

FAA G27 Testing Update



Federal Aviation
Administration



Presented to: Systems Meeting

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Background

- The FAA is performing tests in support of the development of an SAE battery packaging standard.
- The tests involve a .3m³ chamber with various criteria that the battery package must meet within the chamber.
- To ensure repeatability, it is the intent of test labs to compare our chambers.



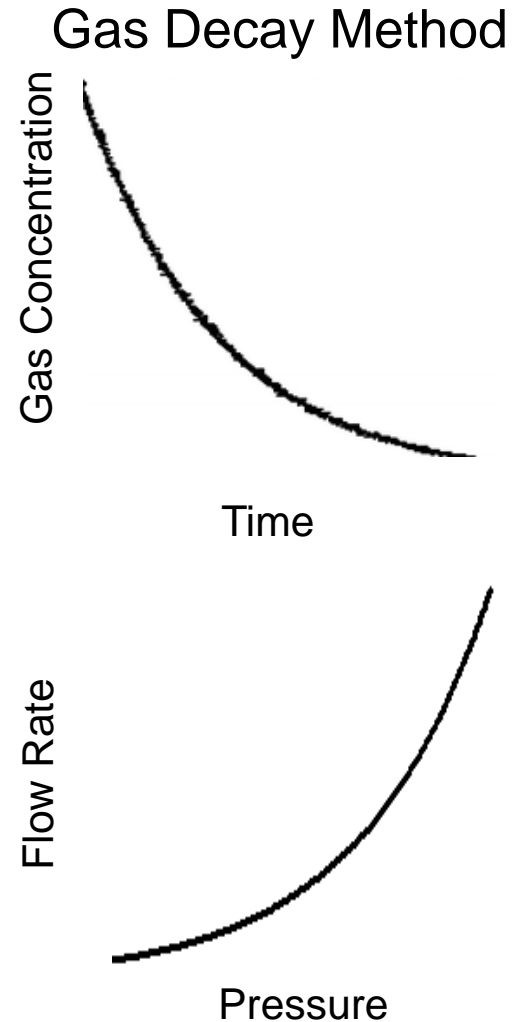
Introduction

- **A subgroup was formed from the main G-27 committee to perform round robins and look at necessary chamber requirements.**
 - Chamber leak rate determination
 - Mixing fan requirements
 - Spark igniter requirements
 - etc.
- **Currently, the FAA chamber has a leak rate of 1 hour determined by a gas decay profile.**
- **Our first task was to look at alternate methods of determining the maximum leak rate.**



Introduction

- **Within the group it was agreed**
 - gas decay method most represented actual test conditions since most of the time the chamber isn't under pressure
 - pressure/airflow method was easier to perform since it requires minimal time.



Introduction

- **Is the pressure rise in the pressure/airflow method low enough that it doesn't affect the chamber and therefore affect the perceived leak rate?**
- **For example: a pressurized chamber could cause leaks to grow and increase the leak rate.**
- **Tests will be performed with both methods with all test labs to determine the correlation between both methods.**



Setup – gas decay



Gas analyzer



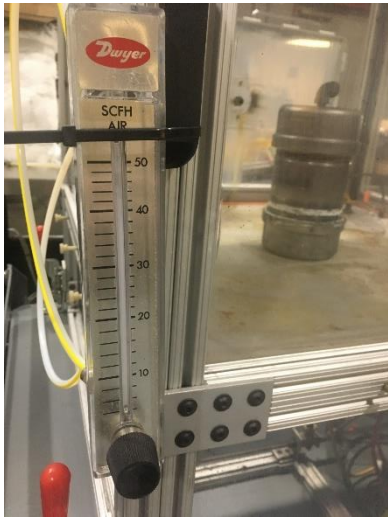
Chamber



CO₂ source

- CO₂ was sprayed into the chamber
- Time was given for temperature to equalize
- The decay of CO₂ concentration was recorded and used to determine exchange rate.

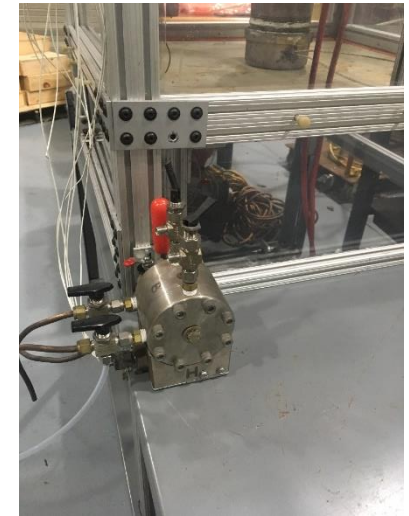
Setup – pressure/airflow



Flow Meter



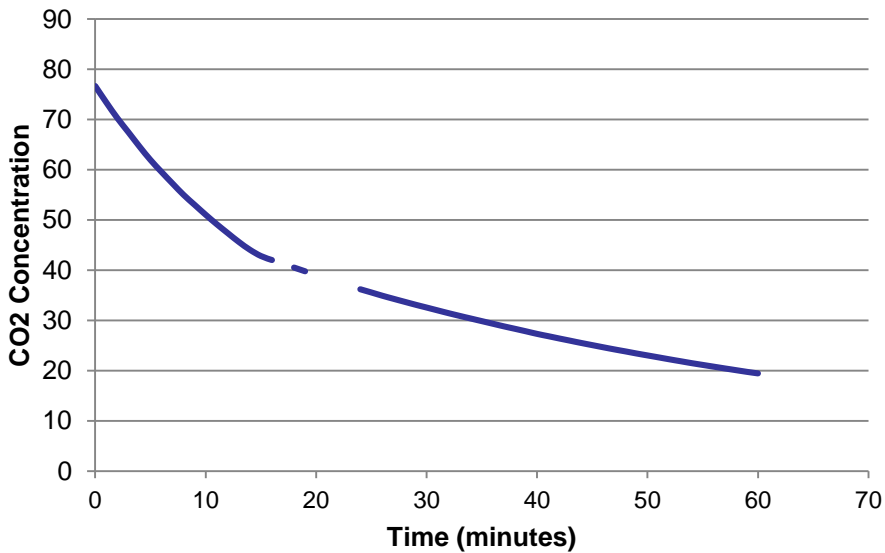
Chamber



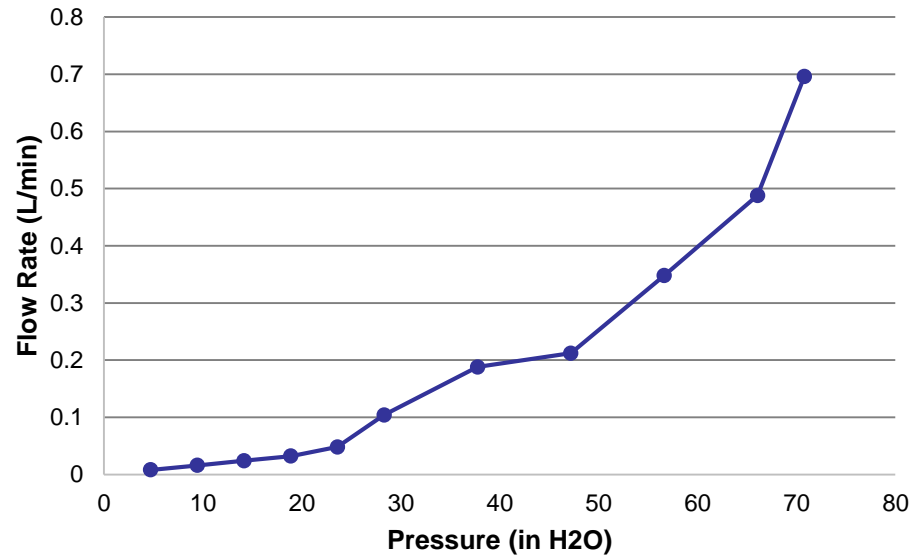
Pressure Transducer

- Air line was attached in series to a flow meter and then to the chamber
- Pressure transducer was ported to the chamber.
- Flow through the flow meter was gradually increased and the corresponding pressure was recorded.

Results



Gas decay method



Pressure & Airflow method

Summary

- **At first glance, the pressure/airflow method seems promising. However, validation is needed with other labs to verify correlation between the two methods.**
- **Waiting on other members of the group to perform tests.**
- **Once the chamber specifications are finalized the group can start round robin testing.**



Questions?

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