SF_6 Maintenance Equipment Fundamentals

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SF_6 Is...

- **Indefinitely reusable**
- **Easily maintained**

Maintenance Equipment Is...

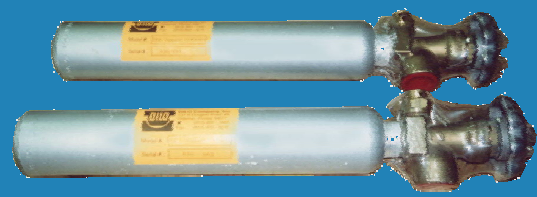
- **Affordable**
- **Efficient**

Reasons for Testing...

- Compliance with OEM
- Establishing benchmarks
- Increase maintenance intervals

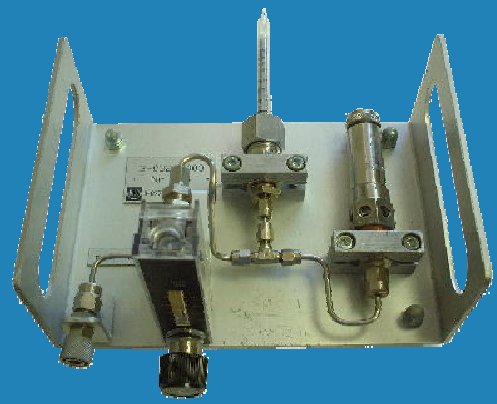
Off-Site Testing

- Sample drawn from GIE
- Shipped to lab
- Specific results



On-Site Testing

- Instant results
- Less accurate
- Lower cost

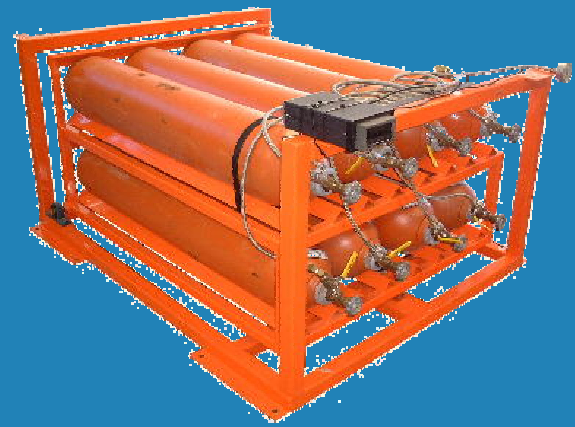


Test Equipment

- **Moisture**
  - **PPM_V, PPM_M, dew point**
- **Decomposition**
  - **SO_2, SOF_2, HF**
- **Purity**
  - **Volume percentage**

Recovery Equipment Uses

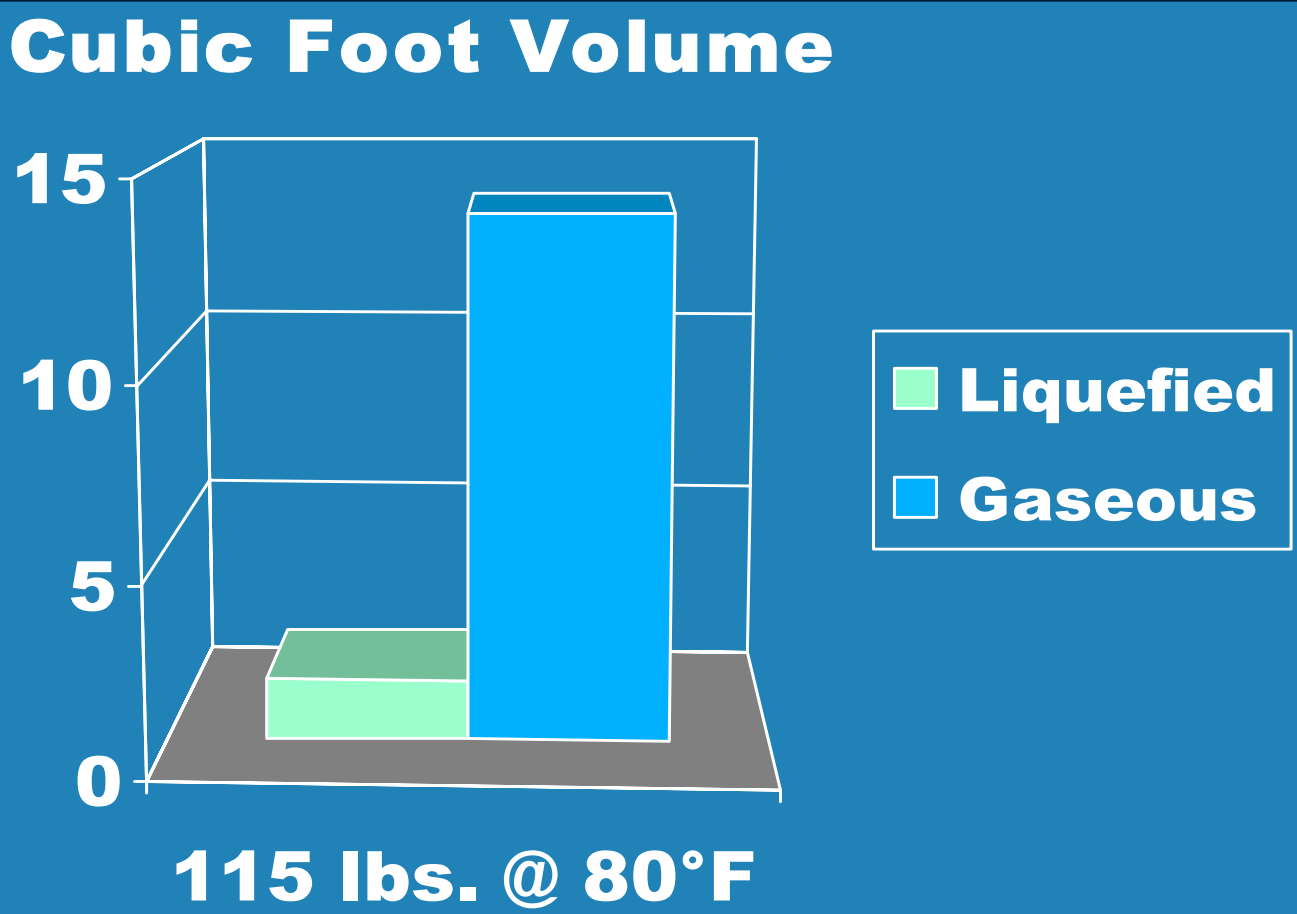
- Storing SF_6
- Filtering SF_6
- Consolidating SF_6
- Transporting SF_6



Recovery Equipment Type

- Sizes
- Technologies
- Capabilities

Liquid vs. Gaseous Storage



Liquefaction Technologies

- Heat-exchanged liquefaction
- Refrigerated liquefaction
- Direct high-pressure liquefaction

Low-Pressure Liquefaction

- Faster operation
- Temperature dependent
- Limited to refrigerated storage
- Not DOT-approved
- Constant power requirement

Heat-Exchanged Liquefaction

- Hybrid design
- Temperature dependent
- Requires circulation
- Not DOT-approved

High-Pressure Liquefaction

- Liquefy directly into any un-cooled vessel
- DOT-approved storage
  - 49 CFR 173.115(b):
    - Any Class 2.2 gas which exerts in the packaging an absolute pressure of 40.6 PSIA or greater at 68° F must be in a DOT approved vessel with a working pressure of at least 1000 PSIG.

High-Pressure Liquefaction

- Temperature independent
- Simplified and unsupervised operation
- Direct cylinder consolidation

Compressor Designs

- Direct-drive
- Belt-drive
- Pneumatic-drive
- Oil-lubricated
- Oil-free
- Oil-less

System Considerations

- 100% recovery
- Automation
- 100% refill

Components

- Main compressor
- Vacuum/booster compressor
- Filter
- Vacuum pump

Summary

- Recovery equipment for all sizes
- Equipment pays for itself
- Easy to use
- Constantly evolving