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Chairman's Message

By Adolfo Blasquez

The International Institute of Ammonia Refrigeration is gearing up for the 2012 IIAR Conference & Exhibition in Milwaukee, Wisconsin, and that means my term as Chairman is almost over.

It was a pleasure to serve in this leadership role, especially for the last year. IIAR made great strides to accomplish many important objectives in 2011, and as we look ahead to 2012, we'll be building on the many successes of the past year.

One of my goals as chairman was to expand the presence of IIAR's international presence, with the support and hard work of the IIAR international committee.

As part of a strategy focused on bringing IIAR safe and efficient practices to the international community, we've visited India and strengthened our ties with the Association of Ammonia Refrigeration, India, beginning the process of providing IIAR seminars in that country. In addition, we continue to work closely with the Chinese Association of Refrigeration and Eurammon.

In 2011, IIAR carried out two well attended, successful workshops; in Bogota, Columbia, and Guayaquil, Ecuador.

Both workshops were two-day events designed to deliver IIAR educational resources while also promoting safety, energy efficiency and a greater awareness of IIAR in the region.

In Bogota, Colombia, twelve 40-minute technical presentations were given by IIAR manufacturer members as well as local contractor members in Latin America.

The Optimization of Hot Gas Defrost, Methods for Estimating Cooling Times for Food, and Humidity in Refrigeration Systems, were just a few of the compelling presentation topics on the technical program.

Feedback from our Latin American seminars was overwhelmingly positive, and as a result, IIAR's international committee is currently planning similar events for 2012 in Peru, Chile and Costa Rica, followed by Ecuador, Colombia and Argentina in 2013.

The advancement of an international presence was only one part of the progress that IIAR made last year. An update to IIAR's PSM/RMP guidelines will debut at the IIAR annual conference. A new chapter for the Piping Handbook is now available.

In the 1990's, IIAR developed a set of guidelines based on the then-new PSM/RMP regulations. Since that time, IIAR members have had the chance to work through the real-life application of the regulations and IIAR guidelines, accumulating a body of knowledge based on experience.

This year, IIAR will release the first set of updates to those guidelines. Built on real-world experience and application, the updated PSM/RMP guidelines represent a consolidated package of materials that will reduce duplication of effort in compliance with both regulations. The complete guidelines come in 2 volumes, accompanied by a Microsoft Word, CD version, which can be used to create a customized PSM/RMP program.

In addition to the updated guidelines, we're also pleased to announce that a new chapter of the Piping Handbook is available. Both the PSM/RMP update and the new chapter of the Piping Handbook will be available for purchase at the IIAR conference in Milwaukee.

The Piping Handbook has become the must-have document in our industry, and its use as an invaluable technical resource is widespread.

The Handbook's new chapter focuses on piping diagrams required by regulations for training and general information, including resources for emergency responders. The chapter also includes common symbology for systems as well as instructions for the layout of diagrams.

General updates to various parts of the Piping Handbook have also been made, and are available with the new chapter as inserts that can be merged with the original copy of your Piping Handbook.

Be sure to stop by the IIAR bookstore in Milwaukee to learn more about these important updates.

This year has been an exciting one for our organization. Outreach, education, and, of course, publication of the many important resources we all depend on, has been the focus of my work as your chairman.

None of these objectives could have been met without the focus and determination of you, our volunteer membership. Our work as an industry lies at the core of IIAR's success. I want to thank everyone who has had a role in advancing IIAR's mission this year. Without you, the work of our organization would not be possible. iar

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Letter to the Industrial Refrigeration Industry

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During 2011 we have been focused on moving into our new State of the Art packaging facility in Lebanon, Tennessee, and to establishing a distribution organization to provide qualified coverage throughout the United States. These activities are now completed. Having obtained input from all segments of the Industry, we are now in a position to better provide our products and services to Refrigeration Contractors and Engineers in support of the End User needs, consistent with traditional North American business practices.

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IIAR Releases New, Updated PSM/RMP Program Guidelines

When the Process Safety Management and Risk Management program regulations were originally introduced in the mid-1990's, the ammonia refrigeration industry scrambled to find the best way to comply with the largely undefined regulations. The International Institute of Ammonia Refrigeration responded by producing the industry's first set of guidelines to help refrigeration companies meet federal regulations for facilities that use over 10,000 lbs. of ammonia. Now, after more than 15 years of real-life experience with those regulations, the IIAR is set to release a new, updated set of guidelines that reflect the culmination of regulatory and operational experience in the implementation of PSM/RMP program.

"The updated guidelines will prove useful for any company interested in practically applying management procedures that lead to a comprehensive safety plan," said Bruce Badger, IIAR president. "Such a safety plan directly responds to PSM and RMP rules and regulations and is the first step in establishing and maintaining a safe ammonia refrigeration facility."

"IIAR would like to recognize all the volunteers who gave their hard work and attention to this project," said Badger, adding that the seven-person committee included chairman Jim Marrella, principal writer Peter Jordan, and members Gary Webster, Kem Russell, Godan Nambudiripad, Ron Worley and Martin Timm.

"These new guidelines reflect ten to 15 years of experience in implementing what OSHA and EPA originally meant to accomplish with their two separate regulations," said Jim Marrella, Cordinator of OSHA and EPA compliance for United States Cold Storage, and chair of IIAR's PSM/ RMP Task Force. "This reflects the entirety of our real-world experience as an industry. IIAR has brought together the very best and most experienced professionals, to form a committee made up of PSM/RMP experts. As the result of some very hard work by this committee, we now have a much greater understanding of how these regulatory agencies will apply this law in practice."

Marrella said the main goal behind IIAR's work on the PSM/ RMP guidelines was the feeling that the program should be brought up to date to reflect industry experience with the regulations as well as a more robust and communicative relationship between the industry and federal regulators.

"The main reason we did this update was because we wanted to include the latest information, the appearance is still similar, but the substance has changed quite a bit because we have years of experience now," he said. "We really tried to find a middle ground where everyone could use the program…from the expert down to the novice. It's not generally an easy program to apply to facilities; this committee really worked hard to make IIAR's guidelines user friendly and relevant to everyone."

Two important changes mark IIAR's most recent release of the guidelines. The first change, the combination of previously separate PSM and RMP guides, will serve to provide a much more integrated framework for companies looking to take a holistic approach to creating a safe and efficient operation that is compliant with OSHA and EPA regulations.

"These regulations really should have been combined from beginning, but because all regulatory agencies are departmentalized, that didn't happen in practice," said Don Siller, past IIAR chair and honorary life member. "Now that we have experience with this process, we can look at these regulations, both as an industry – and for EPA and OSHA as federal regulators – and integrate all the functional and managerial elements that are at the core of both guidelines."

The second important change reflected in IIAR's update includes a much more dynamic approach to helping industrial refrigeration companies develop their own customized PSM/ RMP program with attention to the specific ways the regulations apply to their own operations.

"The PSM/ RMP programs in an ammonia facility cannot, and never were intended to be books sitting on shelves,"

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said Siller, who was the co-chair of the first committee tasked with producing PSM/ RMP guidelines. "While the original guidelines were invaluable in beginning the process of meeting these regulations, the IIAR updated guidelines help companies create a much more dynamic program. Regulators have now begun emphasizing the importance of active participation in these safety programs as opposed to having files full of documentation, and the new guidelines help companies create that active participation."

The new guidelines, titled, *Process Safety Management and Risk Management Program Guidelines*, was written under the premise that many users will choose to consolidate their PSM and RMP elements into one, inclusive program. Different options have been chosen by other users which are equally effective. Some users have chosen to separate their PSM and RMP elements into two distinct programs. Either option is perfectly acceptable provided that all PSM and RMP program requirements are addressed.

Additionally, a desire to maintain safe and efficient operation of industrial refrigeration systems is paramount on the minds of any individual who handles ammonia on a day-to-day basis.

"These new guidelines really reflect the experience of all the employees who deal every day with the separate processes addressed by the OSHA and EPA regulations," said Marrella. "It is a performance standard rather than a specification standard, so that means it depends on everyone's participation."

IIAR's new guidelines address the employee's role in meeting PSM/ RMP regulations, giving them an opportunity to take part in a facility's program, he said.

"That's important because these are the people who work with the program every day. They apply OSHA and EPA standards every day, and now, if a company chooses to update their original program or create a new program using IIAR's guidelines, those people will have much more guidance in their day-to-day operations."

"It really comes down to the efforts of our members and all the people involved in making our industry safer," said Marrella, a process that began in the 1990's.

Ultimately, the *Clean Air Act* (CAA), as amended in 1990, required the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) to address concerns that chemical accidents could pose a risk to employees, the public, and the environment, setting the stage for the PSM and RMP regulations that followed.

Emphasis was placed on the proper management of hazards associated with ammonia to help assure safety through creating internal management programs in facilities directly dealing with hazardous chemicals.

New *PSM and RM Program Guidelines* on Sale at 2012 IIAR Conference

Debuting exclusively at the IIAR 2012 Industrial Refrigeration Conference & Exhibition

Building on the foundation of IIAR's popular publications *Process Safety Management Guidelines* and *Risk Management Guidelines Program*, IIAR's new *Process Safety Management and Risk Management Program Guidelines* manual focuses on an integrated approach to developing an ammonia refrigeration facility's PSM and RMP management programs.

A useful tool, this manual comes replete with the benefit of 15 years of experience from industrial refrigeration industry leaders who have developed both consolidated and individual PSM and RMP management and safety programs successfully.

Available at the member price of $1,750.00 this manual can be yours for $1,250.00 if purchased at conference. An incredible savings of $500!

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EPA's Risk Management Program (RMP) rule, which took effect June 21, 1999, is focused on the protection of the public and the environment, while OSHA's Process Safety Management standard, which took effect May 26, 1992, is focused on the protection of employees and on-site contractors. Although often seen as separate, the shared objective of these two programs is to prevent accidental chemical releases and minimize their impact if they do occur.

In response to the direct effect both regulations have had on ammonia refrigeration facility management, IIAR's original *Process Safety Management Guidelines*, published in 1994, were meant to function as a guide for companies to understand and interpret OSHA's PSM standard. The manual was then updated in 1998 to include lessons learned from the first five years of PSM implementation and enforcement and a companion manual entitled *Risk Management Program Guideline*, to address the EPA's RMP rule, was also published in the same year.

IIAR's new *Process Safety Management and Risk Management Program Guidelines*, comes replete with the benefit of experience from many industry leaders who have developed both consolidated and individual management and safety programs successfully.

Each chapter in the Process Safety Management and Risk Management Program Guidelines is divided into two parts. The first section is a grand overview while the second section is a step by step guideline on how to develop a customized PSM/RMP program.

The first section of each chapter contains a statement of purpose of the element, an explanation containing a description of the employer's compliance obligations, a description of relevant OSHA and EPA clarifications, and a list of steps which can be followed to comply with PSM and RMP requirements.

The second section of each chapter contains a sample plan or procedure which can be modified by the employer to produce the relevant compliance documents for inclusion in a PSM and RMP manual. *Tips* are included to describe suggestions which may be considered when using these plans.

The information in the sample plans is not mandatory and have a range of applicability to various facilities. The applicability and utility of the work practices will depend on many factors such as engineering judgment, the industry standards, the age or size of the facility, the complexity of the process, the size of the system, the size and experience of the workforce and their work practices, and the effectiveness of the engineering and administrative controls.

While the practical benefit of IIAR's new guidelines to the industry will be enormous, the Institute's effort in developing them has already strengthened the relationship between the industry and regulators.

Throughout the process of developing the original and most recently, the updated PSM/ RMP guidelines, IIAR has gained the respect of both OSHA and the EPA, said Marrella and Siller. The result of the industry's effort to respond to PSM/ RMP regulations, to a large extent, has been that both regulatory agencies rely upon recommendations from IIAR in enforcing the programs, they said.

"These agencies are no longer adversaries," said Siller, "they are partners in improving the safety of systems. That was the ultimate goal…to not just come up with program documentation that filled file folders, but to come up with a program that would improve the safety of our systems."

Taking a more active role in how the regulations play out in the industry continues to be a driving force behind the work of the PSM/ RMP committee, said Marrella. "The committee worked to produce something that will be useful and relevant, and now that we've done that, we're not hanging up our coats just yet. We're still looking at ways to expand on the resources available to help companies meet these guidelines. This is just the first step." ear

IIAR Code Advocacy Update

By Jeffrey M. Shapiro, PE., FSFPE

Inspection Checklist: Tool or Weapon?

Recently, the IIAR Code Committee was asked to weigh in on the use of checklists for inspection of ammonia refrigeration systems. IIAR members had reported seeing local inspectors in some jurisdictions making use of checklists to guide code enforcement inspections, and concerns were raised about whether checklists are truly appropriate for this purpose. In addition, the Code Committee was asked to consider whether IIAR should develop our own checklists rather than leaving it to other individuals or organizations, who may be less knowledgeable, to prepare them. The following is a synopsis of the Code Committee's discussion and some of my own thoughts on the subject.

Checklists are a powerful tool that help to ensure that important concerns are not overlooked in systems, processes and procedures. They are routinely used in quality control applications ranging from product manufacturing to hospital surgical procedures, and they're common in safety applications ranging from electrical lockout /tag out programs to confined space entry procedures. Been on an airplane? Your safety during the flight was heavily reliant on pilots' use of checklists to ensure that systems have been properly verified, and in the event of a mishap, a checklist would have guided emergency procedures. Planning on how to handle an ammonia emergency? The Ammonia Safety Training Institute (ASTI) makes extensive use of checklists as a basis for outlining response procedures for facility operators and emergency responders when an unplanned ammonia release occurs.

It may surprise you to know that checklists are also commonly used in code enforcement applications, from plan review to field inspection. In fact, the International Code Council, which publishes the International codes, also publishes checklists to guide inspectors in code enforcement activity; albeit, these documents tend to focus on general safety concerns as opposed to evaluating detailed code compliance of complex systems. For the International Fire Code (IFC), ICC's inspection checklist is even published in a convenient "carry in your pocket" format so that it's easy for field inspectors to use.

So, what about checklists for inspection of ammonia refrigeration systems? IIAR is aware of at least two code enforcement checklists that have been developed for evaluating compliance of ammonia refrigeration systems. One is being used in California and the other in Washington.

Although these documents may be well intended, the Code Committee's review of their content identified many concerns based on how they were written, the most significant of which is the apparently intended use of a single checklist for inspecting both new and existing systems. The problem with that approach is its failure to accommodate the ever-changing nature of codes and standards.

Specifically, regulations in the current editions of the IFC, International Mechanical Code (IMC), ASHRAE 15 and IIAR-2 governing design and installation are generally intended to apply only to new installations. The only time that a current design or installation provision in one of these documents is applicable to an existing installation is when the provision previously existed in the edition of the code or standard that the equipment was installed to, with the exception of the IFC, which also has a special allowance for remediation of hazards that are determined to be a distinct hazard to life or property.

The code committee also identified:

- Checklist provisions in which guidance from an IIAR bulletin was being improperly applied as an enforceable requirement.
- Checklist provisions that went so far as to modify the cited recommendation or requirement without identifying that the material had been modified.
- Checklist provisions that were only partially extracted from the source code or standard, leaving behind important exceptions and limitations that affect how the section should be applied.
- Checklist summaries of requirements that simply misrepresented what is in the source code or standard.

It should be recognized that none of these issues is a fundamental defect with the concept of checklists themselves. Instead, they simply reflect checklists that were not properly executed for the intended purpose.

When it comes to the legalities of code enforcement, accuracy in application and interpretation of regulations is critical, both in ensuring that facilities meet the applicable safety requirements and in ensuring that owners and operators are not mandated to do more than meet the codes and standards that have been legally adopted by a jurisdiction. That's an entirely different situation than using a checklist for a

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IIAR Government Affairs

By Lowell Randel, IIAR Government Affairs Director

OSHA National Emphasis Program Now In Place

As reported in the last issue of The Condenser, the Occupational, Safety and Health Administration was working late in 2011 to finalize the national rollout of the PSM Covered Chemical Facilities National Emphasis Program (NEP). The program was finally announced through a directive released on November 29, 2011 and has been in effect since that date. The directive marks the evolution of the pilot NEP on chemical facilities that has been in operation since the summer of 2009 into a nationwide program.

As expected, the NEP will be implemented nationwide, including the mandatory adoption (or equivalent) by state plan states. While programmed inspections are already taking place in federal OSHA states, many state plan states are currently working to implement their plans for the NEP and it could take a few more months for some of the state plan states to begin their programmed inspections.

The OSHA Directive lays out two categories for facilities subject to the NEP. The first category is for facilities likely to have ammonia used for refrigeration as the only Highly Hazardous Chemical (HHC) and the second category is for all other facilities. It is interesting to note that the name of the new NEP indicates that the program is focused on "chemical facilities". With the heavy focus on ammonia refrigeration, it appears that the title may be a bit of a misnomer, as industrial refrigeration sites do not process or manufacture chemicals, as may be inferred from the program's name. There is concern that this may cause some misunderstanding in the field and lead to the application of principles meant for chemical manufacturers and processors in industrial refrigeration settings. This has been recognized by IIAR as a potential problem and outreach is ongoing with OSHA to try and minimize any issues that may arise.

IIAR was encouraged to see the training and experience requirements established in the Directive for inspectors conducting NEP programmed inspections. Given the decentralized nature of OSHA, it can be difficult to ensure that NEP inspections will be conducted in a consistent manner across Regions, Areas and state plan states. By including training requirements, the agency has acknowledged the importance of having well informed inspectors to the effectiveness of the program. Even with the training requirements, IIAR will be closely monitoring the implementation of the NEP to identify potential areas of inconsistency and be ready to provide technical resources to OSHA to help remedy such inconsistencies.

As facilities prepare for potential NEP inspections, it is important to note that a requirement to verify abatement of previous OSHA PSM citations has been added to the national program. Facilities with past violations should make sure that proper abatement measures have been taken.

Similar to the NEP pilot program, OSHA will use four sources for targeting programmed inspections:

- U.S. Environmental Protection Agency's (EPA) Chemical Accident Prevention Provisions, Program 3 Risk Management Plans (RMP)
- Explosives manufacturing NAICS codes
- OSHA's IMIS database
- OSHA Area Office knowledge of local facilities

OSHA has compiled these lists and run a random generator to determine the order in which facilities appear on the programmed inspections list.

During the NEP development process, there were concerns that sites participating in the OSHA Voluntary Protection Plan (VPP) and OSHA Consultation's Safety and Health Achievement Recognition Program (SHARP) would be subject to the NEP, despite the special efforts made by these sites to proactively address safety. However, the Directive specifically states that VPP and SHARP sites are to be deleted from lists for programmed inspections. VPP and SHARP sites will continue to be subject to the NEP during unprogrammed inspections. In addition, facilities that had NEP inspections during the pilot program during the last two years will be deleted from the programmed inspections list.

The directive requires Regions to complete an average of 3-5 programmed inspections per Area Office per year under the NEP. Approximately 25 percent of all programmed inspections will come from ammonia facilities (Category I). OSHA has indicated that this percentage was actually placed in the directive to avoid a disproportionate number of inspections at ammonia refrigeration facilities, due to the high number of such facilities nationwide. The remaining 75 percent will come from all other facilities (Category II). The Directive states that unprogrammed inspections must also follow the NEP. Unprogrammed inspections may occur as a result of complaints, referrals, accidents or catastrophes.

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non-regulatory purpose, such as a safety or operational good practice procedure.

It's a simple fact that developing appropriate checklists for regulatory compliance of ammonia refrigeration systems would be a tremendously complex task that would require accurately and comprehensively extracting applicable provisions from many source documents and would require different checklists for each adopted code edition. Then, the inspector would determine which code edition a particular system was installed to and select the proper checklist. Certainly, this isn't an impossible task, but one would have to question the ultimate value of and investment in the exercise versus simply applying the codes and standards themselves.

The Code Committee ultimately decided that there is not a pressing need to develop an IIAR version of a checklist for ammonia refrigeration systems and that we, as an industry, should discourage the use of improperly conceived checklists for regulatory purposes.

In summary, checklists can be valuable assets as tools to guide an owner or operator in inspecting system installations, but as a weapon used by a code enforcer as a basis of citing a facility, there is a significant danger of improper application of the code.

If you find yourself dealing with a jurisdiction that uses a checklist for determining compliance of an ammonia system and you get cited based on the checklist, be sure to ask the inspector to provide the text of the specific code section that's supposedly being violated and be sure to have them review the text of the actual regulation with you when the citation is issued. Since it's unlikely that they'll have the source document with them during the inspection (hence, one perceived benefit of the checklist…not needing to carry source documents), it's a good idea to have on hand at your facility copies of editions of IIAR-2, ASHRAE 15, the IMC (or UMC) and the IFC (or UFC), as applicable in your jurisdiction, that were adopted when your system was installed.

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Inspections will be conducted using an unpublished dynamic list of questions related to Process Safety Management. For ammonia refrigeration inspections, there will be 10 questions specific to ammonia refrigeration and 5 questions regarding general PSM compliance. The directive states that priority will be given to implementation over documentation, so facilities should be prepared to demonstrate that the implementation of their PSM program is consistent with their written plan. If an inspector determines that PSM deficiencies may exist outside dynamic list questions, the inspection may be expanded after consultation with the Area Director.

Inspections will begin with an opening conference which will include a verification that the facility is subject to the NEP. This was an issue identified during the pilot program, as many facilities thought to possess a threshold quantity of chlorine were ultimately determined to not be subject to the NEP. This provision will be unlikely to effect ammonia refrigeration facilities unless the site no longer has over 10,000 pounds of ammonia.

The inspector will then ask for a series of documents including the facility's PSM plan and OSHA worker illness and injury logs. The inspector will ask for a description of the facility's PSM programs and conduct a walkaround. It is important to note that contractors at the facility will also be subject to the inspection.

As facilities prepared for a potential NEP inspection, it is helpful to look at the results of the NEP pilot to identify which areas were most cited for violations. According to OSHA, during the first two years of the pilot, 207 inspections had taken place. Ammonia facilities made up approximately 41 percent of all inspections (programmed and unprogrammed) through the first two years of the pilot program. Of the 207 inspections, 142 resulted in citations. For those inspections resulting in citations, an average of nine violations was cited per inspection, resulting in an average total of $30,933 in fines.

The majority of citations resulting from NEP pilot inspections came from PSM elements such as Process Safety Information, Mechanical Integrity and Process Hazard Analysis. This is not surprising, given the heavy focus on PSM in the questions. However, there were a substantial number of non-PSM related citations that can give facilities an indication of where problem areas may exist. The most prevalent non-PSM citations included issues such as lockout/tagout, personal protective equipment and record keeping. The results of the pilot illustrate some key areas that facilities may want to examine within their PSM and overall safety programs.

IIAR strongly encourages all members to read the full directive and review their PSM programs in anticipation of a possible inspection. A full copy of the OSHA Directive detailing the NEP can be found at: http://www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-014.pdf

In addition, IIAR is working with OSHA through the Alliance program to develop compliance assistance materials related to the NEP to help members better understand the NEP and how to comply. IIAR Government Affairs will continue to actively engage with OSHA regarding the NEP and work to provide members the latest information on program developments.

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Moon Shots and Safety Relief Valve Life Prediction

AMMONIA REFRIGERATION FOUNDATION

Recent political figures have resurrected interest in the space program and the conversation invariably highlights all of the great technology spinoffs of NASA, from memory foam, freeze-dried foods and HACCP to Tang (maybe – not so much!). In addition to ammonia heat pipe cooling in the space shuttle, there is another link to our industry, Weibull analysis. Bear with me here. In the pioneering days of the Mercury and Apollo programs, every mission pushed the technical envelope beyond the current knowledge base. There was precious little time for extensive R & D or multiple prototypes. This is where the math of Prof. Waloddi Weibull (1887-1979) comes into play. Using his techniques, a failure rate of just a few samples could be reliably predicted and applied to a large number of similar components. The aerospace industry of the early 1960's were the early adopters of this technology. Pratt & Whitney and General Motors also used Prof. Weibull's methods.

In 1972, Dr. Weibull (on the left) received an ASME Medal and his photo was captured with Dr. Richard Folsom (in the middle), along with former Astronaut Neil Armstrong, the first man to step on the moon (on the right).

Segue to the present day…

5 year replacement of relief valves is the norm. Does it have to be? Bulletin 110 (June 2007 revision) states *"…2) An alternate to the prescriptive replacement interval, ie., five years, can be developed based on documented in service relief valve life for a specific applications using industry accepted good practices of relief valve evaluation…"*. To that end, the IIAR Research Committee has developed a testing standard for safety relief valves. The Ammonia Refrigeration Foundation then sponsored a follow-on research project to prove the viability of this test procedure. Testing was successfully conducted by the Industrial Refrigeration Consortium and the standard was deemed workable and accepted by IIAR. Now that the industry has a standardized procedure to test safety valves, how do we use the data? Thanks to the ARF and Dr. Fred Elder, Dr. Weibull's methods live on.

The most recently completed research project of the ARF is the SRVCalc–Statistical Pressure Relief Replacement Interval Calculator. This PC based analysis software will be available free to IIAR members. It will allow you to take the data from a batch, (7 minimum) of similar, tested relief valves and predict the useful lifespan.

Mark your calendars – The IIAR Research Forum held Tuesday, March 20, 2012 at 1:30 PM in the Convention Center (Frontier Airlines Center), Room 202D will feature the Author of SRVCalc, Dr. Fred Elder.

Here is a "peek behind the curtain." The software is intuitive and easy to use, once you have tested a batch of relief valves with the procedure noted above.

The required input values are:

Valve Details; Scheduled Replacement interval, NB#, Manufacturer, Model number, Manufactured date, installed date and valve set point.

Installation location details; Facility, Equipment name and P & ID Tag number.

Removal from Service; Date Removed, Bench test #, Pop Pressure, Condition notes and Removal reason.

Once a group of valves have been entered into the SRVCalc, they can be analyzed with a click of a mouse. The output of the Weibull probability plot will then display the predicted life span of that group of valves.

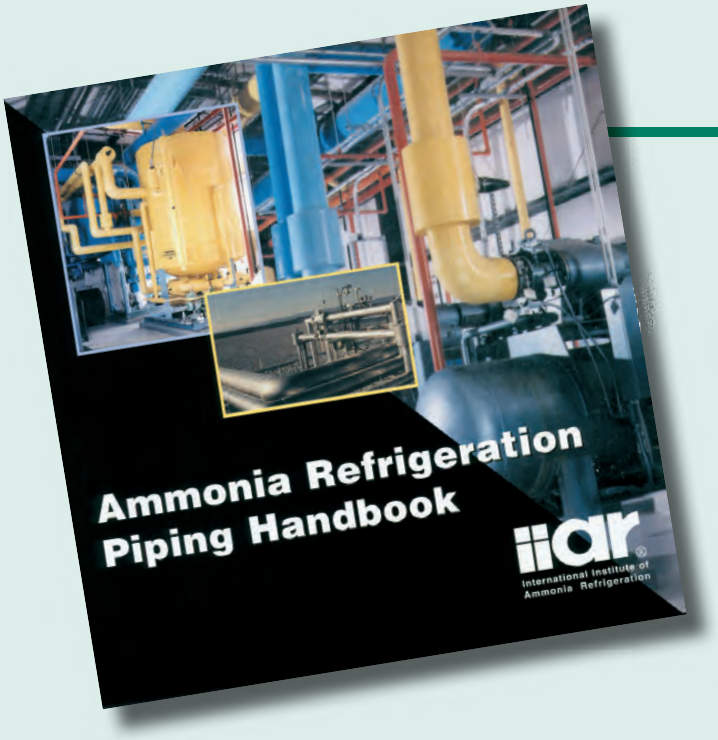
It is this plot that will then provide the plant with suitable documentation to alter the five year replacement interval.

We hope to see you there.

Remember more data – better results!

The Best Just Keeps Getting Better!

IIAR's premier publication
Ammonia Refrigeration Piping Handbook
has been **updated**!



The *Ammonia Refrigeration Piping Handbook* has been hailed as one of the best publications ever produced by IIAR.

First published in 2000, and updated in 2004, IIAR's *Ammonia Refrigeration Piping Handbook* is the ultimate guide to modern ammonia refrigeration piping as well as a comprehensive introduction to piping design and installation as it is practiced in the field.

The newest update is truly an additional chapter which provides guidelines on developing ammonia system drawings, schematics and diagrams that are necessary for design and maintenance.

This update sets the standard for systems diagrams so that virtually anyone can know the meaning of ammonia piping symbology. Analyzing risk through standardization enhances an ammonia refrigeration facilities ability to create an environment of safety!

The *Ammonia Refrigeration Piping Handbook* Contains:

Make sure to purchase your update today!

Member Price: $75.00

Don't have the *Ammonia Refrigeration Piping Handbook* yet? Purchase now for a member price of $350.00 and you can own the complete handbook with update included!

The update and Handbook can be purchased online at **www.iiar.org** and at the IIAR 2012 Industrial Refrigeration Conference & Exhibition.


IIAR
2013
Colorado Springs, Colorado
March 17–20, 2013
iar
International Institute of
Ammonia Refrigeration

IIAR'S AMMONIA SAFETY TRAINING DAY

OPEN TO ALL, FREE TO ALL

March 18, 2012 ■ 7:00 am – 4:00 pm
Hyatt Regency Milwaukee
– Regency Ballroom

IIAR's Ammonia Safety Training Day is a free event offered as a benefit to the ammonia refrigeration industry.

The Safety Training Day, offered in association with the IIAR 2012 full Conference & Exhibition, is a great way to provide safety awareness training for all employees.

Well trained ammonia refrigeration facility employees and managers alike ensure that we continue to uphold important industry safety procedures.

This year, IIAR is also providing a unique opportunity to develop effective emergency planning at the IIAR Ammonia Safety Training Day.

IIAR's Training Day includes an introduction to regulatory and code responsibilities followed by an overview of emergency planning and personal protective equipment.

Thanks to our Ammonia Safety Training Day sponsors for their valuable support.

Time	Topic / Speaker / Location
7:00 – 8:00 AM	Continental Breakfast in Lakeshore Ballroom *Sponsored by EVAPCO*
8:00 – 8:10 AM	Greeting, Introductions, and Overview *Bruce Badger – IIAR*
8:10 – 9:15 AM	The Refrigeration Cycle and the Use of the Emergency Pressure Control System *Jeff Shapiro – IIAR*
9:15 – 9:30 AM	*Sponsors Recognition*
9:30 – 10:45 AM	Valve and Pipeline Readiness *Grant Golding and Scott Melton – ASTI*
10:45 – 11:00 AM	Networking
11:00 – 12:00 PM	Get the Jump on the Release Stop it SMALL with an Early Warning System – Maintain your system so it's ready for the call! *Troy Baker – ASTI*
12:00 – 1:00 PM	Safety Day Luncheon in Lakeshore Ballroom *Sponsored by Vilter*
1:00 – 1:40 PM	Managing Hazards, Risks and Threats to Preserve Life, Environment, and Facility *Presentation by SAL Monia and Gary Smith of ASTI*
1:40 – 2:15 PM	The Value of Pre Emergency Readiness Create "muscle memory" by practicing readiness during high risk maintenance and repair operations *Presentation by Gary Smith and Scott Melton – ASTI*
2:15 – 2:30 PM	*Sponsors Recognition*
2:30 – 3:30 PM	Panel Discussion: Lessons Learned, Meet the Regulators – EPA, OSHA, Local Environmental Health and Fire Service *Facilitated by the ASTI Team*
3:30 – 4:00 PM	Course Overview, Evaluation, and Class Certificates

Industrial Refrigeration Conference & Exhibition Slated for Milwaukee

It's easy to see why Milwaukee's official tourism slogan is "this is why I come to Milwaukee," there's a lot to do in the city. But IIAR members may see another reason to visit – it's an area central to the ammonia refrigeration industry in the United States. The upper Midwest is home to the facilities and headquarters of many food and beverage companies that make up a large part of IIAR's membership.

This year, the 2012 IIAR Industrial Refrigeration Conference & Exhibition will be held in downtown Milwaukee at the Frontier Airlines Convention Center, March 18–21. With a special emphasis on end-user operations, the program focuses on many of the industry's most important subject areas, including safety, and strategies that drive down operating cost by boosting energy efficiency.

This year, IIAR is extending a special welcome to exhibitors and attendees with a new educational event, a full Ammonia Safety Training Day. The free event will be offered Sunday, March 18, 2012 at the Hyatt Regency Milwaukee.

IIAR's Ammonia Safety Training Day program will consist of an introduction to regulatory and code responsibilities followed by an overview of emergency planning and personal protective equipment. The goal is to provide enough training that each attendee walks away with the knowledge of what they should be doing in order to plan effectively and appropriately respond to an ammonia release event.

Beyond the Safety Training Day event, IIAR is looking forward to providing its usual robust technical program and networking opportunities, establishing itself once again as the "must attend" event of the year for industrial refrigeration professionals.

This year's technical program includes workshops, reviews of technical papers and educational panels designed to give the most thorough update on operations, maintenance, and energy conservation within the industrial refrigeration industry. Technical papers topics range from a review of the feasibility of ammonia in U.S. supermarkets to Hot Gas Defrost and Charge Minimization.

IIAR's Conference & Exhibition would not be possible without the focused dedication and involvement of its members. The work of IIAR volunteer members makes it possible to foster an environment of collective education and exchange of ideas through the technical program sessions and workshops.

IIAR sponsors and exhibitors also play an invaluable role in bringing the newest products and technologies to industry professionals. This year, more companies than ever before will exhibit at and sponsor the IIAR conference, spotlighting the current economic strength of the industry.

Attracting the most qualified business leaders and peer-to-peer networking groups, the conference is the largest gathering of industrial refrigeration decision makers in the industry.

As an IIAR member, you have access to the best forum in the world for industrial refrigeration professionals who want to stay educated on the issues they face in their day-to-day business environment. IIAR is continuously working to broaden the scope of the industry by fostering a valuable exchange of ideas and knowledge. The IIAR Conference & Exhibition is an important part of that effort. We hope to see you there.

Conference Sponsors

Continental Breakfast – Monday, March 19

Regulatory Update Breakfast – Tuesday, March 20

Morning Break – Monday, March 19

Meeting Note Pads

Afternoon Break – Monday, March 19
Morning Break – Tuesday, March 20

Banquet

Meeting Bags

Luggage Tags

Chairman's Reception Exclusive

Morning Break – Wednesday, March 21

Water Sponsor

Afternoon Break – Tuesday, March 20

Cyber Café

Pocket Schedule

Badge Lanyards

Exhibit Hall Lunch – Monday, March 19

Continental Breakfast – Wednesday, March 21

Hotel Room Keys

Saturday, March 17

7:00 a.m. – 12:00 p.m.	Committee Meetings	Hilton Milwaukee Hotel
1:00 p.m. – 5:00 p.m.	Registration Open	FAC Exhibit Hall D Foyer – 3rd Floor

Sunday, March 18

7:00 a.m. – 4:00 p.m.	Ammonia Safety Training Day	Hyatt – Regency Ballroom
8:00 a.m. – 5:00 p.m.	Exhibitor Setup	FAC Exhibit Hall D – 3rd Floor
9:45 a.m. – 4:00 p.m.	Tour: *A Tour of Milwaukee* **Registration Required**	Meet at Hilton Hotel – Wright Ballroom A at 9:30 a.m.
10:00 a.m. – 5:00 p.m.	Registration Open	FAC Exhibit Hall D Foyer – 3rd Floor
5:30 p.m. – 6:00 p.m.	First Timers' Reception	Hilton – Regency Ballroom
6:00 p.m. – 7:00 p.m.	Chairman's Reception *Sponsored by Republic Refrigeration*	Hilton – Crystal Ballroom

Monday, March 19

7:00 a.m. – 5:00 p.m.	Registration Open	FAC Exhibit Hall D Foyer – 3rd Floor
7:30 a.m.	Continental Breakfast *Sponsored by Summit Refrigeration*	FAC – Ballroom AB Foyer
8:00 a.m.	IIAR Business Meeting	FAC – Ballroom AB – 1st Floor
8:30 a.m.	Plenary	FAC – Ballroom AB 1st Floor
9:00 a.m. – 4:00 p.m.	Tour: *Sacred Spires and Spectacular Spaces* **Registration Required**	Meet at Hilton Hotel – Wright Ballroom A at 8:30 a.m.
9:15 a.m.	Exhibits Open	FAC Exhibit Hall D – 3rd Floor
9:30 a.m.	Technomercial #1 – Vahterus Oy	FAC Exhibit Hall D – 3rd Floor
10:00 a.m.	Break – *Sponsored by Parker Hannifin*	FAC Exhibit Hall D – 3rd Floor
10:30 a.m.	Technomercial #2 – Vilter	FAC Exhibit Hall D – 3rd Floor
11:30 a.m.	Technomercial #3 – EVAPCO	FAC Exhibit Hall D – 3rd Floor
12:00 p.m. – 12:30 p.m.	Lunch in Exhibit Hall *Sponsored by EVAPCO*	FAC Exhibit Hall D – 3rd Floor
1:00 p.m.	Technomercial #4 – JCI/Frick	FAC Exhibit Hall D – 3rd Floor
1:30 p.m.	Exhibits Closed	
1:30 p.m.	Technical Paper #1 – *Charge Minimization*	FAC – 203B
	Technical Paper #2 – *NFPA 70E Regulatory Compliance: Protecting Employees from Arc Flash Hazards*	FAC – 202B
	Workshop #1 – *Screw Compressors: Essential Knowledge*	FAC – 202D
	Trabajo técnico #1 – *Agrietamiento por corrosión con esfuerzo en la refrigeración con amoníaco*	FAC – 203D
2:15 p.m.	Technical Paper #3 – *Hot Gas Defrost on Recirculated Air Units*	FAC – 203B
	Technical Paper #4 – *Application of Ammonia in US Supermarkets*	FAC – 202B
	Workshop #2 – *Development of Inspection and Test Procedures*	FAC – 202D
	Trabajo técnico #2 – *Diseño de sistemas de CO_2 como refrigerante secundario*	FAC – 203D
3:00 p.m.	Break – *Sponsored by Airgas*	FAC – 200 Foyer
3:30 p.m.	Technical Paper #5 – *Sustainability in Practice: An Ammonia Heat Pump Case Study*	FAC – 203B
	Technical Paper #6 – *Ammonia Absorption Refrigeration Ready for Prime Time*	FAC – 202B
	Workshop #3 – *Case Study on the Internal Repair of an Ammonia Vessel*	FAC – 202D
	Trabajo técnico #3 – *El flash gas en su sistema de refrigeración*	FAC – 203D
4:15 p.m.	Technical Paper #7 – *System Design for CO_2 Secondary Coolant Based Systems*	FAC – 203B
	Technical Paper #8 – *The Case for CO_2/Ammonia Cascade for Office Buildings and Hospitals*	FAC – 202B
	Workshop #4 – *Defrosting Issues*	FAC – 202D

FAC = Frontier Airlines Center

	Trabajo técnico #4 – *Diseño de congeladores estáticos*	FAC – 203D
6:00 p.m.	Reception	Hyatt – Regency Ballroom Foyer
6:30 p.m. – 10:00 p.m.	Banquet – *Sponsored by GEA Refrigeration NA*	Hyatt – Regency Ballroom

Tuesday, March 20

7:00 a.m. – 5:00 p.m.	Registration Open	FAC Exhibit Hall D Foyer – 3rd Floor
7:30 a.m.	Regulatory Update Breakfast– *Sponsored by Vilter*	FAC – Ballroom AB
8:00 a.m.	Government Relations Report	FAC – Ballroom AB
8:30 a.m.	Code report	FAC – Ballroom AB
9:00 a.m.	Exhibits Open	FAC Exhibit Hall D – 3rd Floor
9:30 a.m.	Technomercial #5 – Mayekawa	FAC Exhibit Hall D – 3rd Floor
9:45 a.m. – 12:00 p.m.	Tour: *Behind the Scenes Refrigeration at Miller Brewing Company* **Registration Required**	Meet at Hilton Hotel – Wright Ballroom A 9:15 a.m.
10:00 a.m.	Break – *Sponsored by Airgas*	FAC Exhibit Hall D – 3rd Floor
10:30 a.m.	Technomercial #6 – Hansen	FAC Exhibit Hall D – 3rd Floor
11:30 a.m.	Technomercial #7 – Airgas	FAC Exhibit Hall D – 3rd Floor
12:00 noon	Exhibits Closed — Lunch on your own	
1:30 p.m.	Technical Paper #5 – *Sustainability in Practice: An Ammonia Heat Pump Case Study*	FAC – 203B
	Technical Paper #7 – *System Design for CO_2 Secondary Coolant Based Systems*	FAC – 202B
	Panel #1 – *Research Update*	FAC – 202D
	Trabajo técnico #5 – *La congelación y la calidad de la carne de cerdo*	FAC – 203D
2:15 p.m.	Technical Paper #8 – *The Case for CO_2/Ammonia Cascade for Office Buildings and Hospitals*	FAC – 203B
	Technical Paper #6 – *Ammonia Absorption Refrigeration Ready for Prime Time*	FAC – 202B
3:00 p.m.	Exhibits Open	FAC Exhibit Hall D – 3rd Floor
3:00 p.m.	Break – *Sponsored by Colmac Coil*	FAC Exhibit Hall D – 3rd Floor
3:30 p.m.	Technical Paper #4 – *Application of Ammonia in US Supermarkets*	FAC – 203B
	Technical Paper #2 – *NFPA 70E Regulatory Compliance: Protecting Employees from Arc Flash Hazards*	FAC – 202B
	Panel #2 – *Alternate Natural Refrigerants*	FAC – 202D
	Workshop #5 – *Canada's Regulatory Minefields – An End User Perspective*	FAC – 203D
4:15 p.m.	Technical Paper #1 – *Charge Minimization*	FAC – 203B
	Technical Paper #3 – *Hot Gas Defrost on Recirculated Air Units*	FAC – 202B
	Workshop #6 – *OSHA Cooperative and National Emphasis Programs*	FAC – 203D
6:00 p.m. -7:00 p.m.	Exhibitors' Reception	FAC – Exhibit Hall D – 3rd Floor
7:00 p.m.	Exhibits Close	

Wednesday, March 21

7:00 a.m. – 10:00 a.m.	Registration Open	FAC Exhibit Hall D Foyer – 3rd Floor
8:00 a.m.	Exhibits Open – Breakfast in Exhibit hall – *Sponsored by Mayekawa*	FAC Exhibit Hall D – 3rd Floor
9:00 a.m.	Workshop #7 – *Guidelines for eyewashes and safety showers*	FAC – 202B
	Workshop #8 – *Tracking and Implementing Recommendations from PHA, Audits, and Inspections*	FAC – 202D
9:45 a.m.	Workshop #9 – *Ammonia and the Brewing Industry*	FAC – 202B
10:30 a.m.	Break – *Sponsored by Howden*	FAC – Exhibit Hall D – 3rd Floor
11:00 a.m.	Exhibits Close	
11:00 a.m.	Closing Forum – Discussion of process rooms, machinery rooms, and handling releases	FAC – 202D
12:30 p.m.	Conference Adjourns	

KEYNOTESPEAKER

ROBERT MILLER

Robert (Rob) Miller, Vice President Engineering, ConAgra Foods

Robert (Rob) Miller, Vice President Consumer Engineering, joined ConAgra Foods in September 2005. He has focused on creating and growing a centralized Supply Chain Engineering organization that leverages industry leading best practices in project execution, capital planning, cost control, technology application, automation, and leadership development. The Consumer Supply Chain Engineering organization has responsibility for:

- More than $300 million in annual capital
- Over 1,000 projects annually
- Engineering needs of over forty (40) Consumer Manufacturing facilities
- More than 300 Engineering and Technical professionals
- Annual savings from technology of more than $30 million annually

Prior to joining ConAgra Foods, Rob Miller was Sr. Director of Engineering responsible for the technical leadership in the Morning Foods division of the Kellogg Company. He had responsibility for more than $90 million annually of capital and delivery of more than $15 million annually in cost savings from technology. He joined Kellogg's in 1984 and assumed leadership positions of increasing responsibility.

He graduated with a bachelor's degree in Engineering from Western Michigan University and three (3) associate degrees from Kellogg Community College. Rob also has been awarded a U.S. and an International Patent.

TECHNICALPAPERS

2012 TECH PAPER SCHEDULE

Technical Paper #1
Charge Minimization
Monday, March 19 | 1:30 p.m. – 2:15 p.m. | FAC – 203B
Tuesday, March 20 | 4:15 p.m. – 5:00 p.m. | FAC – 203B

Technical Paper #2
NFPA 70E Regulatory Compliance: Protecting Employees from Arc Flash Hazards
Monday, March 19 | 1:30 p.m. – 2:15 p.m. | FAC – 202B
Tuesday, March 20 | 3:30 p.m. – 4:15 p.m. | FAC – 202B

Technical Paper #3
Hot Gas Defrost on Re-circulated Air Units
Monday, March 19 | 2:15 p.m. – 3:00 p.m. | FAC – 203B
Tuesday, March 20 | 4:15 p.m. – 5:00 p.m. | FAC – 202B

Technical Paper #4
Application of Ammonia in US Supermarkets
Monday, March 19 | 2:15 p.m. – 3:00 p.m. | FAC – 202B
Tuesday, March 20 | 3:30 p.m. – 4:15 p.m. | FAC – 203B

Technical Paper #5
Sustainability in Practice: An Ammonia Heat Pump Case Study
Monday, March 19 | 3:30 p.m. – 4:15 p.m. | FAC – 203B
Tuesday, March 20 | 1:30 p.m. – 2:15 p.m. | FAC – 203B

Technical Paper #6
Ammonia Absorption Refrigeration Ready for Prime Time
Monday, March 19 | 3:30 p.m. – 4:15 p.m. | FAC – 202B
Tuesday, March 20 | 2:15 p.m. – 3:00 p.m. | FAC – 202B

Technical Paper #7
System Design for CO_2 Secondary Coolant Based Systems
Monday, March 19 | 4:15 p.m. – 5:00 p.m. | FAC – 203B
Tuesday, March 20 | 1:30 p.m. – 2:15 p.m. | FAC – 202B

Technical Paper #8
The Case for CO_2/Ammonia Cascade for Office Buildings and Hospitals
Monday, March 19 | 4:15 p.m. – 5:00 p.m. | FAC – 202B
Tuesday, March 20 | 2:15 p.m. – 3:00 p.m. | FAC – 203B

2012 PROGRAMMA EN ESPAÑOL

Trabajo técnico #1
Agrietamiento por corrosión con esfuerzo en la refrigeración con amoníaco
Monday, March 19 | 1:30 p.m. – 2:15 p.m. | FAC – 203D

Trabajo técnico #2
Diseño de sistemas de CO_2 como refrigerante secundario
Monday, March 19 | 2:15 p.m. – 3:00 p.m. | FAC – 203D

Trabajo técnico #3
El flash gas en su sistema de refrigeración
Monday, March 19 | 3:30 p.m. – 4:15 p.m. | FAC – 203D

Trabajo técnico #4
Diseño de congeladores estáticos
Monday, March 19 | 4:15 p.m. – 5:00 p.m. | FAC – 203D

Trabajo técnico #5
La congelación y la calidad de la carne de cerdo
Tuesday, March 20 | 1:30 p.m. – 2:15 p.m. | FAC – 203D

WORKSHOPS

2012 WORKSHOP SCHEDULE

Workshop #1
Screw Compressors: Essential Knowledge
Monday, March 19 | 1:30 p.m. – 2:15 p.m. | FAC – 202D

Workshop #2
Development of Inspection and Test Procedures
Monday, March 19 | 2:15 p.m. – 3:00 p.m. | FAC – 202D

Workshop #3
Case Study on the Internal Repair of an Ammonia Vessel
Monday, March 19 | 3:30 p.m. – 4:15 p.m. | FAC – 202D

Workshop #4
Defrosting Issues
Monday, March 19 | 4:15 p.m. – 5:00 p.m. | FAC – 202D

Workshop #5
Canada's Regulatory Minefield – An End Users Perspective
Tuesday, March 20 | 3:30 p.m. – 4:15 p.m. | FAC – 203D

Workshop #6
OSHA Cooperative and National Emphasis Programs
Tuesday, March 20 | 4:15 p.m. – 5:00 p.m. | FAC – 203D

Workshop #7
Guidelines for eyewashes and safety showers
Wednesday, March 21 | 9:00 a.m. – 9:45 a.m. | FAC – 202B

Workshop #8
Tracking and Implementing Recommendations from PHA, Audits, and Inspections
Wednesday, March 21 | 9:00 a.m. – 9:45 a.m. | FAC – 202D

Workshop #9
Ammonia and the Brewing Industry
Wednesday, March 21 | 9:45 a.m. – 10:30 a.m. | FAC – 202B

2012 PANEL & FORUM SCHEDULE

Panel #1: Research Update
Tuesday, March 20 | 1:30 p.m. – 3:00 p.m. | FAC – 202D

Panel #2: Alternate Natural Refrigerants
Tuesday, March 20 | 3:30 p.m. – 5:00 p.m. | FAC – 202D

Forum: Big Issues – Process Rooms, Machinery Rooms and Handling Releases
Wednesday, March 21 | 11:00 a.m. – 12:30 p.m. | FAC – 202D

2012 TECHNOMERCIALS

Technomercial #1: Vahterus Oy
Monday, March 19 | 9:30 a.m. – 10:00 a.m.

Technomercial #2: Vilter
Monday, March 19 | 10:30 a.m. – 11:00 a.m.

Technomercial #3: EVAPCO
Monday, March 19 | 11:30 a.m. – 12:00 p.m.

Technomercial #4: JCI/Frick
Monday, March 19 | 1:00 p.m. – 1:30 p.m.

Technomercial #5: Mayekawa
Tuesday, March 20 | 9:30 a.m. – 10:00 a.m.

Technomercial #6: Hansen
Tuesday, March 20 | 10:30 a.m. – 11:00 a.m.

Technomercial #7: Airgas
Tuesday, March 20 | 11:30 a.m. – 12:00 p.m.

All Technomercials take place at Frontier Airlines Center – Exhibit Hall D – 3rd Floor

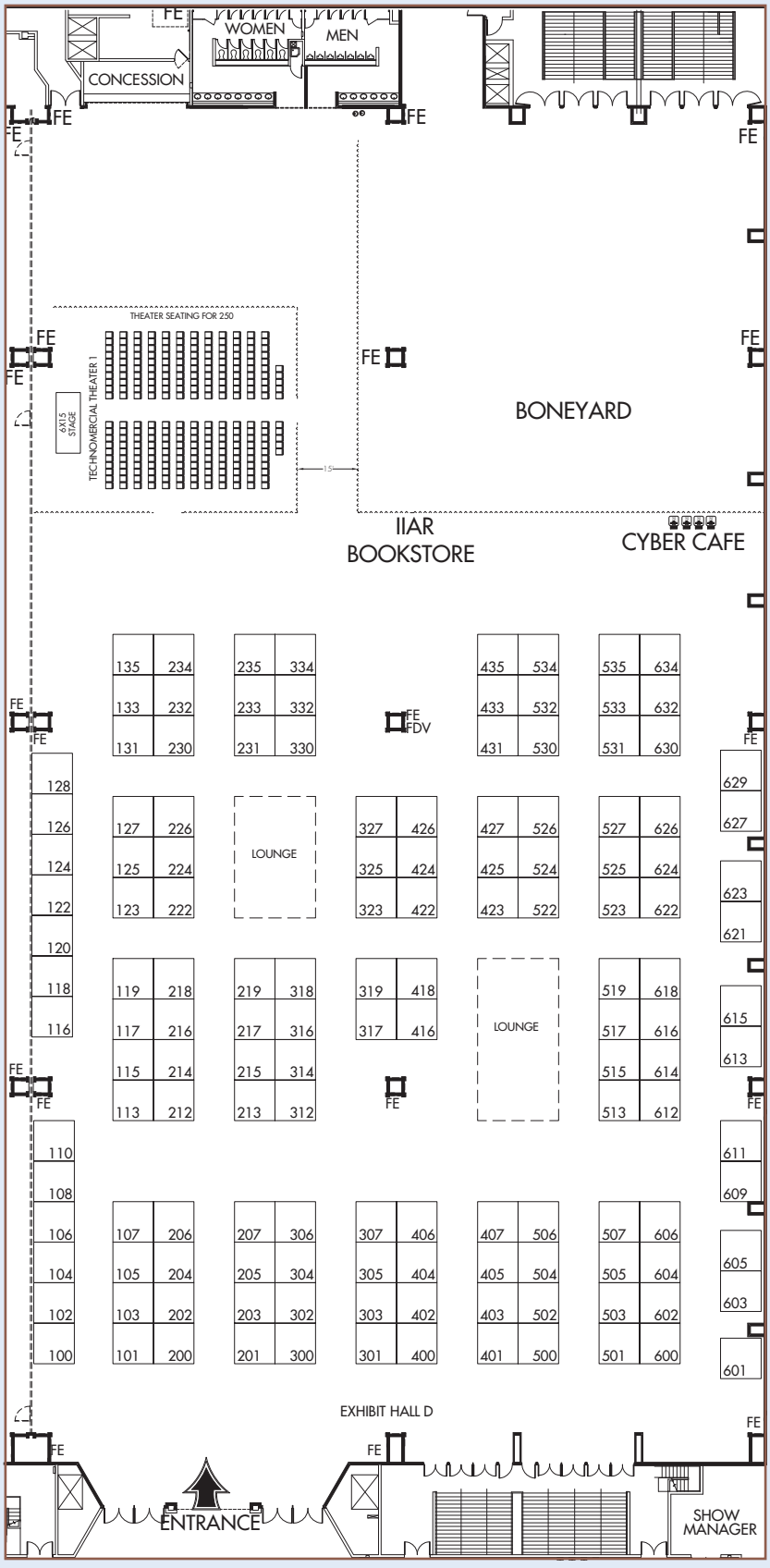
COMMITTEES

2012 COMMITTEE MEETINGS

Committee Name	Day	Time	Location
Ammonia Refrigeration Foundation	Sunday	4:30 p.m. – 5:30 p.m.	Hilton – Mitchell
Code	Saturday	9:00 a.m. – 12:00 Noon	Hilton – Wright Ballroom C
Education	Saturday	8:00 a.m. – 12:00 Noon	Hilton – Walker
Exhibitor Advisory	Tuesday	2:30 p.m. – 3:00 p.m.	Frontier Airlines Center 203C
International	Saturday	8:00 a.m. – 12:00 Noon	Hilton – Mitchell
Marketing	Saturday	9:00 a.m. – 11:00 a.m.	Hilton – Miller
Piping	Saturday	8:00 a.m. – 12:00 Noon	Hilton – Oak
Research	Saturday	9:00 a.m. – 12:00 Noon	Hilton – MacArthur
Safety	Saturday	7:00 a.m. – 9:15 a.m.	Hilton – Kilbourn
Standards	Saturday	8:00 a.m. – 12:00 Noon	Hilton – Wright Ballroom A

EXHIBITHALLFLOORPLAN

FRONTIER AIRLINES CENTER ■ HALL D



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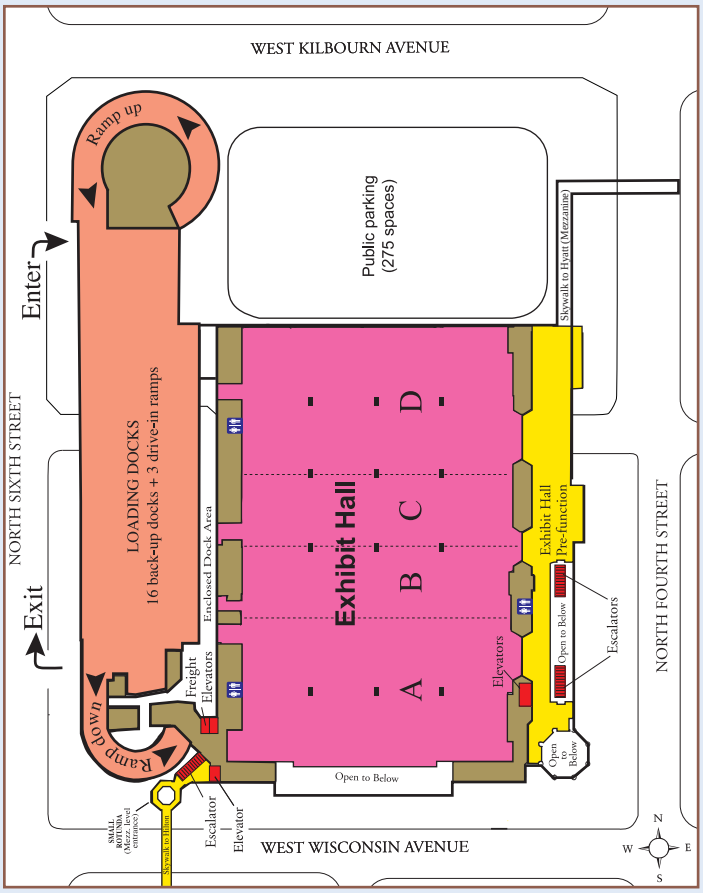
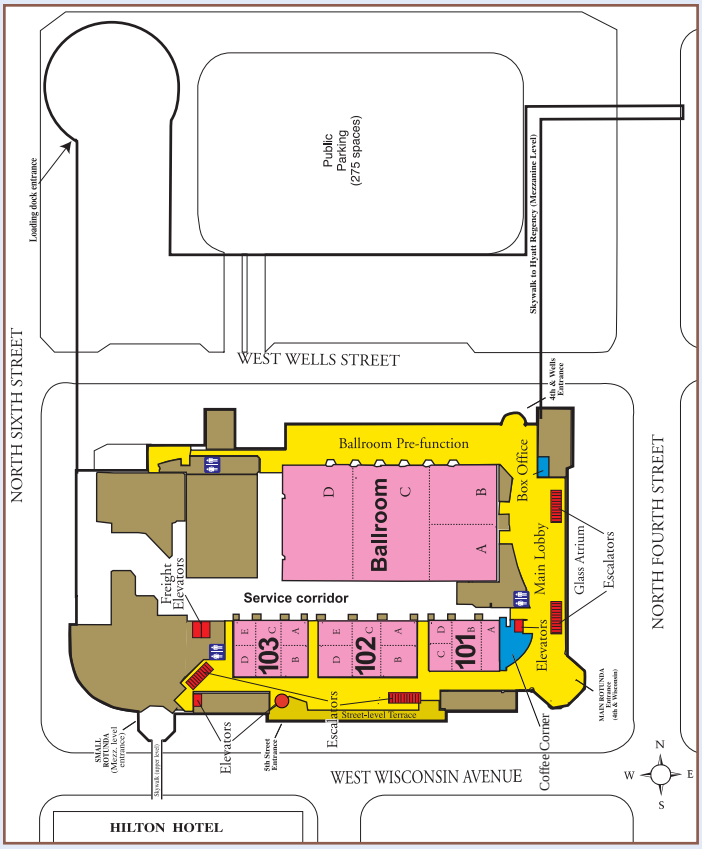
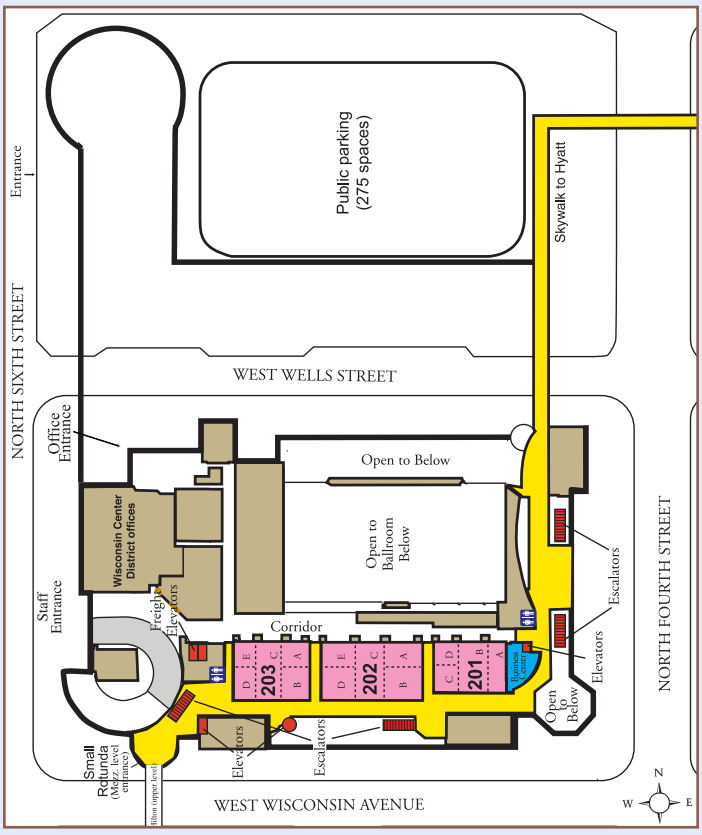


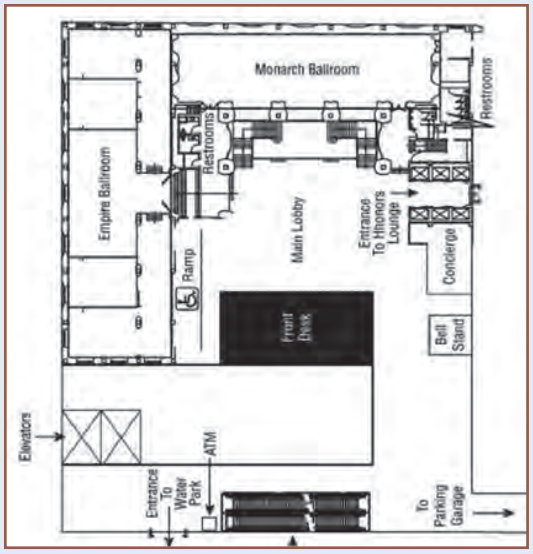
STREET LEVEL



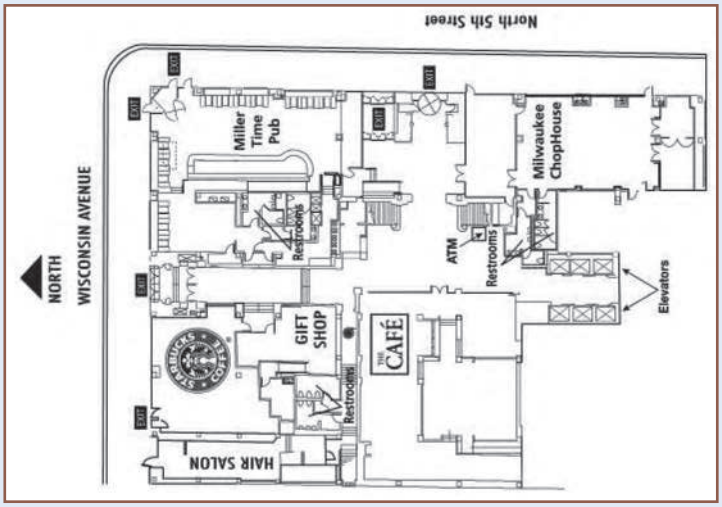
MEZZANINE LEVEL



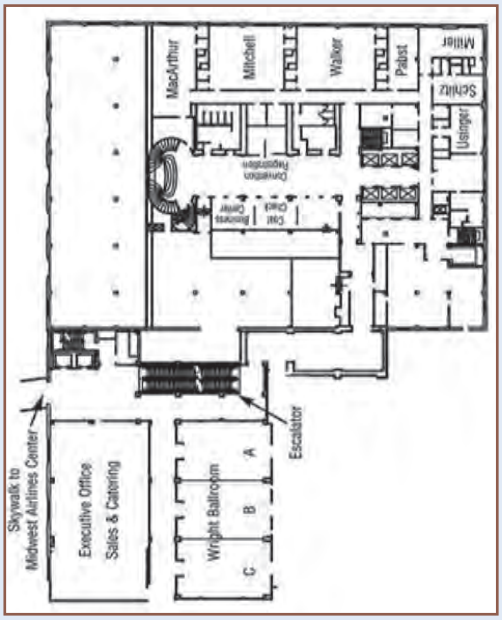
HOTELS



HILTON – UPPER LOBBY

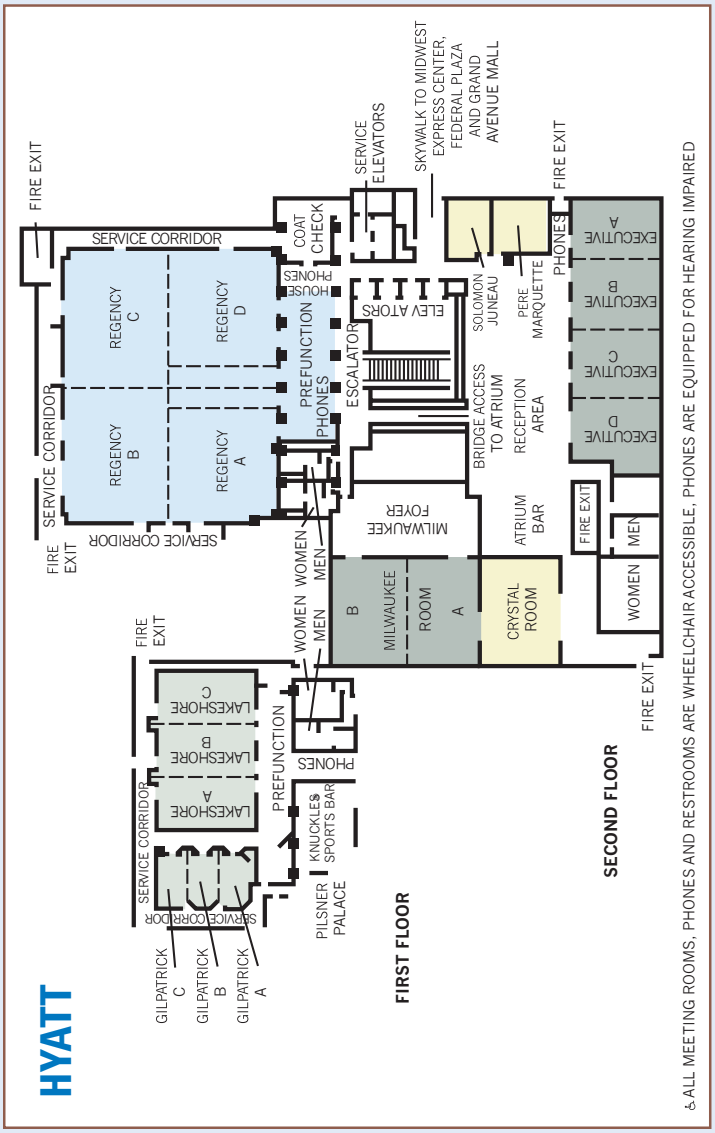


HILTON – LOWER LOBBY



HILTON – 4TH FLOOR

HILTON – 5TH FLOOR



AAIM Controls . . . . . Booth #525
From starters and drives to PLC systems and microprocessor designs, AAIM Controls has the expertise for all your automation requirements with over 90 years of combined refrigeration controls experience.

A. Blasquez E. Refrigeraciòn Industrial . . . . . Booth #318
A. Blasquez E. Refrigeraciòn (ABE) is the largest ammonia refrigeration contractor company in Latin America, specializing in refrigeration systems for breweries, beverages, food and cold storage industries. ABE, your refrigeration partner in Mexico.

Acuren Inspection . . . Booth #105
Acuren's industry-leading mechanical integrity services for ammonia refrigeration systems include Corrosion Under Insulation Scanning (CUI), Computerized Radiography (CR), API Tank and Vessel Inspections, and our exclusive inspection data management system, DMAPS.

Advanced Energy Control . . . . . Booth #435
AEC is a refrigeration and energy management controls company to the cold storage and food processing industries that provides the most comprehensive energy management systems on the market today.

Airfoil Impellers. . . . . Booth #506
Cast aluminum fan blades, machine room exhaust fans, product cooler fans, blast freezer fans, and general ventilation fans.

Airgas Specialty Products . . . . . Booth #305, 307
Airgas Specialty Products offers anhydrous ammonia, pump-outs, field service, safety video, safety training, and Cold Flow Sampler (for determining water in ammonia).

Alfa Laval . . . . . Booth #522
Manufacturer and supplier of semi-welded plate heat exchangers, gasketed heat exchangers and 100% stainless steel fusion-bonded heat exchangers for applications as condensers, evaporators, oil coolers, and economizers.

American Industrial Refrigeration . . . . . Booth #527
AIR is your premier industrial refrigeration contractor; a division of Corval Group, Inc. AIR has been providing design/Build engineering and installation, customized packaging skids, superior quality shop fabrication, parts and field service technicians across the U.S. and International markets since 1978.

Ammonia Process Safety Management (APSM) . . . . . Booth #422
APSM provides PSM software and services for effective compliance management.

Ammonia Refrigeration Foundation (ARF). . . . Booth #339
ARF is a non-profit research and education foundation organized by members of the International Institute of Ammonia Refrigeration (IIAR) to promote educational and scientific projects related to industrial refrigeration and the use of ammonia and other natural refrigerants.

Analytical Technology . . . . . Booth #627
ATI designs and manufactures a complete line of ammonia gas detectors both fixed and portable and additionally gas detectors for 32 other toxic and combustible gases.

Armstrong International . . . . . Booth #103
Automatic purgers.

ASTI . . . . . Booth #106
ASTI was established in 1991, in recognition of the long standing need for training in the safe handling of ammonia, a chemical used widely throughout many areas of industry and agriculture. ASTI offers training in accordance with OSHA Standard 1910.120(q)–emergency response to hazardous substance releases.

Bacharach . . . . . Booth #630
Fixed, continuous monitors for the detection of gases including ammonia, CO, CO_2, CFCs, HFCs, CH4 and more featuring multiple alarm, sensor and relay configurations. From one to 64 points, the units are ideal for chillers, walk-in freezers, public spaces, physical plants in commercial and industrial applications.

Baker Inspection Group. . . . . Booth #124
Mechanical Integrity and Process Safety Management Consulting; Testing & Inspection, NDT.

Baltimore Aircoil Company . . . . . Booth #300, 302
BAC is a worldwide manufacturer of heat transfer and ice thermal storage products. BAC's products include evaporative condensers, cooling towers, closed circuit cooling towers, ice thermal storage systems and equipment controls.

Bitzer Canada . . . . . Booth #232
NH_3 Direct Drive Screw Compressors with displacements ranging from 59 to 377 CFM. OS85 series includes slider control for infinite or stepped capacity control. Optimized for parallel compounding.

Bry-Air . . . . . Booth #127
Manufacturer of Industrial Desiccant Dehumidification and Hygienic Air Systems that are engineered to meet all design conditions in applications where temperature and moisture control are critical.

Calibration Technologies . . . . . Booth #523
Ammonia gas detection products and calibration service.

CAMCO Lubricants . . Booth #404
Nationally known for both the CAMCO 717 series ammonia refrigeration oil and for high-quality food-grade lubes for all air compressors, gear, hydraulic, vacuum, and grease applications.

Carnot Refrigeration . . Booth #609
Carnot Refrigeration designs and manufactures state-of-the-art customized systems using environmentally friendly methods. It specializes in refrigeration systems for supermarkets, refrigerated warehouses, and arenas.

Century Refrigeration . . . . . Booth #116
Century Refrigeration is the leader in Comdustrial™ Refrigeration Systems: The ideal balance of commercial and industrial refrigeration markets. We offer flexibility in design surrounded by durability in construction.

Chem-Aqua . . . . . Booth #602
Chem-Aqua is a water treatment company specializing in cost effective, efficient, customer-designed water treatment programs for industrial, commercial, and institutional facilities.

Chester-Jensen . . . . . Booth #604
Chester-Jensen manufactures air agitated ice builders, instant chillers, plate heat exchangers and other heat transfer equipment.

CIMCO Refrigeration . . . Booth #530, 532
CIMCO Refrigeration specializes in the engineering, design, manufacture, installation, and service of industrial, process cooling, and recreational refrigeration systems. With key locations across North America and around the world, we provide unique cooling solutions to meet our client's needs.

CMC Associates . . . . . Booth #122
CMC Associates is a design/build company that specializes in the planning, design, and construction of facilities for the food, beverage, and cold industries.

Colmac Coil Manufacturing . . . . . Booth #231
From its newly opened second factory in Illinois, Colmac is supplying its Aircoil™ and custom aluminum, stainless, and galvanized steel evaporators to Midwest and Eastern markets.

CoolAir . . . . . Booth #402
Cool Air provides quality ammonia leak detector systems and equipment. Coming soon: the new and improved in LBW-50 ammonia leak detector.

Cornell Pump . . . . . Booth #215
Cornell Pump presents the latest innovations in refrigerant pumps including their new high-pressure, low-speed 2.5 CBH. Cornell also manufactures high quality glycol and chiller pumps.

Cyrus Shank . . . . . Booth #216
The Cyrus Shank Company manufactures and sells industry-leading relief valves and other products for the refrigeration industry such as relief valves, shut-off valves, bolted bonnet shut-off valves, flanged valves, expansion valves, needlepoint valves, check valves, three-way valves, line valves, purge valves, manifolds, brass valves, etc.

Danfoss . . . . . Booth #203, 205
Danfoss manufactures a complete range of products to regulate and monitor industrial refrigeration systems including valves for pressure and temperature regulation, check valves, stop valves, motorized valves, valve motors, and electronic and liquid level controls.

Delta Tee International . . . . . Booth #622
Delta Tee manufactures heat exchangers, pressure vessels and systems, complete capabilities in designing and manufacturing shell and tube heat exchangers for refrigeration, air conditioning, chem-process, food and other applications.

Digital Lumens . . . . . Booth #233
The digital Lumens LED-based Intelligent Lighting System is proven to reduce warehouse and cold storage facilities' lighting electricity expenses up to 90% while improving light levels.

Draeger Safety . . . . . Booth #101
Draeger offers a full line of fire and gas detection equipment for the ammonia industry. The DraegerSensor is the foundation for success in the ammonia industry market. With the new Flame 5000, Draeger can now provide a full safety system covering flame and gas detection.

Dual-Temp . . . . . Booth #235
Providers in the finest of design, construction, installation, service, and supplies for the industrial refrigeration market. Dual-Temp also provides equipment, training, and supplies to meet all your safety requirements.

EXHIBITOR LISTING

ESI . . . . . Booth #135
ESI is a nationwide design-build general contracting firm with 20 years experience. We specialize in the planning, design, engineering, and construction of food distribution and process facilities.

EVAPCO . . . . . Booth #323
EVAPCO is a worldwide leader in the design and manufacture of industrial refrigeration system components. A broad line of ammonia air unit evaporators, critical process air systems, evaporative condensers, water treatment systems, packaged recirculators, pressure vessels, hydrocooling coils, and ice builders can shipped from one of 19 manufacturing facilities in 9 countries around the world. With an on-going commitment to Research and Development, EVAPCO provides the most advanced products in the industry-Tomorrow's Technology... Available Today!

Extol of Ohio . . . . . Booth #400
Extol fabricates and distributes STYROFOAM™, isocyanurate, cellular glass, perlite, and phenolic insulation for piping equipment. Complete valve system, contoured heads, fittings, PVC, aluminum, vapor, and weather barrier caulks and coatings. Extol also provides specification assistance. Extol offers materials for refrigeration chilled water, steam, and process systems.

Farley's S.R.P . . Booth #108, 110
Farley's S.R.P., Inc. is a family owned and operated, refrigeration contractor/parts supplier. Low overhead reduces cost and we pass the savings to the customer. Providing "Getability" since 1978.

Frick by Johnson Controls . . . Booth #513, 515, 517
A full line of refrigeration equipment for most applications. Rotary Screw Compressor Packages and PacChillers with Variable Speed Drive, Condensers, Evaporators, AcuAir Hygienic Air Handlers, Vessels, Controls, and Replacement Parts.

Gamma Graphics . . . Booth #219
Gamma Graphics provides NDT services on ammonia refrigeration systems. We find corrosion & wet insulation on refrigeration piping without cutting any holes. We also provide ultrasonic testing on ammonia vessels.

Garden City Ammonia Program . . . . . Booth #312
Garden City Ammonia Program, known as GCAP, has been providing education for the industrial ammonia refrigeration & boiler operator for efficiency, safety, and compliance is nine years old. Our Ammonia Boot Camp, National Emphasis Program, and the New Process Safety Management Training are the newest in the industry. Our private technical school has CO_2, Ammonia, and Boiler equipment for hands-on training.

Garden City Community College . . . . . Booth #431
Ammonia Refrigeration, Boiler, PSM/RMP, Adv RETA Prep, "Hands-On" Ammonia Refrigeration training since 1996, 4 1/2 Day Format–Earn College Credit–Degree Opportunities Conforms to OSHA & EPA regulations.

GEA PHE Systems . . . Booth #118
GEA PHE Systems- manufacturer of FlatPlate® heat exchangers perfect for ammonia refrigeration applications with flow rate up to 1,645 tons. Products meet ASME/CRN requirements, manufactured in York, PA.

GEA Refrigeration North America . . . . . Booth #416, 418
GEA Refrigeration North America, Inc. manufactures and markets GEA FES, GEA Aerofreeze and GEA Intec industrial refrigeration and freezing equipment for the North American markets. Products include rotary screw and reciprocating compressor packages, spiral, tunnel and carton freezing equipment, custom engineered refrigeration systems, heat exchangers and advanced microprocessor controls.

GF Piping Systems . . Booth #123
COOL-FIT® ABS Plus is complete pre-insulated plastic piping system for glycol and secondary cooling piping systems. It is UV resistant, vapor-tight, and 100% water-tight and requires minimum installation time.

GfG Instrumentation . Booth #100
GfG Instrumentation develops and manufactures portable gas detectors, fixed systems, and respiratory airline monitors; protection from combustibles, oxygen hazards, and toxic gases.

Golden Industrial Refrigeration . . . . . Booth #505
Golden Industrial Refrigeration is a national engineering firm that provides consultation engineering & design solutions along with the procurement of related parts to customers with large industrial refrigeration plants.

H.A. Phillips . . . . . Booth #107
We manufacture valves, level eye sight glasses, liquid level controls, ASME pressure vessels, gas pressure recirculation systems, and mechanical pump recirculator packages. We also distribute Danfoss valves and controls.

Hansen Technologies . . . Booth #317, 319
Hansen Technologies is a global leader in designing and manufacturing components for industrial refrigeration systems. Offerings include an expansive line of valves, pumps, purgers, controls, and other state-of-the-art components.

HCR. . . . . Booth #126, 128
Since 1974, HCR has been eliminating ice, frost, and condensation from freezer doorways through properly engineered, energy efficient equipment, utilizing waste heat from the refrigeration system as the heat source.

Hench Control . . . . . Booth #424
Hench Control is a manufacturer and service provider of modular energy management systems for industrial refrigeration which quantifiably cut energy cost, improve profitability, and significantly reduce the CO_2 footprint for the environment.

Henry Technologies . . . Booth #501, 503
Heat Exchangers, Condensers, Chillers, Pressure Vessels & HVAC/Refrigeration Components. Henry Technologies Ltd. takes pride in providing high quality HEX / PV to our global partners in industrial and commercial applications. Customer Satisfaction, Quality Designs, Product Quality and On Time Deliveries are our primary goals. Let Henry Technologies Ltd. be a partner to your future successes.

Hermetic Pumps . . . . Booth #600
Hermetic Pumps has over 40 years experience in handling refrigerants in canned motor pumps and has over 50,000 units installed. Hermetic is the only manufacturer that offers a canned motor pump specifically designed for refrigerants.

Hill Phoenix . . . . . Booth #615
Hill Phoenix specializes in the design and manufacturing of halocarbon, carbon dioxide transcritical and secondary refrigeration systems for commercial warehousing and industrial refrigeration applications.

Honeywell Analytics . . . . . Booth #213
Honeywell Analytics manufactures the industry's most complete range of monitoring instrumentation for ammonia and other refrigerant gases. We offer fixed-install units (Manning), portable services, controllers, service/support second to none.

Howden Compressors . . . . . Booth #427
Howden Compressors offers the most complete range of screw compressors available in the world for virtually any compressor application- refrigeration to gas reliquification, gas compression or cryogenics, and more.

Howe Corporation . . Booth #102
For over 90 years, Howe Corporation has manufactured quality refrigeration components and packages. Products include flake ice equipment, reciprocating and pump-out compressors, liquid transfer and recirculating units, and pressure vessels. Visit our booth to learn more about the newest Howe product, the 20-ton flake ice machine.

Industrial Consultants . . . . . Booth #206
Industrial Consultants- your compliance connection for OSHA and EPA related training and services including HAZMAT, refrigeration, PSM/RMP, lockout/tagout, confined space, and incident command.

EXHIBITOR LISTING

Industrial Refrigeration Technical College . . . . Booth #407
Industrial Refrigeration Technical College (IRTC) training lab features VFD compressors, Quantum, G-Force micro's, VFD condenser, VFD evaporators, hygienic unit, liquid recirculation, thermosyphon oil cooling, plate chiller, autopurger, and PLC controls.

Industrial Service & Fabricators . . . . . Booth #204
Industrial Service & Fabricators custom designs and fabricates pressure vessels, tanks, and liquid recirculator assemblies. Products include recirculators, receiver intercoolers, accumulators, surge drums, and oil pots.

Innovative Refrigeration Systems . . . . . Booth #519
Innovative Refrigeration Systems specializes in customized turnkey industrial refrigeration systems. We design and build computer-controlled ammonia refrigeration, large tonnage Freon systems, and large CO_2 systems for the cold storage and food process markets.

Insul-Therm International . . . . . Booth #316
Insul-Therm International is a leader in the fabrication and distribution of insulation products for refrigeration and process systems. Our product offerings include TRYMER™, STYROFOAM™, SARAN™, Foamglas, Mylar, and many other lines.

Integrated Circuit Systems . . . . . Booth #212
ICS is a system integrator working primarily in the industrial refrigeration sector. ICS provides turnkey solutions in engineering, specifications, control code, development, graphical interface, operation evaluation, and control panels.

ISN . . . . . Booth #618
ISN is a global contractor management system for over 250 Owner Clients and 40,000 contractors/suppliers, connecting corporations with safe, reliable contractors.

Isotherm . . . . . Booth #218
Heat exchangers, chillers, condensers in shell-and-tube and plate-and-frame configurations. Pressure vessels and recirculator packages. Design and fabrication per ASME VIII Code. Special enhanced surface tubes for NH_3 and CO_2 applications. Titanium and Ti-Tec tubes for RSW applications. High pressure NH_3/ CO_2 cascade condensers.

ITW Insulation Systems . . . . . Booth #133
ITW Insulation Systems supplies TRYMER™ polyisocyanurate pipe insulation and XPS pipe insulation billets, former products of Dow Chemical Company. Additionally, ITW specializes in aluminum and stainless steel jacketing, sheets, and elbows.

Kathabar Dehumidification Systems . . . . . Booth #606
Kathabar Dehumidification Systems, Inc. (KDS) is the most diverse dehumidification company in the world-offering five (5) liquid desiccants and the silica gel desiccant wheel. Liquid desiccants reduce energy usage up to fifty percent by eliminating frost/ ice buildup on evaporator coils thus eliminating the defrost cycle completely. Kathabar designs and manufactures liquid desiccant and dry desiccant systems for a wide range of applications for industrial, commercial, institutional, and green/LEED facilities.

Krack Corporation . . . . Booth #624, 626
Krack Corporation offers a complete line of evaporators, condensing units, and condensers for your commercial refrigeration needs as well as engineered solutions for your industrial refrigeration projects.

Kuhlman . . . . . Booth #621
Kuhlman Incorporated specializes in engineering, design, installation, service, parts, and training of industrial refrigeration systems for over 50 years.

Lanham Insulation . . Booth #425
Lanham Insulation is celebrating 30 years of unparalleled quality and reliability in mechanical insulation services. From inception, our expertise and pursuit of excellence have earned us the trust and confidence of our customers. The Lanham team of industry-leading insulation professionals focuses exclusively on the complete success of each project, to ensure the highest levels of safety, quality, and efficiency. Our fundamental mission is to deliver complete satisfaction with superior quality and value.

Lanier Technical College . . . . . Booth #201
The Georgia Ammonia Refrigeration Program at Lanier Technical College is dedicated to providing the ammonia refrigeration industry with the best, state-of-the-art, hands-on, live system training in ammonia refrigeration system operation, maintenance, and support.

Logic Technologies . . Booth #500
Logic Technologies, the industry's foremost leader in factory automation and computer controls, provides turnkey, state-of-the-art automation systems for ammonia formulization and production, and is setting the standard for today's automation.

Logix Refrigeration Controls . . . . . Booth #314
Logix Refrigeration Energy Management Systems provide energy-efficient operation of refrigeration equipment with documented savings up to 40%. No other refrigeration energy management system is easier to use or more capable.

LUDECA . . . . . Booth #131
LUDECA, Inc., leading provider for Preventive, Predictive, and Corrective Maintenance Solutions including Laser Coupling Shaft Alignment and Belt Alignment tools; vibration analysis and balancing equipment; software, services, and training.

M&M Refrigeration . . Booth #113
M&M Refrigeration manufactures both reciprocating and rotary screw compressor packages, packaged refrigeration systems, pressure vessels, and microprocessor control systems.

Marking Services . . . Booth #207
Marking Services, Inc. is your partner for ammonia refrigeration pipe labels, valve tags and signage materials and services. In addition to the manufacture of identification products, we provide turnkey services for material installation and P&ID updates/creation.

Mayekawa USA . . Booth #304, 306
The Mycom TRUE Touch compressor control panel complements the industry leading efficiency of Mycom compressors and superior package design by offering features such as a user friendly touch screen interface, remote panel monitoring, and a USB interface.

McCormack Coil . . . . Booth #327
McCormack Coil, a subsidiary of EVAPCO, is a manufacturer of a complete line of evaporator coils and specialty finned-tube heat transfer products for the ammonia refrigeration industry. Specializing in high quality aluminum construction, McCormack Coil Company catalogs over 35,000 standard fan/coil combinations to meet your industrial refrigeration application requirements.

MIRO Industries . . . . . Booth #120
MIRO Industries, Inc. provides solutions for supporting rooftop pipe, conduit, duct and walkway systems that prevent damage to the roof membrane.

Multi-Wing America . . . . . Booth #423
High efficiency low noise fan blades, diameters from 7 inches to 9 feet.

NIKKISO Pumps America . . . . . Booth #125
Canned motor seal-less pumps for ammonia refrigeration.

Nomaco Insulation . . Booth #234
Cryoflex, closed cell polyethylene foam, is supplied in block, sheet, and tube forms. It is a new insulation for applications that require flexibility in a cold environment.

North Star Ice Equipment . . . . . Booth #603
North Star Ice manufactures industrial flake ice makers and ice storage and delivery systems.

Omega Thermo Products . . . . . Booth #613
Heat exchangers/evaporators, including falling film chillers, ice machines, cooling tables/conveyor, cooling jackets, and specialized cooling/cryogenic equipment.

Owens Corning . . . . . Booth #623
From a leader in Fiberglas™ Pipe Insulation comes the new Owens Corning FOAMULAR® extruded polystyrene (XPS) fabrication billets. You now have a choice for your XPS pipe insulation requirements. Benefits include exceptional thermal efficiency, long service life, reduced overall installation costs and manufactured in the USA. All of this brought to you by the same trusted company you can count on for FOAMULAR® cold storage floor applications.

Parker Hannifin . . . . . Booth #401, 403
Parker Refrigerating Specialties manufactures both industrial and commercial refrigeration control valves, mechanical float switches, electronic liquid level controls, and industrial service valves. Additionally, Parker's herl brand includes shut-off, expansion, hand check, safety, and overflow valves for all common refrigerants including ammonia and CO_2.

Paul Mueller . . . . . Booth #230
Paul Mueller will feature their falling film chiller, semi-welded plate and frame heat exchanger, brazed plate heat exchanger and heat recovery equipment.

PermaTherm . . . . . Booth #214
PermaTherm is a premier manufacturer of pipe insulation, serving the ammonia refrigeration and cold chain industry for over 20 years. As a leading design manufacturer and supplier of rigid pipe insulation, PermaTherm has developed a complete pipe insulation system for the ammonia refrigeration industry with millions of linear feet of trouble-free pipe installed throughout the country. The PermaTherm pipe insulation system provides superior thermal performance and environmental attributes, while yielding tremendous savings at every phase of your project!

EXHIBITOR LISTING

Petrochem Insulation . . Booth #202
Petrochem is your premier single source specialty contractor, providing mechanical insulation, siding, scaffolding, fireproofing, coatings and linings, heat tracing and lead and asbestos abatement services nationwide from twelve regional offices.

Phoenix Air Systems. Booth #334
Phoenix Air Systems is an experienced designer and manufacturer of critical process air management products. The company's extensive product line includes: hygienic air handlers, desiccant dehumidification products, energy recovery units, make-up air handlers, penthouse refrigeration units, and related accessories. Phoenix Air Systems specializes in critical process air management for the food industry, but the company also has experience in a variety of industrial applications.

Polyguard Products . . . . . Booth #117, 119
RG2400™ Corrosion Gel ZeroPerm™, Vapor Barrier, AlumaGuard™ Weather Barrier, ZeroPerm™ Ultra Vapor and Weather Barrier Membrane, RG2400™ CSA Structural Steel Corrosion Protection.

Process Compliance . . Booth #632
Protexus- a data management system designed to work with any existing RMP/PSM program documentation. This system provides a storage solution for your RMP/PSM library.

Professional Rebuild & Optimal Services . . . . Booth #629
PROfurbish (rebuild) screw compressors and gear boxes. All brands, makes, and models.

PSRG . . . . . Booth #104
OSHA Process Safety Management Services and Training.

Quote Express . . . . . Booth #217
Quote Express estimating software enables you to save time and maximize profits by automating your estimating process. Most estimators are trained in a single afternoon. With Quote Express, it's easy to generate precise, reliable, and fast bids.

Refrigeration Systems. . Booth #330
Refrigeration Systems Co. (RSC) is celebrating 50 years, working nationwide in the cold storage construction and industrial refrigeration industry. Our experienced team of project engineers, service technicians, and installers are ready to assist you. Regardless of the project size, RSC is only a phone call away.

Refrigeration Valves & Systems . . . . . Booth #325
RVS is a preferred supplier of innovative industrial refrigeration products including factory assembled, packaged recirculation systems and ASME pressure vessels of all types and sizes. RVS, a subsidiary of EVAPCO, is committed to providing superior technical support and the highest quality products with fast, on-time shipments to meet your construction schedule.

Republic Refrigeration . . . Booth #301, 303
Industrial refrigeration system design, packaged refrigeration systems, equipment skids, pipe installation, refrigeration controls, control and power wiring, parts, service quality, integrity, and performance. We do it right the first time!

Resource Compliance Booth #504
PSMWriter© is a software solution designed to satisfy PSM, RMP, and CalARP regulations. It includes 16 elements that work together to assist you in staying in compliance with today's chemical regulations. It's simple, user-friendly interface requires very little training and it can be implemented in your facility almost immediately.

RETA . . . . . Booth #601
RETA exists to enhance the professional development of industrial refrigeration system operators and technicians through training and education events focused on safe and efficient operation.

Schneider Electric . . . Booth #524
Schneider Electric manufactures industrial refrigeration solutions including AC motors, variable speed drivers, and system controls specifically designed for the industrial refrigeration market focused on control and energy efficiencies.

SCS Tracer Environmental . . . . . Booth #433
Environmental engineering and consulting services focusing on PSM & RMP compliance for ammonia refrigerated facilities.

Select Technologies . . Booth #526
Select Technologies Inc. specializes in food plant equipment integration with ammonia refrigeration, process, HVAC, and product handling. Services include design-build-installation, production line relocations, mechanical, electrical, PLC automation, and IT integration.

SINTECO IMPIANTI . . Booth #611
Process Air Conditioning systems for food products; Manufacture of Air Handling Units "Hygiene®"; Clean Rooms; Air Ducts (textile and metallic); Plenoms.

SmartWatt Energy . . Booth #332
SmartWatt Energy is a leading provider of turnkey energy-efficiency solutions, specializing in the provision of comprehensive energy efficiency solutions for cold storage and food processing facilities.

Stellar . . . . . Booth #200
Stellar is a fully integrated firm focused on design, engineering, construction, and mechanical services worldwide. In addition to its Jacksonville, Florida headquarters, Stellar maintains more than 20 strategic technical support and refrigeration parts locations throughout the United States. For almost 25 years, Stellar has been the leader in designing, fabricating, installing and maintaining industry best ammonia refrigeration systems. Stellar also provides expert compressor rebuilding and remanufacturing services, safety compliance and PSM programs, condensation control, mechanical integrity, thermal services, automation and replacement parts.

Summit Industrial Products . . . . . Booth #634
Summit Industrial Products manufactures ammonia compressor lubricants using various base fluids: from NSF-certified H1 PAOs to Alkylbenzene (AB), AB/PAO, Polyglycol and API Group II fluids. Summit Products deliver value and cost benefits like thermal efficiency, increased reliability, reduced oil carryover, extended oil drains, and cleaner lubricating systems. NH_3/ CO_2 cascade systems? Bring'em on! For lubricant-related technical expertise and used oil analysis support, let's talk.

Summit Refrigeration . . Booth #406
Summit Refrigeration Group is a full service, customer oriented, design/build industrial refrigeration contracting company specializing in food processing plants, multi-temperature distribution centers and specialized process cooling. Summit provides services and contracting for customers nationwide.

Tanner Industries . . . Booth #502
Full service anhydrous ammonia distributor for ammonia refrigeration. Acknowledged for product quality and service dating back to 1890. Storage tanks pump-out services and safety training. Member NACD.

TechCold International . . . . . Booth #612
TechCold International is on the cutting edge of energy saving industrial refrigeration control technology, with a proven track record of delivering control solutions for over 10 years on a global scale. By adopting an open infrastructure, non-proprietary approach to industrial refrigeration controls, TechCold International offers cost-effective solutions helping organizations reduce energy consumption and increase profitability.

Teikoku USA . . . . . Booth #507
Teikoku is the world's largest manufacturer of sealless, canned motor pumps, and the leading supplier of pumps to the refrigeration industry. Our highly reliable and easy to maintain pumps are perfect for pumping ammonia.

Th. Witt GmbH Industrial Refrigeration . . . . . Booth #405
Refrigerant pump, float regulators.

Thermal Seal Duct Systems . . . . . Booth #531, 533
Refrigeration Duct work.

Vahterus Oy . . . . . Booth #426
As the inventors of Plate 4 Shell Heat exchanger (PSHE) technology, with an installed base of >29000 exchangers, Vahterus PSHE have many benefits for advanced refrigeration applications.

VaCom Technologies . . . . . Booth #605
VaCom Technologies provides integrated control solutions for industrial refrigeration systems, focusing on technologies for energy efficiency, system integration and performance monitoring to achieve reliable operation and enterprise connectivity.

Vilter Manufacturing . . . . . Booth #222, 224, 226
Vilter manufactures industrial refrigeration reciprocating compressors, singe screw compressors, and twin screw compressors. The Vilter single screw's low life-cycle costs and high reliability are backed by an exclusive 15-year bearing warranty.

Vogt Ice . . . . . Booth #535
Vogt Ice manufactures Ice Makers, Ice Storage, Ice Delivery Systems, and Plate Water Chillers. The company is out of Louisville Kentucky, we have been manufacturing for more than 70 years.

VRTX Technologies . . . Booth #614, 616
VRTX specializes in chemical-free water treatment in cooling towers and evaporative condensers. The VRTX system relies on kinetic energy, hydrodynamic cavitation, and chemical equilibrium to control scale corrosion.

Xylem . . . . . Booth #534
Semi-welded and brazed plate heat exchangers.

Zero Zone . . . . . Booth #115
Zero Zone is refrigeration...from traditional DX and Edge™ Distributed Systems to Cold Loop Secondary Systems. Zero Zone provides custom tailored systems for retail refrigeration, industrial chillers, and cold storage facilities.

From the Technical Director

Blow out panels are sections of walls, louvers, hatches or doors that are designed to relieve pressure from an explosion. We are sometimes asked about the requirements for blow out panels for refrigeration engine rooms. To be clear, there is no code requirement for them for ammonia refrigeration systems. Section 911 of the International Fire Code (fire protection systems chapter) describes rules that are applicable when a hazardous material exceeds certain quantities. The code generally describes flammable gas as one of those materials that necessitate the use of blow out panels when specified quantities are exceeded. Of course, ammonia is a flammable gas under certain conditions. HOWEVER, chapter 35 of the IFC provides some specific exceptions to the definition of flammable gases. Most important to our industry is Exception #1: "Gases used as refrigerants in refrigeration systems (see section 606)". Section 606 is the section on mechanical refrigeration with which most of us are very familiar, and there are no requirements for blowout panels within it. Some underwriters have been known to require blowout panels in engine rooms, and this has led some to believe that they are generally a requirement. Underwriters certainly have the discretion to require more stringent protections to buildings they insure, and they will typically provide design guidelines that will meet their requirements. However, there are many protections inherent in an ammonia refrigeration system design including generous ventilation requirements. With these protections and with proper maintenance and operation, the risk of an explosion is significantly minimized.

Ammonia inventory reporting is a necessity, and something that requires a bit of thought and preparation. We have received calls about what form to fill out if a facility has ordered 10,000 lbs. of replacement ammonia. First, there is the yearly inventory reporting requirement under the Emergency Planning and Community Right to Know Act (EPCRA) 312. This includes a Tier I or Tier II (if requested) report to the SERC (state emergency response commission), LEPC (Local Emergency Planning Committee) and the local fire department and must be done by July 1 annually. This report is on your entire inventory. Next, if a facility has received 10,000 lbs of refrigerant for a "re-charge" or "top-off", it will be considered "otherwise used" under EPCRA 313. Additional conditions of this requirement are that facilities employ 10 or more people, and that the facility is classified as Standard Industrial (this is almost always the case). EPCRA 313 form "R" would be used to report this quantity (the amount added, but not the entire charge) by March 1 for the preceding year.

But when the reporting happens, and the ammonia orders are filled, an obvious question arises…What happened to the refrigerant that was in the system to begin with? This question might not come up immediately upon reporting, but a system manager would do well to figure it out ahead of any regulator that might take a look at the reports or invoices and ask that question. What I am suggesting is that when an annual report is filed, it is not a good idea to repeatedly report the same calculated figure of the inventory year after year and then later order more ammonia to "top off" the system. A savvy inspector would ask the question above, and wonder whether or not there was an unreported major release. So while it is likely an effort in futility to try to calculate exact losses, it is a good idea to make some reasonable estimate of refrigerant that was lost throughout the year and include that loss in annual reports. Typical sources of minor refrigerant loss are: purgers, compressor shaft seals, valve stem packing, oil draining operations, and minor repairs. An often-cited rule of thumb is 5%-10% loss annually of the total system charge, depending upon the age, size and condition of a system. It is worth keeping in mind that losses of 100 lbs. / 24 hours are to be reported to the EPA and the National Response Center. Losses beyond that figure need to be accounted for, whether they are caused by an accidental release, or intentional removal for maintenance or re-configuration.

IIAR will be introducing a newly revised and updated PSM/RMP guidance manual at the IIAR Annual Conference in Milwaukee. One new feature of the guideline is the minor leak reporting program, within the mechanical integrity section. This will help operators keep up with small leaks that do not warrant an immediate shut down, but can be addressed during planned maintenance. This is one means of helping to estimate annual losses so that when inventory reporting comes around, a more accurate accounting can be done and preparation can be made for the justification of adding more refrigerant to your system.

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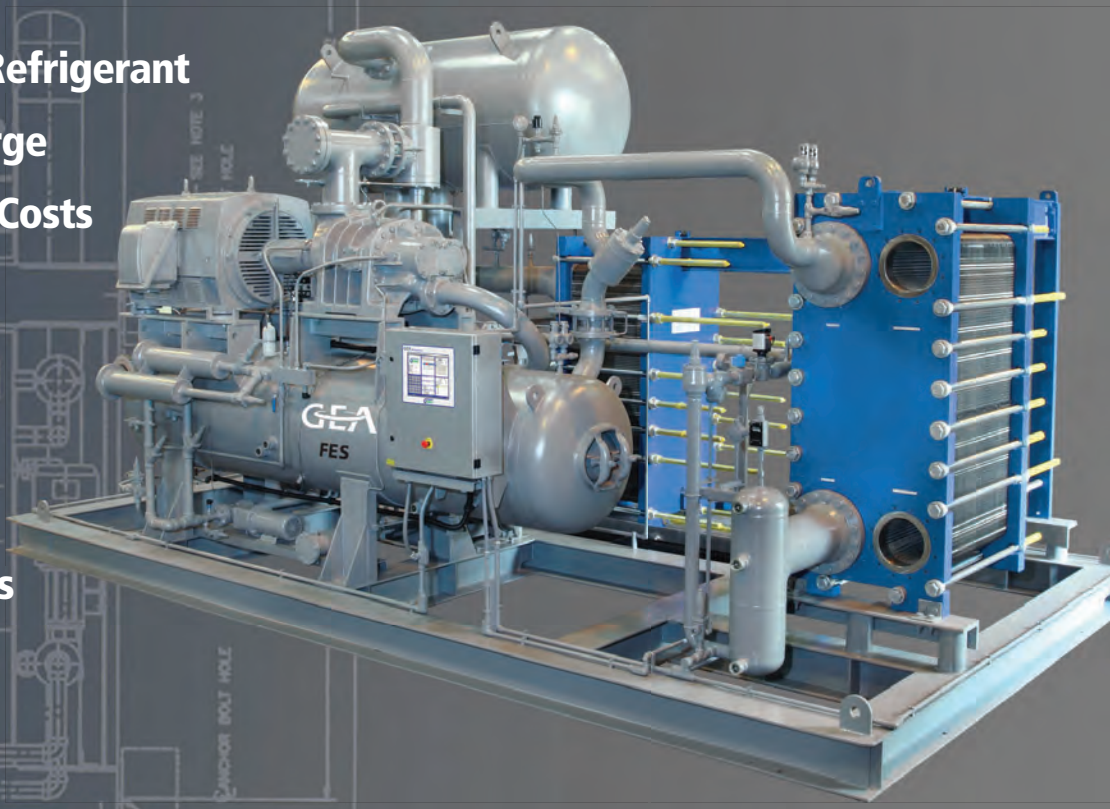

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