



Instrumentation & Controls Division
Integrated Engineering Services, Inc.
Fall - 2001

History

HPM Systems

founded in 1997 by:
Reinhard Hanselka,
Rizik Michael and
Jeff Tarter to
provide engineering,
consulting and field
services specifically
focused on the
instrumentation,
controls and
monitoring
requirements for
Hazardous
Production Materials
(HPM's).

Welcome Bert

HPM Systems

is pleased to
introduce **Mr. Bert
Buehler P.E.** as
HPM Systems' new
General Manager.
Mr. Buehler is a
Registered Electrical
Engineer and comes
to HPM Systems
with over twenty-five
years of industry
experience including
nine years as a
Division Manager for
Toxic Gas
Monitoring & Life
Safety Controls
projects in the
Silicon Valley area.

Expanded Services

The addition of Mr.
Buehler will
significantly increase
our Electrical
Engineering and
Systems Integration
capabilities.

ANNUAL FUNCTIONAL TESTING



TGO and UFC requires safety control systems to be tested at least annually; that such testing be performed by qualified persons; and that such maintenance and testing be documented and available to the Fire Chief upon inspection.

7 reminders when performing annual maintenance and functional tests:

- **Plan Now!** Conduct your inspection and testing during scheduled holiday shutdowns.
- **RFO Sizes:** Verify RFO sizes have not changed to maintain 1/2 IDLH treatment capability.
- **Excess Flow Switches:** Verify cylinder pressures and process flow requirements have not changed.
- **Gas Cabinet Exhaust:** Verify 200 fpm exhaust velocity across open access windows.
- **Emergency Control Station:** Test notification of alarm company and emergency responders.
- **Smoke Detectors:** Test smoke detectors in hydride storage areas.
- **Emergency Shut-Off Controls:** Test manual ESO controls at each source and point-of-use.

CERTIFICATION

Demand more from your gas monitoring and controls group. **HPM Systems** is the only company that provides all of the following:

- Professional Electrical Engineers
- Certified Fire Code Plans Examiners
- Certified 3rd Party Inspection & Testing
- Certified ERT Training & Response
- Certified Manufacturer's Representative
- Licensed Contractors



ENFORCEMENT TRENDS

With the industry moving towards "micro-bulk" systems within the facility, the Fire Departments have stepped up their enforcement of UFC Article 75.

UFC Article 75: Cryogenic Fluids

requires a permit for the installation of non-flammable cryogenic fluid systems greater than 60 gallons and references UFC Standard 80-4 for additional requirements pertaining to inert cryogenic fluids such as liquid nitrogen.

UFC Standard 80-4: Inert Cryogenic Fluid

Systems At Consumer Sites classifies inert gas systems greater than 20,000 scf as bulk systems. This encompasses not only "micro-bulk" systems such as Perma-Cyl[®], but also more than 4 standard dewers manifolded together. When such a bulk container or inert gas storage system is installed indoors, oxygen deficiency monitoring may be required along with an appropriate alarm system. This may include manual and/or automatic shut-off controls, smoke detection and exhaust interlocks – all of which may be integrated together by **HPM Systems**.

TUNABLE LASERS & COMPOUND SEMICONDUCTORS



The manufacturing process for both tunable distributed feedback lasers (DFB) and vertical cavity surface emitting lasers (VCSELs) generally involve growing an epitaxial layer on a gallium arsenide or indium phosphide substrate using phosphine and/or arsine with an organometallic.

Obviously, the toxic gases pose a significant health hazard and are required to be monitored by an approved gas monitoring system. However, it may be the use of the organometallics that pose the greatest impact on the facility. Organometallic compounds such as trimethylindium and trimethylgallium are classified as pyrophoric liquids, which are limited by the 1997 UFC – even in an H6 Fabrication Area – to 1 pound. This creates a problem since the quantity within a single Epi reactor may easily exceed 1 pound. In addition, indium compounds are coming under increased scrutiny as potential carcinogens, which could lead to a decrease in the PEL and TLV, and the requirement for additional monitoring.