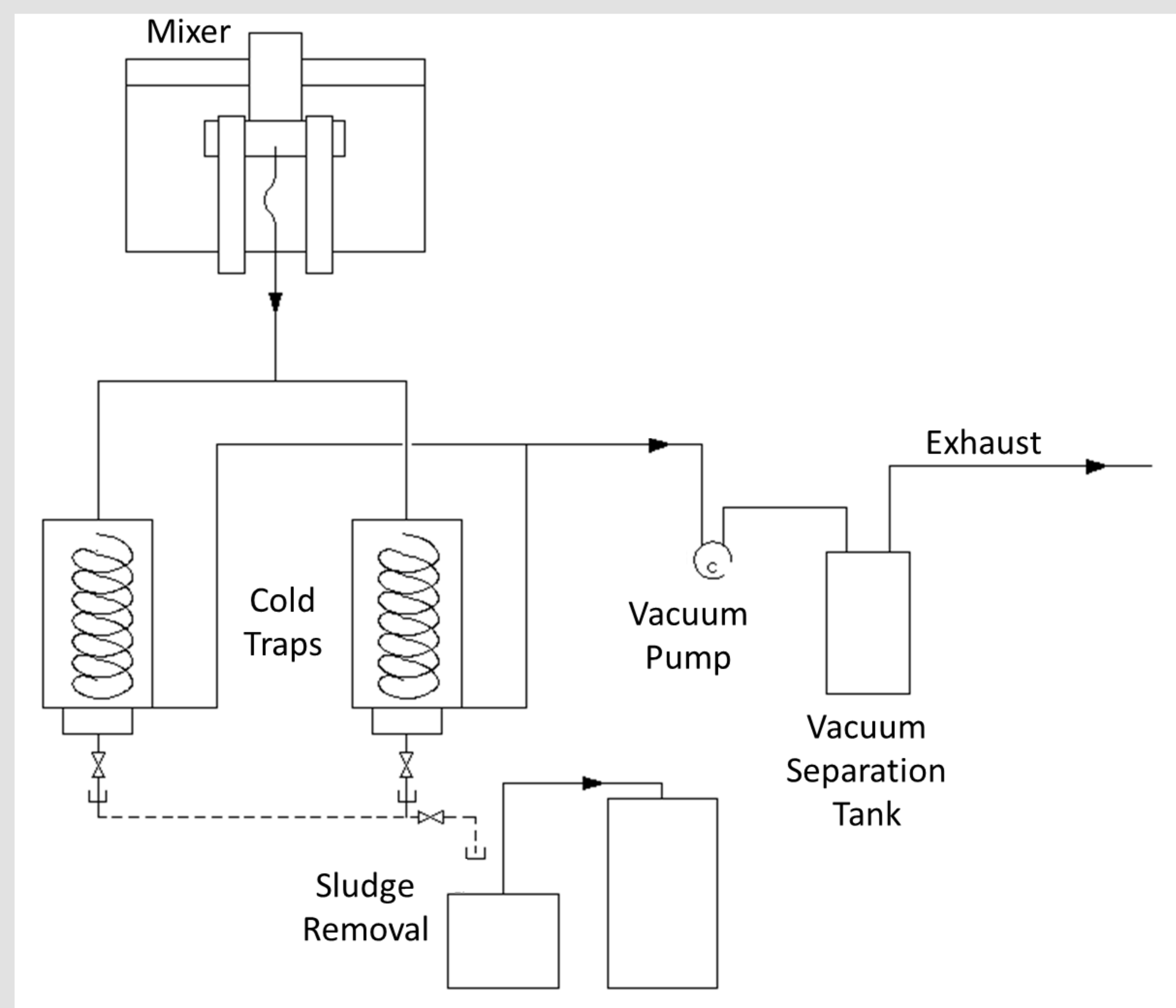
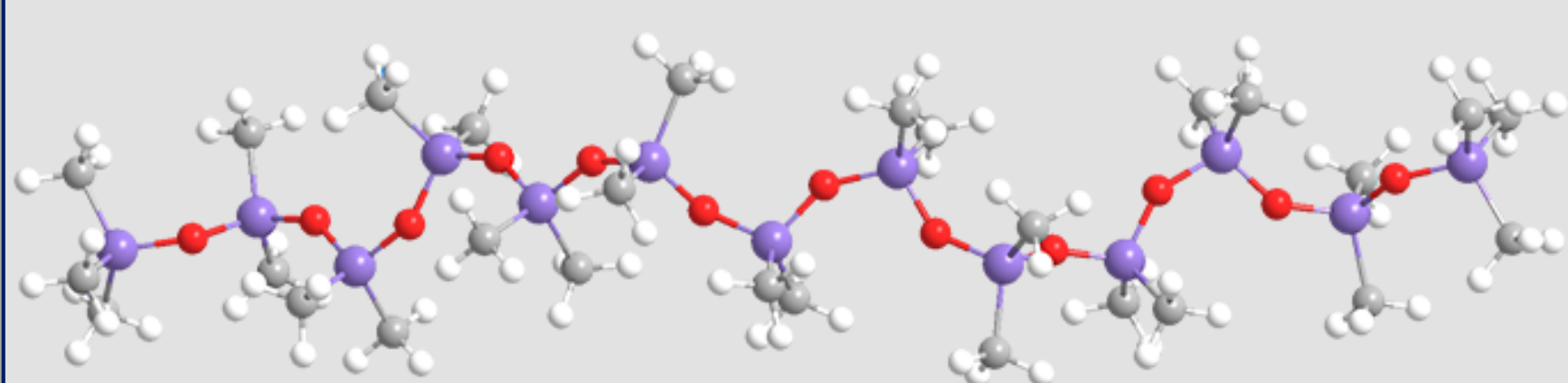


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Background

Silicone and adhesives products are produced in a batch mixing reaction. Volatiles such as water, ammonia, and polydimethylsiloxanes (below) are formed as unwanted side products in the process. To test the volatile content and ensure a quality product, the reaction must be stopped and purged multiple times.



Process Flow Diagram for Silicone Production and Gas Purge

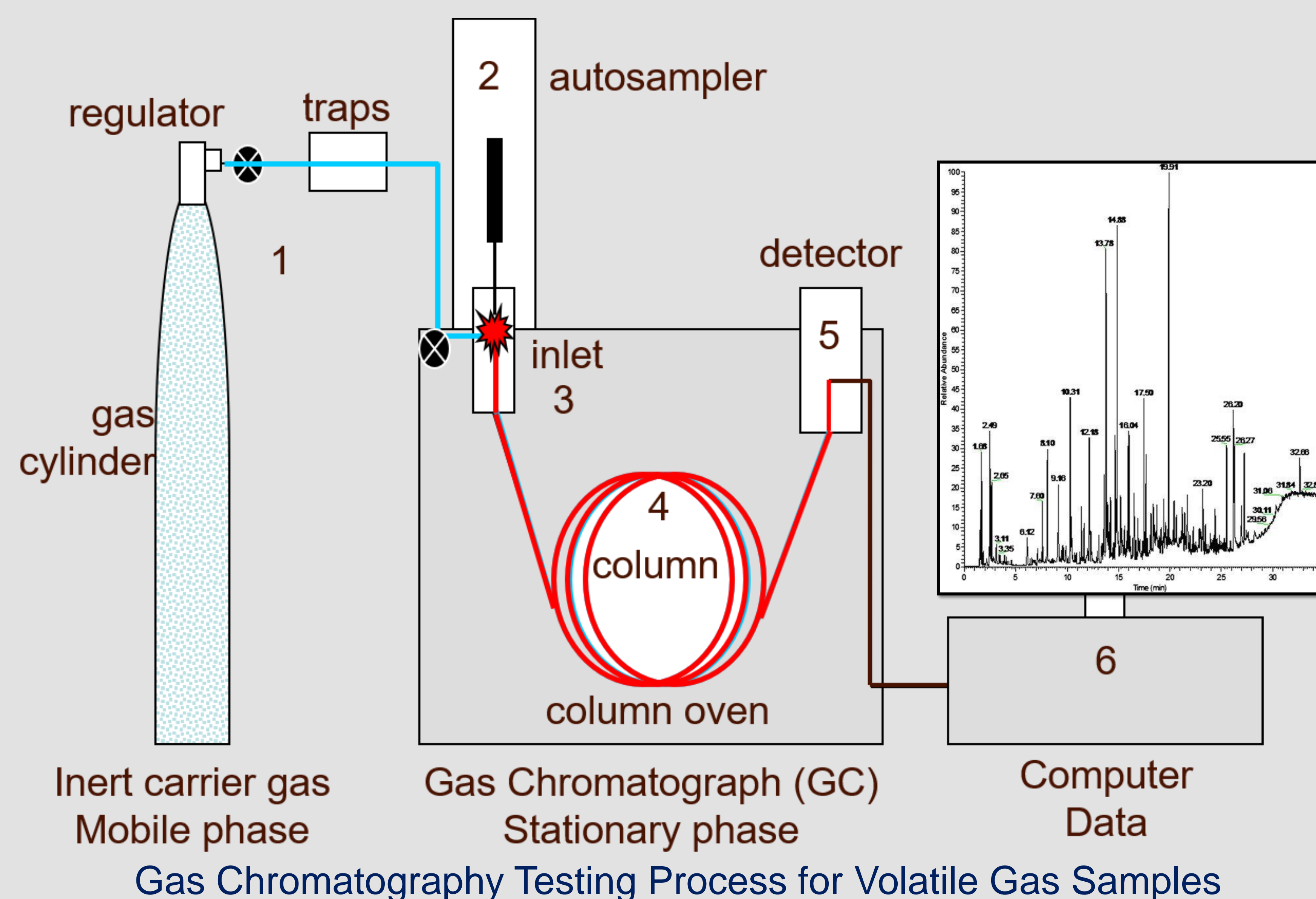
Design

Taking an in-line sample removes the need to take multiple product samples which requires pausing the mixing process. To acquire in-line samples from the gas exhaust line, we must overcome the lines vacuum pressure of 20 in Hg. Utilizing a rotary vacuum pump, a gas sample is drawn into an inert collection vessel. The sample is passed to a gas chromatogram which outputs the volatile composition. As the composition changes over time and reaches a specified limit, the mixing process is completed with greater precision.

Sampling Equipment



Important sampling equipment includes a rotary vacuum pump, gas chromatograph, and proper sampling container (Bottle Vac).



Benefits

- Batch → Continuous
- Reduction of testing dead time
- Greater amount of time to mix
- More product produced
- Reduction of nitrogen cost due to less purge cycles

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