EVOLUTION of the EMERGENCY CONTROL BOX ECB

Presented at Salinas Valley Safety Day
May 24, 2012
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INTRODUCTION

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Residing here in the Central Coast area since 1986, building & servicing facilities.

Participated in live tests of ECB
Scope

- The evolution of ECB from the early days (1950?) to present. Code changes.
- Explain how an ECB was used to help mitigate and lessen the effects of an ammonia release.
- Review an ECB SOP
- Conclude w/ debate, new version vs. old.
What is an Emergency Control Box?

Very simply, it is an enclosure with a system of Hand Valves, located in the proximity of the refrigeration machine room mandated for use by the Fire Code to help mitigate problems such as:

- Overpressure.
- Potential structural failure due to fire.
- Lessen a refrigerant leak.
Early ECB had only Hand Valves from the High & Low side(s) of the refrigeration system & a Water Valve piped to a chamber to mix with the ammonia as it is released (dumped). This ammonia & water mix is sent to holding ponds, tanks, or in some instances, down the sewer. All these valves had to be manually operated. No automation.
Along came Crossover Valves & Discharge into ADTs. Big improvement!! No more discharging ammonia & water mix to holding tanks or sewers!!

The crossover valves would allow transfer of High pressures from one part of the refrigeration system to another. There may be multiple crossover valves. Manual operation, no automation, still.
The Next ENHANCED ECB by the 2010 CFC 606.10

EMERGENCY PRESSURE CONTROL SYSTEM

EPCS

Automated Crossover Valves (Electric solenoid valves)

No means to transfer AMMONIA PRESSURE automatically or manually to an ADT.
Advantage: Overpressure control automatically, (High to Low). Automatic shutdown of refrigeration equipment. (redundant safety cutout)

Dis-advantage: No longer able to Transfer Ammonia (pressure) to an ADT to mitigate a Release.
Processor Release Rates

Pre - CFC 606.10 2010 EPCS

At the time of release: 760 #/HR.
= approx. 12 #/MN. = 2.3 GAL./MN.
Duration 1 HR. = 138 GAL. released

Leak rate after using the ECB to lower system pressure to 0 PSIG: 175 #/HR
= approx. 3 #/MN. = ½ GAL./MN.
Duration 9 HR. = 270 GAL. released

Total release amt. approx. 408 Gals.
Release potential w/ 2010 EPCS

10 HR. @ 760 LB./HR. = 7600 LB.
7600 LB. = APPROX. 1380 GAL.

408 GAL. With ECB (DUMP VALVES)
1380 GAL. With EPCS (NO DUMP VALVES)

Which would you choose to have? EPCS or Pre 2010 ECB?
Release Mitigation: ECB and ADT
Flow Diagram

Photo ECB:
ECB  EMERGENCY CONTROL BOX
SOP  STANDARD OPERATING PROCEDURES

• Review the steps and cautions of YOUR SOP for YOUR particular ECB
• Sample
Finishing Notes:

• Be sure to include the **ECB/EPCS** in the Mechanical Integrity yearly.

• Also, consider trying to operate the **ECB/EPCS** at night. Is there sufficient lighting to read all the operating instructions and labels?
Thanks for Attending the 2012 SVASD.

We hope you never have to use the spare tire for your car, but, it is nice to know you have one & it is in **Good Condition**.

The same goes for your **ECB/EPCS**.

See you next year!!