

Medical University Resolves Boiler Explosion Risks

Application Note

"If Honeywell Combustion Safety had not intervened, it is very likely that another explosion was only a matter of time."

Challenge

The university medical center suffered three boiler explosions prior to involvement with Honeywell Combustion Safety. "The number one boiler had blown up twice and number two had blown up once," the center's facility manager explained. The two Babcock & Wilcox boilers were retrofitted in 1991, and the controls upgraded prior to the first explosion in 1993. Following the second explosion in 1997, an oxygen trim system was added. The last explosion occurred in late 2002. In all three cases, the wind box burner sections had been damaged when the boilers experienced low oxygen levels at low fire.

Solution

Honeywell's team of engineers, tuning and controls technicians identified the root cause of the explosions as an improperly designed boiler and inadequate repairs. Their findings included:

- Improper fuel/air ratio set up made for difficult and dangerous control of air fuel ratios at low fire
- Improper purge time prevented safe evacuation of combustibles prior to light-off
- Ineffective training and maintenance prevented the identification and resolution of combustion issues
- Bypassing of important safety interlocks included airflow switches, jumper wires and failed switches
- Numerous safety shut-off valves were leaking in the closed position while others had inoperable and/or missing shut-off handles
- Lacking start-up, shutdown and emergency procedures

Benefit

The Honeywell team brought to an end a long history of "near-misses". Based on the recommendations, the site's management decided to shut down boiler # 2 after the discovery of safety deficiencies. There were additional safety issues, which required attention, such as preventive maintenance, training of staff, emergency procedures and gap analysis. After conducting various testing, inspection and analysis throughout the facility, a comprehensive long-term recommendation plan was presented to the client.



World Leader in Combustion Safety Services

With 30 years of industry experience, Honeywell Combustion Safety, formerly known as CEC Combustion Safety, is the world leader in managing and mitigating combustion equipment and fuel gas piping risk exposure. The company provides expert testing, inspection, training and engineering services for all types of fuel-fired systems across numerous industries throughout the world.

National Code Committee Member

- **NFPA 85** - Boilers greater than 12.5 MM BTU/HR
- **NFPA 86** - Furnaces & Ovens
- **NFPA 87** - Fluid Heaters
- **NFPA 56** - Standard for fire & explosion prevention during cleaning & purging of flammable gas piping systems

Facts and Figures

- Global service, engineering & upgrade capabilities
- Domain expertise with all types of fuel-fired systems across numerous industries
- 30,000+ fuel-fired systems inspected and safety tested
- SafeView - A unique online reporting system featuring a dashboard that trends and tracks issues, and empowers proactive decisions across one to 100+ facilities and thousands of fuel-fired systems
- Corporate-wide creation, implementation and management of safety programs
- Thousands trained annually with client-specific hazards, live-fire demos and online training
- Proven safety services to increase safety, reduce costs and increase reliability, efficiencies, and competitiveness while ensuring facility capacity

Our Mission

To save lives and prevent explosions while increasing the efficiency and reliability of combustion equipment.

For more information

Learn more about Honeywell Combustion Safety, contact info@combustionsafety.com, visit www.combustionsafety.com or contact your Honeywell Sales Engineer.

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