



PYRAMID PRESS

ASHRAE – Memphis Chapter
<http://www.ashraememphis.org/>

October 2008



**MEMPHIS
CHAPTER
CONTACTS**



LUNCH MEETING

TUESDAY, October 14th, 2008
11:30 AM

Meeting Location:

**Chickasaw Country Club,
3395 Galloway Ave
Memphis, TN**

[Click here for map](#)

THIS MONTHS SPEAKER

Marlene Linders

Philders Group Int'l Inc—Heathrow, FL

UNDERSTANDING BASICS OF LIABILITY & RISK DURING HEALTHCARE CONSTRUCTION

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Ms Linders is the President and CEO of PHILDERS GROUP INTERNATIONAL INC—Infectious Disease, and Risk Management Consultants. She has several years of extensive expertise in development and understanding of construction and design for building systems. She has worked on designing high-risk environments as Surgical Suites, Transplant, Teaching and Urban Hospitals for several Level One trauma centers costing in excess of \$4 billion dollars. Her expertise is in Environmental Epidemiology, Indoor Air Quality, Infection Control and the impact it has on Occupant/Patient Health.

Ms. Linders is a Registered Nurse, architect, and holds a Master's degree in Science. Additionally, she is a National Speaker on Infectious Diseases, a **distinguished speaker for ASHRAE**, and an Expert Witness for some of the largest law firms nationwide.

Her former company, PLI Inc, wrote the first IAQ online curriculum course for the University of Florida Rinker School of Construction.

Philders Group International Inc. provides consulting services, education, and corporate risk management programs for Infectious Disease to architects, engineers, Real Estate Management, Contractor and health care industries. They work with clients as a medical resource, provide ongoing education and compliance programs, allowing clients to function at lower liability and manage risk. Additionally, companies looking to penetrate the healthcare industry, hire Philders Group for start up, placement and positioning to establish themselves.

Education

RN nursing, MS clinical psychology Halifax School of NSG
BA Architectural Design, NYU

Other

Harvard University Professional Development Program, Graduate School of Architecture and Design



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THE PRESIDENTS CORNER

ASHRAE Returns to Chicago for Winter Conference and AHR EXPO

Chicago, with one of the most recognizable skylines in the United States, has long-standing status as a livable urban center. That the city has stood the test of time makes it the perfect backdrop for this year's ASHRAE Winter Conference theme: *Sustainable Urban Design: Engineering Tomorrow...Today.*



The Palmer House Hilton will once again host ASHRAE January 24 – 28, with the ASHRAE co-sponsored AHR Expo taking place Jan. 26-28 at McCormick Place. The conference promises to be a great way to kick off the new year, with opportunities to interact with colleagues, learn technical information, and hear Keynote Speaker Chris Luebke of Arup speak on sustainability and thoughtful design and Technical Plenary speaker Adrian Bejan, Ph.D., explain technical evolution through "constructal theory" which he says can predict how everything flows through time and space.

The technical program highlights the conference theme and will feature presentations on energy conservation, indoor environmental quality, sustainability efforts and more that will help you earn your PDHs. Seeking to create additional value for Expo and Conference attendees, ASHRAE is launching "Wednesday Welcome," at which all ASHRAE technical program sessions on Jan. 28 take place at McCormick Place. The "Wednesday Welcome" includes 18 hands-on, applications-type programs, held from 9 a.m. to 1:30 p.m., leaving the afternoon open to tour the Expo with more than 1,850 exhibits covering a world of equipment, systems, components and technology for the building industry. Admission to the "Wednesday Welcome" is included with your full

ASHRAE Winter Conference registration or you can purchase a ticket for the full day for \$99.

You can also earn PDHs and CEUs at Professional Development Seminars and Short Courses brought to you by the ASHRAE Learning Institute.

Networking opportunities and chances to see Chicago are plentiful at the ASHRAE Winter Conference. Meet with old friends at the Welcome Party, Presidents Luncheon and Member's Night Out. Technical tours of the city take you to the Intercontinental Hotel and The Art Institute of Chicago and you can see mansions and temples of the city, or take a cooking class on one of the general tours.

For complete, updated information and to register for the ASHRAE Winter Conference, go online to www.ashrae.org/chicago. Visit www.ahrexpo.com to learn more about the AHR EXPO.

I am looking forward to seeing everyone at the luncheon.

Regards,

David Branham, PE



COMPUTER ENVIRONMENT

**Attend the meeting and get a chance to win
a Liebert 500 VA LINE INTERACTIVE UPS**



Computer Environment is pleased to donate a 500 VA Liebert PSA Line Interactive UPS to the lucky winner of this month's ASHRAE raffle. The Liebert PSA is an economical line-interactive UPS that offers full-featured power protection for small office computers and electronic equipment. The Liebert PSA is Ideally Suited For: Professional Desktop PC's, Professional Workstations, Routers, Bridges, Point-of-Sale Terminals and Other Sensitive Electronics



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THE HISTORIAN

HISTORY OF THE TENNESSEE AIR NATIONAL GUARD Memphis, Tennessee

October's history article is about an unusual occurrence in the annals of the Air National Guard. Few times in the history of the ANG has a base of operation been built on a green field site. Usually the ANG has been co-located on a military base or the units are located on existing bases or airports where facilities have been modified over time to suite the airframe being flown.

The 164 Airlift Wing is in the process of moving from their existing Democrat Road location on the north side of the Memphis International Airport property to the new location at Shelby Drive and Swinnea Road on the south-east side of the airport property. The 164 AW held an open house for the new base on September 6, 2008. Some of you may remember that I served with the 164 AW for thirty-three years.

In attendance at the opening ceremony were Governor Phil Bredesen, General Norton A Schwartz, Chief of Staff of the U.S. Air Force, Lt. Gen. Craig R, McKinley, Director of the Air National Guard, Major General Gus Harget, Jr., Adjutant General of Tennessee, plus many other high ranking officers and enlisted men and women from other ANG units across the U.S.

The following mechanical, electrical and structural engineering firms, architectural firms and contracting firms were part of the design and construction for the new Memphis 164 AW facilities: Allen & Hoshall, Flintco Construction Solutions, SSRE Ellers, Tom Robinson & Associates, Security Fire, Clark Dixon Associates, TRO Jung/Brannen, Self Tucker Associates, Morgan & Thornburg, Inc., Avation Alliance, APAC, Burns & McDonnell, CH2M Hill, Dennis Electric, Inc., POND Architects-Engineers-Planners, Tigerbrain Engineering, Inc., Frankfurt Short Bruza Architects, Dyson Construction, Reliable Contracting, Benham, Alberici, plus other subcontractors.

Lt. Col. Olen Spencer, 164 AW, has given permission to allow a copy of the *"History of the Tennessee Air National Guard Memphis, Tennessee"* to be included in this months newsletter.

The 164th Airlift Wing began in 1946 when the secretary of war authorized the adjutant general of Tennessee to organize an air unit of the National Guard in Memphis. After months of planning and negotiating with local, state, and federal governments, the 144th Fighter

Squadron obtained federal recognition on 23 December 1946 along with the following support units: the Utility Flight of the 155 FS, Detachment B, 218th Air Service Group, and the 155th Weather Station. Total personnel authorized to these four units were 50 officers, 33 of which were pilots, and 303 enlisted.

Lieutenant Colonel Henry K. Crawley of Memphis was named the squadron's first commander. The first Army Air Corps liaison officer (advisor) to the unit was another Memphian, Lt. Col. Fred Hook. In many respects, Colonel Hook was arguably the most instrumental figure in obtaining authority to organize an ANG flying unit in Memphis and securing facilities for the unit at Memphis airport. The 155th's first organizational meeting (drill) was held Friday, 29 November 1946 at 1900.

Excitement over the prospect of a new ANG flying unit in Memphis had been building steadily during the last four months of 1946. Local newspapers kept Mid-Southerners up-to-speed on developments regarding progress that was being made towards attaining federal recognition. The Memphis unit has no designation or assigned mission, but organizers were both enthusiastic and diligent in their actions to recruit personnel for their future mission.

In the early months of 1947, with federal recognition securely in hand but still no aircraft, speculation surrounding the future mission was ramped. Two of the more popular rumors involved P-47 Thunderbolts and P-80 jet fighters. In the Spring of 1947 the speculation would be put to an end as the famed P-51D Mustang was assigned to the 155th Fighter Squadron. Ironically, the P-51D was not among the numerous aircraft that had been rumored for bed-down in Memphis.

The 155th Fighter Squadron, which became known as the "Red Scarf Squadron", was well known for its precision flying ability and was often sought after to participate in public events such as the Cleveland Air Races in 1948 and the 1949 National Air Fair in Chicago.

In 1948, the newly-formed USAF changed the "P" (for pursuit) designation to "F" (for fighter).(TRS) and deployed to Shaw AFB, South Carolina.

Continued on page 6



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OFFICERS & CHAIRS

Continued from Page 1

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Golf Tournament	David George Stan Wilson Keith Mayes 901-373-5100

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NOTICES

ASHRAE Endorsed Events

Update your Membership Information

Please update your email, phone #s, and contact information by logging in at www.ashrae.org

<http://www.ashrae.org/template/MemberLinkLanding/category/1570>

Manage Your Membership
Manage Personal Information
Address Changes

The Memphis Chapter Newsletter mailing list and roster are based on those records.

ASHRAE Technology Awards Program

The purpose of the ASHRAE Technology Awards program is to:

1. Recognize ASHRAE members who design and/or conceive innovative technological concepts that are proven through actual operating data;
2. Communicate innovative systems designs to other ASHRAE members;
3. Highlight technological achievements of ASHRAE to others, including associated professionals and societies worldwide, as well as building and facility owners.

Each year the Society may present awards in seven categories: Commercial Buildings (New and Existing); Institutional Buildings (New and Existing); Health Care Facilities (New and Existing); Industrial Facilities or Processes (New and Existing); Public Assembly (New and Existing); Residential (New and Existing); Alternative or Renewable Energy Use.

For each category a first, second, and honorable mention winner may be named. Also, one of the category first place winners may be selected to receive the ASHRAE Award of Engineering Excellence. The recipient will have demonstrated the best overall compliance with the judging criteria.

[Technology Award Program Overview, Requirements, Judging Criteria and Helpful Hints](#)



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CHAPTER EVENT

18TH ANNUAL ASHRAE BENEFIT GOLF TOURNAMENT

Proceeds to be donated to ASHRAE Research and Development

FRIDAY, OCTOBER 24, 2008
STONEBRIDGE GOLF CLUB
MEMPHIS, TN

4-MAN SCRAMBLE COMPETITION

Organize your own team or allow us to pair you with other golfers.

9:00 AM – SHOTGUN START

Breakfast prior and lunch following Golf, Breakfast & Lunch: \$100 (includes mulligans and putting contest. Water , soda's and powerade furnished)

PRIZES FOR:

1ST PLACE CHAMPIONSHIP FLIGHT

2ND PLACE CHAMPIONSHIP FLIGHT

1ST PLACE 1ST FLIGHT CLOSEST TO THE PIN

LONGEST DRIVE

Sign up form and Sponsor Forms are at the end of this newsletter

ASHRAE MEMBERSHIP GROWTH

Please inform colleagues interested in becoming members of ASHRAE to log on to <http://www.ashrae.org> to fill out an electronic application. Once at the site click on "Join ASHRAE" on the left side of the page then scroll down to the appropriate application for the desired membership grade (This link will take you directly to the membership application selection page - <http://www.ashrae.org/template/AboutLinkLanding/category/1872;jsessionid=aaaglpHers1BeQ>) .

Also, have each interested colleague go to the Memphis Chapter Internet site (<http://www.ashraememphis.org/page2.html>) and fill out a local chapter application. If the prospective members do not have internet access just have them contact me directly and give me their mailing address for me to send hard copies.

Total dues are \$150 National and \$95 local. Local dues are only \$15 if they will not attend the lunch meetings.

Please feel free to call or write with any questions.

James Fleck, P.E.
(ASHRAE Membership Promotion Chairman)
Gala Engineering
Phone: (901) 384-8400
Fax: (901) 373-2255



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History of the Tennessee Air National Guard—continued from page 3

In January 1951, the 155th was called to federal service to prepare for missions in support of the Korean Conflict. Of immediate concern was the task of modifying its fleet of F-51 aircraft with photo reconnaissance equipment. On 1 April 1951, with all assigned aircraft not RF-51's, the 155th was re-designated a Tactical Reconnaissance Squadron (TRS) and deployed to Shaw AFB, South Carolina.

The 155th Tactical Reconnaissance Squadron returned to state control on 1 January 1953 and began night photo-recon operations from the Memphis ANGB with newly assigned Douglas RB-26 Invader (Intruder?) aircraft. The 155th flew the RB-26 for the next three years.

On 1 April 1956, the 155th converted to the RF-84 aircraft. RF-84's were brand new jet-engine aircraft directly off the factory assembly line. The 155th's mission remained tactical reconnaissance for another 5 years.

1 April 1961 was truly a major milestone in the unit's history as it marks the beginning of the 164th's era of military airlift. It was on this date the 164th Air Transportation Group (Heavy) was activated as the parent organization, and the 155th was re-designated an Air Transportation Squadron (Heavy). Other support units assigned to the 164 ATG were stood up as well. The gaining major command (MAJCOM) for the 164 ATG was the Military Air Transport Service. Lt. Col. William C. Smith was reassigned from the 118th Tactical Reconnaissance Wing in Nashville to the position of group commander. The organization received the Boeing C-97 Stratofreighter, a heavy military transport based on the B-29. This mission change was an exciting time for the Airmen of the 164th and the glamour of world-wide missions resulted in high morale among the troops.

The USAF re-designated MATS to Military Airlift Command (MAC) on 1 January 1966. This resulted in a corresponding change to the designation of the 164th – it became the 164th Military Airlift Group (MAG).

In January 1966 Air National Guard transport units began flying additional cargo flights each month to Southeast Asia. The 164 MAG was no exception. In fact, the 164th did more than its fair share. In May 1966 the 164th set many records for airmanship: Ten round trips to Southeast Asia, over 1700 flying hours, and tremendous transport of cargo and passengers—all accomplished by part-time personnel.

May of 1967 brought the grand lady of the air, the C-124 Globemaster, as the 164 MAG converted aircraft once again. Affectionately known as Old Shaky, the 164th would continue to fly strategic military airlift missions in the C-124's until May 1974.

In September 1974 the 164 MAG took receipt of the first of nine C-130A aircraft and began another aircraft conversion. The mission remained military airlift but the focus was tactical in nature. The unit obtained a drop zone in Coldwater, Mississippi and performed its first aerial delivery mission on 8 February 1975. The 164th Military Airlift Group was re-designated the 164th Tactical Airlift Group.

In the 1990's Desert Storm brought the activation of several units of the 164th Tactical Airlift Group. One unit noted

for its service was the 164th Mobile Aerial Port Squadron. This unit was the first Air National Guard aerial port unit activated for Desert Storm and served a six-month tour in the desert with distinction.

After a one-year delay due to Operation Desert Shield/Desert Storm, the 164 TAG began a conversion back to strategic military airlift when the first of nine C-141B Starlifters arrived on 2 January 1992. For several months the unit flew both C-130A's and C-141B's. The 164th transferred its last C-130A in April 1992 and was re-designated the 164th Airlift Group.

In October 1995, the 164 AG was re-designated the 164th Airlift Wing. This was a result of an USAF initiative to re-designate all unit-equipped flying groups, including Guard and Reserve flying groups, to wings.

In late September 2001 the 164th volunteered on short notice to take over Air Mobility Command's European Strategic Intra-theatre Deployment (E-SID) mission based at Ramstein Air Base, Germany. The unit deployed and flew its first E-SID mission within 40 hours of initial notification. Although some Airmen deployed for longer periods of time, most supported this mission on a 30-day rotational basis until December 2002.

In April 2002 the USAF made public its plan to assign C-5A Galaxy aircraft to the 164th Airlift Wing in fiscal year 2005 (1 October 2004). The wing wasted no time and immediately began to pre-plan what could be, arguably, its greatest organizational challenge since its beginning in 1946.



The 164th Airlift Wing retired the first of its nine C-141's in November 2003. The final aircraft, tail number 70157, was retired on 2 May 2004 following a brief ceremony at the ANG Base. All unit-assigned C-141's were handed over to the Aerospace Maintenance and Regeneration Center (AMARC), Davis-Monthan AFB, AZ to be taken out-of-service.

The USAF's C-5A iron flow plan for the 164 AW had the first Galaxy arrive Memphis on or about 15 September 2004. Another was delivered prior to 1 October 2005. Both of these aircraft were aircraft maintenance trainers to facilitate formal training that was conducted by USAF personnel during Q1 FY 05 at the Memphis, ANG Base. Two more C-5's were delivered in January 2005. Over the next 2 ½ years others followed as scheduled. The ninth C-5 was delivered in July 2007. The conversion from the C-141 Starlifter to the C-5 Galaxy marks the eighth airplane that has served here since 1946 and is one of the largest and heaviest aircraft in the world.



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TECHNICAL ARTICLE



R-410A - WHAT YOU NEED TO KNOW

Ozone (O₃), the key substance of the protective ozone layer, is naturally created and destroyed by chemical reactions in the stratosphere. When chlorine is present in the stratosphere, it upsets the natural ozone layer balance by destroying O₃ faster than it is naturally replaced. It is the chlorine present in CFCs (Chlorofluorocarbons) and HCFCs (Hydrochlorofluorocarbons) that causes ozone depletion.

In order to reduce and eliminate ozone depletion, the Montreal Protocol required production and importation of CFCs in The United States and other developed countries to be halted at the end of 1995. Under this protocol, the United States has started phasing out the production and importation of HCFCs. This is of particular importance to the refrigeration and air conditioning industry because HCFC-22 or R-22 is the world's most widely used refrigerant. It serves in both residential and commercial applications, from small window units to large commercial water chillers, and everything in between. HCFC-22 Ozone Depletion Potential (ODP) is as much as 95% lower than CFCs. Nevertheless, it does have some ODP, so international law set forth in the Montreal Protocol and its Copenhagen and Vienna amendments have put HCFC-22 on a phase-out schedule. In developed countries, production of HCFC-22 will end no later than the year 2030. In intervening years, production is reduced in a series of specified steps.

Detailed phase-out schedules vary from country to country. In the U.S., HCFC-22 production will be frozen at baseline levels on January 1, 2010, and the production of virgin refrigerant will be banned unless it is used as a feedstock for other refrigerants, or in equipment manufactured prior to January 1, 2010. The countries of the European Community have adopted even stricter measures.

What are the Options?

There are a wide variety of options available to replace both HCFC refrigerants and equipment or systems. The most widely accepted replacement option for HCFCs is the use of hydrofluorocarbons (HFCs). Ammonia is also a replacement option in the large commercial air conditioning and refrigeration sectors. These refrigerants do not deplete the ozone layer and can replace both CFC and HCFC uses. A brief overview of options classified by general equipment groups is as follows:

- Residential and Commercial Air Conditioning

Almost 100% of residential and commercial air conditioning equipment (excluding large air conditioning systems called chillers) has traditionally operated on HCFC-22. The current refrigerant alternatives for residential and commercial air conditioning equipment are HFC blends. Some of these blends can be applied to existing equipment with modifications to the systems. Others can only be used with new equipment designed for the specific refrigerant blend.

- Large Air Conditioning Systems (Chillers)

Large air conditioning systems or chillers use either high or low-pressure refrigerants. Low-pressure chillers have traditionally used a CFC refrigerant (CFC-11). The current alternative refrigerant for low-pressure chillers is HCFC-123. This refrigerant will be manufactured/imported until 2030 for use in servicing these systems; however, other alternative low-pressure HFC refrigerants (such as HFC-134a) are being implemented.

The HCFC Phase-out Schedule

HCFCs are a controlled substance because of their ozone-depleting potential. Importation and manufacturing of new or "virgin" HCFCs is regulated by a federal allowance system. The United States government has adopted the following phase-out schedule for HCFCs based on the terms of the Montreal Protocol:

Jan. 1, 1996	baseline annual allowable amount of HCFCs based on Montreal Protocol
Jan. 1, 2004	annual allowable amount of HCFCs reduced by 35%
Jan. 1, 2010	annual allowable amount of HCFCs reduced by 65%
Jan. 1, 2010	no new R-22 equipment manufactured or imported



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TECHNICAL ARTICLE

- Jan. 1, 2015 of HCFCs reduced by 90%
- Jan. 1, 2020 annual allowable amount of HCFCs reduced by 99.5% except HCFC-123, which can be imported or manufactured until 2030 to service large air conditioning units (chillers) under the remaining .5% allowance. No new HCFC equipment to be manufactured or imported
- Jan. 1, 2030 HCFCs no longer permitted to be imported or manufactured

What does the HCFC Phase-out mean and what should be done?

The majority of the HCFC phase-out impact from a standpoint of refrigerant availability (e.g. R-22) will be felt over the next eight years. By January 1, 2010, 65% of the current annual supply of HCFC refrigerants will be eliminated from the marketplace and R-22 equipment will not be manufactured or imported. Awareness of the phase-out schedule and available alternatives will become more important as the decade progresses and contractors, equipment specifiers and equipment owners consider replacement and servicing of new and existing refrigeration and air conditioning equipment.

Equipment Owners (including Homeowners)

Equipment owners today are mostly unaware of the HCFC phase-out and its implications. The life cycle of HCFC refrigeration and air conditioning equipment can be as little as 10 years and as long as 30 years depending on the type of equipment. Residential central air conditioning units last between 10 and 15 years. Supermarket refrigeration equipment has a typical life span of approximately 15 years. Large air conditioning units (chillers) can last as long as 30 years. Equipment owners need to start considering the potential impact of the HCFC phase-out when considering new equipment and retrofits of existing equipment with their service contractor or equipment Specifier. Owners of HCFC equipment or those customers who are contemplating purchases of new refrigeration and air conditioning equipment need to make themselves aware of the issues surrounding HCFC refrigerants. The best source for this information should be a refrigeration and air conditioning contractor or equipment Specifier, who can provide this information and assist owners in choosing the proper equipment or refrigerant to meet their needs. Commercial and industrial owners should invest time in reviewing their current stock of refrigeration and air conditioning equipment. Once this is completed, they should discuss with a contractor or equipment Specifier both short and long term plans for their equipment needs and the effects the HCFC phase-out will have on these needs.

HCFC phase-out considerations when planning for replacement or retrofit of HCFC equipment should include:

- a) difficulties in servicing and maintaining existing HCFC equipment in the long term,
- b) the declining availability of HCFC refrigerants,
- c) adequate life cycle timeframes for new equipment (i.e. return on investment),
- d) Determining the remaining life cycle of old equipment, and
- e) Understanding alternative equipment, refrigerant options and compatibility of refrigerants and equipment.

R-410A, the next step. What you need to know.

The industry worldwide has developed a wide variety of long term refrigerant alternatives that are classified as HFCs (Hydrofluorocarbons). HFCs are now available for most refrigeration and air conditioning applications. In the area of unitary air conditioning, the industry manufacturers have primarily moved towards HFC-410A as the replacement for R-22 in NEW equipment. The characteristics of R-410A are considerably different than that of R-22, and while no specific R-410A training is mandated, technicians should be knowledgeable and have the proper tools to safely handle this refrigerant.



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Operating pressures in a R-410A refrigerant system average about 60% higher than in a comparable R-22 system. At first, this may seem to be a negative characteristic. In fact, just the opposite, the higher pressures have led equipment system designers to more robust designs, superior control and protection techniques. As a result, system reliability was not compromised but actually improved.

Because R-410A refrigerant is not a direct, functional replacement for R-22, equipment must be specifically designed to operate with R-410A. R-410A refrigerant units are designed for heavy-duty operation with a thicker compressor shell and heavy-wall tubing. Thicker materials in turn enabled the manufacturer to create heavier, better welds at joints, which improve their resistance to abuse. The field-testing and product history to date for R-410A equipment suggest that the R-410A units are more reliable than R-22 units.

Lubricants

All air conditioners and heat pumps using scroll and reciprocating compressors circulate oil with the refrigerant to keep the compressor lubricated. R-22 units use mineral oil. Most air conditioning and heat pump units operating with HFC refrigerants such as, R-32, R-125, R-134a, R-143a and their mixtures, including R-410A refrigerant, are recommended to use synthetic lubricants. Synthetic lubricants are not uncommon and are commercially available.

Synthetic lubricants are more soluble with R-410A refrigerant than traditional mineral oils are with R-22. Improved solubility allows the oil to mix easier with R-410A refrigerant and circulate more efficiently. Overall, this improves oil return, reduces compressor wear and generally improves reliability. Also, just like synthetic motor oils used in automobiles, synthetic oils circulating with R-410A refrigerant are less likely to breakdown under extreme service conditions. This serves as another benefit to achieving greater system reliability.

The one challenge with synthetic lubricants is that they are prone to absorb moisture from the atmosphere due to polarity of the molecules and ability to attract water molecules. This requires service technicians to take simple precautions to prevent exposing the oil to air. It is as simple as keeping the oil container sealed and transferring oil with a pump rather than pouring it. But, if the oil, as well as R-410A refrigerant, does absorb a small amount of moisture, each refrigerant system should contain a filter-dryer with the express purpose of cleaning and drying refrigerant and oil circulating through the system.

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R-410A Characteristics

R-410A is classified as an HFC refrigerant and has no undesirable ozone depleting properties because it does not contain any chlorine.

Comprised of an equal blend of HFC-32 and HFC-125, R-410A is a near azeotropic refrigerant mixture that exhibits a negligible temperature glide, meaning the system can be topped off repeatedly without risk of fractionalization should refrigerant loss occurs.

Because it is incompatible with mineral oil, R-410A systems use synthetic polyol ester (POE) oil. Unfortunately, POE oils are hydroscopic, meaning they readily absorb water. This can degrade the oil, causing harm to the entire system. R-410A systems should not be left open to the atmosphere longer than absolutely necessary. The operating pressures of R-410A are approximately fifty to seventy percent higher than that of R-22. For example, a normally operating R-22 system will typically have a high side pressure of 260 psig and low side pressure of 76 psig, while a normally operating R-410A system will have a high side pressure of 418 psig and low side pressure of 130 psig.



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Equipment Guideline

The operating pressures of R-410A are significantly higher compared to R-22. To work safely with R-410A, technicians are required to use tools and equipment that are rated for higher pressures. Check with your local wholesaler to ensure your equipment is rated to handle R-410A refrigerant.

Gauges:

Pressure gauges, manifold sets, and hoses need to be rated for use with R-410A. Consult with the equipment manufacturer or your wholesaler for suitability.

Virgin Cylinders:

Refrigerant cylinders containing virgin R-410A can be easily identified by the color of the cylinder and / or cylinder packaging. While available in several sizes, and marketed under a variety of trademarked names, virgin R-410A will always be in rosy-pink colored cylinders and / or cylinder packaging.



Recovery Cylinders:

Because R-410A is a higher pressure refrigerant, you cannot use the same recovery cylinders that you used to recover R-22. Recovery tanks need to be specified as DOT 4BA400 or 4BW400 in order to withstand the higher pressures of R-410A. These cylinders are rated for 400 psig service pressure and 800 psig test pressure.

Identifying R-410A Equipment in the Field:

Air conditioning units are required to have the type of refrigerant they were factory charged with listed on the unit nameplate. In addition, many of the air conditioning manufacturers provide a rose or pink sticker or tag near the service valves (refrigerant connections) to denote R-410A refrigerant. Before servicing an air conditioning unit, be sure to check for these markings to determine whether the unit is charged with R-410A refrigerant.

Can R22 equipment be retrofitted to use R-410A ?

R-410A should never be used in a system designed for use with R-22. Equipment originally designed for use with R22 is not constructed or tested to withstand the higher operating pressures of R-410A. System components including the compressor, condenser, system piping, etc., must withstand not only the higher operating pressures of R-410A, but much higher burst test requirements as well. Many other operational and performance characteristics are substantially different between these two refrigerants. Use of R-410A in any system not specifically designed for R-410A will result in system and/or component malfunction, and will void regulatory approval of the equipment. A "retrofit" with R-410A or R-22 equipment should therefore never be considered, as it is a potentially dangerous and negligent act.

Because R-410A is a blend of refrigerants can it be added to an existing R-410A system charge?

R-410A is a near azeotropic refrigerant mixture with a negligible temperature glide. There are no concerns about fractionalization should refrigerant loss occur, so R-410A can be added without any concern. It is highly recommended that R-410A be charged as a liquid only.



ASHRAE MEMPHIS CHAPTER ANNUAL GOLF TOURNAMENT

The Memphis Chapter of ASHRAE is asking for your sponsorship for the golf tournament October 24, 2008. Your contribution of \$150.00 per hole will help make the tournament a success. If you wish to sponsor a hole, please make check payable to ASHRAE Memphis Chapter, include the completed form below and send to.

David George
Mills-Wilson-George, Inc.
1847 Vanderhorn Dr.
Memphis, Tn. 38134

Please send checks by Oct 17, 2008

Sponsors Name: _____.

Address: _____.

Phone: _____ . Contact: _____.

No. of Holes: _____ X \$150.00 = \$_____.

Thank you for your sponsorship.