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Northwestern Memorial Hospital, newly designed and built for practicing medicine in the 21st Century. Located in Chicago's Streeterville neighborhood, the addition opened its doors May 1999. The new dual-tower design will provide in-patient services at the 17-story Feinberg Pavilion with 492 rooms. The 22-story Galter Pavilion will be dedicated to out-patient services.

CONTINUED ON PAGE 7
Sincerely yours,

Daniel Hickey
President, CEAC
inpatient care with 492 private rooms and 92 intensive care beds, and the 22-story Galter Pavilion for outpatient care and medical office space, connected by an 8-floor diagnostic and therapeutic center.

Over half the capital for the project was raised through investing and cutting costs, and the new facility is touted as one of the most modern, technologically advanced medical complexes around. Architects for the new construction were Ellerbe Becket and Hellmuth Obata & Kassabaum. And the Construction Management for the project was a joint venture between Power Contracting & Engineering Corp. and CRSS Constructors.

The early stages of planning for the new facility date back to 1987, when an administrative evaluation concluded a change was needed to maintain a patients first commitment. The following year, planning for the project began. 1994 marked the groundbreaking, 1996 marked the topping-out ceremony and May 1, 1999 patients moved in.

Continuing with the theme Patients First, Northwestern Memorial offers a host of patient-oriented features, like pull-out beds for family members staying overnight, separate patient and public areas, a four-lane drive through drop off and 2,000-space attached parking garage, expanded Emergency Department facilities, bilingual signage and a Health Learning Center open to patients and the public offering information on health conditions, drug and treatment issues, alternative medicine and much more.

Northwestern Memorial also features a number of clinical advances. It is a leader in the development and practice of minimally invasive surgery, offers one of the most comprehensive treatment programs for early detection and treatment of ovarian cancer, is a world leader in neuroscience and imaging and is pioneering new treatments in cardiology.

Built on the site of the hospital's old parking garage, this construction project was gigantic and a challenge. Due to its proximity to Lake Michigan, a retention wall had to be constructed. After the 100,000 sq.-ft. footprint was cleared, a 40-ft deep, 2-ft. thick slurry
was installed. The next step was the 200 6-ft diameter, 8-15ft. wide caissons that had to be drilled 80 ft. into the ground. The finished foundation is capable of supporting 500 million lbs (40,000 elephants). Structural steel and concrete came next. They formed floor decks, elevator

CONTINUED ON PAGE 9
cores and the towers. Steel was difficult to come by due to Bethlehem Steel’s closing of its Pennsylvania plant. That made jumbo-sized steel beams hard to get (the closest were in Luxembourg). As an alternative, a welded plate design was incorporated in which pieces were welded into square columns. In the fall of 1996 the building topped out and precast was erected. The final stage was the interior and the installation of mechanical, electrical and plumbing systems. This was said by some to be the most challenging aspect of the construction. Six separate contractors were brought in.

CONTINUED ON PAGE 10

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redundancy to ensure uninterrupted care in any conditions.

The Northwestern Memorial Hospital complex has an Evapco Cooling Tower. It features fiberglass blades, a stainless steel pan and delivers 7,000 tons of cooling. It is equipped with vibration switches for the motors, low-level oil detectors that send alarms to the facilities management system, and an oversized capacity of up to 12,000 tons. Technically the unit is two 3-cell towers working in tandem, one for the north side and one for the south. The north half of the tower is outfitted with basin heaters for winter operations. Its #1 fan also has a frequency drive for maintaining lower winter temperatures.

Four York Millennium Centrifugal Chillers work with the Evapco tower. The first chiller is a 1,000-ton, 480V winter unit. It uses 134A refrigerant. The next two...
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That’s important to a building manager or owner, because few things are more evident than poor environmental performance from your building’s mechanical systems.

Problems with these building systems can lead to the threat of legal action.

At best, employees who are uncomfortable may not be as productive as they could be. They may be too hot, or the air circulation may not be suitable.

Worse yet, they may get sick. That costs their employers money, not only in medical costs, but in lost work time.

As a result, some tenants may leave. And that costs an owner money. In fact, according to Building Owners and Managers Association International (BOMA), lack of comfort is now the primary reason for tenants leaving their buildings.

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chillers in line are 2,000-ton, 12,000V centrifugal chillers. And the 4th chiller is a 2,000-ton steam turbine unit. It has an Elliot steam turbine on top and uses 125 psi steam to turn the turbine at 4500 rpm. At full load it uses 24,000 lbs/hour.

The chilled water system connecting all this gear features a primary and a secondary loop. The primary loop circulates through the chillers. The secondary loop serves the coils for the air handlers, cools the linear accelerator, cools the ComEd vault, and provides cooling to the package units throughout the facility. The secondary loop also draws cooling off the primary loop as needed. Three 6,000 gpm Bell & Gossett frequency drive pumps serve the secondary loop and operate at 1,750 gpm for winter opera-

CONTINUED ON PAGE 14

(TOP LEFT) Dave Stout, Glenn Wright, Patient Care and long time employee of Northwestern Hospital, and Ross Feldman. (LOWER LEFT) Hospital Electricians (L to R) Jim Armstrong, Jim Rafferty, Jim Collins, John Ernst. (RIGHT) Emergency Management System operations check is conducted by engineers Steven Gall, Ross Feldman and (seated) Michael Colgan.

Fluorescent Lamp Disposal

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The Bulb Eater BE-55-VRS from Air Cycle Corp. is the ONLY fluorescent lamp crushing unit on the market that can satisfy the needs of small or large scale lamp users. Able to transform more than 800 4' lamps from piles of boxes of fragile, dangerous, difficult to manage lamps into a compact 55-gallon drum. This stops the continued handling, and hazard liability, of whole lamps.

Air Cycle also provides a very low-cost, nation-wide drum removal service for recycling that includes free replacement drums for each full one picked up.

The 55-VRS uses a tested three-stage filtering system that removes both mercury laden dust and vapors. This is an "emissions controlled" crusher that satisfies EPA/CSHA requirements for on-site crushing. The filters are easily and inexpensively replaced after very long service lives. The activated carbon charge is rated for millions of lamps, and chemically neutralizes the captured mercury vapor into an inert mineral.

Stop worrying about fluorescent tube disposal. Call Air Cycle today to order your Bulb Eater. Buy, Lease, or use your credit card!
The extraordinary heating and cooling muscle of Northwestern Memorial Hospital is completely integrated and controlled by a Johnson Metasys facilities management system. This system is tied into all mechanical systems, the life safety system, the elevator system, security and the emergency power network. It covers 20,000 points. This provides the engineering staff with an extremely sophisticated tool to manage the operations of the complex. Operating in a user-friendly Windows computer environment, the system segments the complex by floors and then zooms in to mechanical equipment all the way down to the individual component level.

All mechanical equipment in Northwestern Memorial’s complex is DDC controlled except for the heat exchanger valves and isolation dampers in the fans, and level controls in the boilers. Boiler level controls are pneumatic as a precaution against power failure to allow for easy manual control. As mentioned above, the Johnson Metasys system interfaces with all mechanical equipment throughout the complex. However, boilers and chillers are manually started and stopped by the engineering staff for additional quality control assurance.

An additional emergency power control Impac system is tied into the Johnson Metasys system.

CONTINUED ON PAGE 15
It monitors and tracks critical emergency power. This is vital to a state-of-the-art medical facility like Northwestern Memorial.

Northwestern Memorial Hospital is setting a new, challenging standard to the medical community: The entire complex is H.E.P.A (high efficiency particulate air filter) filtered. This is a unique new way to combat infection in a medical facility. By minimizing the amount of dust particles in the air, Northwestern Memorial has limited the transmission of contagious germs. An independent service was brought in to the facility to test the level of dust in the air and had difficulty finding a level.

Northwestern Memorial has one of the lowest hospital-acquired infection rates in the world.

There are a wide variety of fans throughout the Northwestern Memorial complex ranging in size up to 120 HP. Dual feed air handlers come in to the main duct and feed 11 main supply fans. These are Joy Vane-Actuator fans. These are dual fans, so the actual number of fans is 22. The dual feed feature is nice because on non-extreme days, the engineers can do maintenance on 1/2 of the fans without interrupting service. These fans have 5 stages: An Intake Plenum with primary and secondary filters; a preheat Coil; a humidification section (each half of every dual fan has its own dry steam humidification); a chill water coil; and Heps Filters (52 in each half of all eleven dual fans).

The other main fans in use are the Atrium fans which serve the three atriums in the Galter and Fineberg Pavilions and the E-section that links them.

Five 2-meg Caterpillar generators supply electricity and emergency power to the Northwestern Memorial complex. Here again is an example of massive capacity in Northwestern Hospital

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THE RIGHT KIND OF CHEMISTRY

At H-O-H Chemicals, we obviously believe in the right kind of water chemistry. We also believe it is just as important to have the right kind of chemistry between you and your treatment representative. For example,

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for all five generators is 10 million watts.

All wall barriers in Northwestern Memorial have fire stop that goes all the way up to the next floor. 4,000 smoke detectors are also spread throughout the complex, which is fully sprinklered.

Northwestern Memorial has gone to great lengths to provide efficient transportation between the hospital floors as well as privacy for patients. To facilitate this the elevators are separated into four categories: Patient Transport, Staff, Service and Public. These designations are strictly enforced and transportation is smooth. All elevators in the complex can be programmed from the Johnson Metasys system.

Going through the basic systems found in Northwestern Memorial’s campus doesn’t tell the whole story. In addition to boilers and chillers and air handlers are a variety of highly specialized equipment for use in medicine. A list of some of the major pieces includes a non-potable water system for sterilizers and a medical air system for patient rooms which includes a medical vacuum system, lab air and lab vacuum.

125 psi steam comes into mechanical rooms and is converted to 15 psi. Condensate from machinery is sent to a receiver which then sends the condensate to a de-aerator. Heat exchangers then take the 15 psi steam and heat a closed loop system which sends steam through the building reheat boxes and radiant heat panels in rooms. VAV reheats are controlled by Titus boxes with Johnson Metasys controls.

Reco instantaneous on demand water heaters also take the 15 psi steam to heat incoming city water and provide domestic hot water to patient rooms as well as the rest of the hospital. They feature a recirculation line for
unused water. A liquid disinfector system is used on the return lines of the domestic hot water system. It uses copper and silver ions (positive and negative charges) to kill Legionella and other bacteria.

Part of Northwestern Memorial's success in minimizing hospital infections is no doubt due to the fact that every patient room has its own sink to combat the spread of bacteria. Another nice feature is the presence of oxygen, vacuum and medical air on both sides of every bed. This allows any bed to immediately be converted to an Intensive Care Unit. The beds in the complex also incorporate new technology, positioning and adjusting by sensor according to body type.

Northwestern Memorial features 60 isolation rooms throughout the complex with three in each unit. Every isolation room is equipped with an Iso-Tek monitor mounted outside. This sophisticated device monitors the positive/negative ratio, and sets off alarms if the room's status...
changes. Positive rooms are for transplants and other procedures that require germs to be kept out. Negative rooms are for TB patients and others who have contagious diseases requiring germs to be kept in. The mechanical equipment in the complex makes it possible to switch a room from positive to negative or vice versa in a mere 5 minutes. A room is kept positive by keeping building supply and exhaust at 1/2. A room is kept negative by drawing air out using 2 dedicated isolation room exhausts located on the 17th floor.

Forty-two engineers operate and maintain the mechanical sys-
Chugach Electric Association, in partnership with the Department of Energy, Department of Defense, U.S. Postal Service, National Rural Electric Cooperative

**U.S. Postal Service Facility Tests New Fuel Cell System**

Chugach will dispatch excess power into the utility’s power grid. This fuel cell project will significantly reduce the amount of fuel used and pollution emitted to meet end users electrical and heating needs. In addition, it avoids the investment in conventional standby emergency generators, uninterruptible power supplies (UPS), and heat boilers.

The project came about when Chugach requested consideration for a test and evaluation of a control system using five 200 kilowatt phosphoric acid fuel cells (PAFC) units configured as a one-megawatt power plant. In several typical distributed generation design configurations, current fuel cell control technology causes a noticeable momentary interruption in electric service to the customer during several routine situations. Utility grade functionality in seamless switching and load sharing between modular fuel cell units is an electric utility requirement that has not been met by current fuel cell control technology.

There are many ways such an assemblage can be controlled and dispatched. However, a supervisory control system has not yet been built. The best way to test a control system is to build it and field-test it in a utility application of distributed generation at a customer location. Building, testing, and evaluating control options will provide data and experience that will help other users of the technology.

This project will fund a share of the purchase, operation, and testing of a one-megawatt five-pack (five each 200 kW PAFC units). The total cost of this project is $5,650,000 apportioned between the following parties:

- DOE Buy Down Funds: $1 million;
- CONTINUED ON PAGE 20

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NEW FUEL CELL SYSTEM
CONTINUED FROM PAGE 19

Chugach up to $1.2 million plus fuel and operations and maintenance costs; USPS $1 million; NRECA-CRN/EPRI $750,000. There is also cost sharing from the U.S. Army Construction Engineering Research Laboratory and the manufacturer, CSG, in an additional amount of approximately $1.7 million. Most of their cost sharing is focused on designing and building components for a Site Management System (SMS). The SMS will coordinate transfer between the grid-connect and grid-independent load share operating modes, and provide the interface communication capabilities for control of the multi-unit installation. Its development effort is being done in stages. The first stage was construction of a SMS enclosure that includes a global bypass.

The installation is designed to meet the US Postal Service’s (USPS) peak electrical load from the fuel cells and provide heat in excess of its thermal requirements. The installation will cover an area 75-feet x 139-feet on the east (back) side of the USPS facility. The relatively large footprint of the installation was selected because ample land was available and it allows Chugach to minimize installation and snow removal-related maintenance costs. This project’s load sharing and seamless transfer features required redesign of the inverter control system in each of the fuel cells. These components were installed in the fuel cells prior to shipping. The research and development tasks includes the purchase of fuel cells designed to work with the new control system and Chugach participation in the design of the supervisory control system.

Design work of the supervisory control system includes the development of the physical layout, control and functions, operator interface and utility system interface Supervisory Control and Data Acquisition (SCADA). This will require a significant effort by being present to work with vendors, programmers, and suppliers of components and systems in order to ensure proper interface and operation. Chugach will prepare an interim project report after commission testing of the installation. The installation will include five PC25 Model C Fuel Cell Power Plants with SMS controller and equipment interfaces with the customer load and the Chugach grid. Included in the interim report will be a description of Chugach’s site

CONTINUED ON PAGE 21
A large and detailed study of the possible link between exposure to low frequency electromagnetic fields (EMFs) and suicide among electric utility workers has uncovered what appears to be a distinct association.

Electricians working for five U.S. power companies faced twice the expected risk of suicide, while linemen faced one and a half times the expected risk, according to the University of North Carolina at Chapel Hill study. Suicides among power plant operators occurred at a rate slightly lower than expected, researchers found.

Younger people appeared to be at greater risk of suicide than older ones, and higher, more recent exposures also seemed to boost the chances that workers might take their own lives.

A report on the study, which began with a group of 138,905 male U.S. electric utility workers, appeared in a recent issue of Occupational and Environmental Medicine. Authors include doctoral student Edwin van Wijngaarden, Dr. David A. Savitz, professor and chair of epidemiology; Dr. Jianwen Cai, associate professor of biostatistics; and Dr. Dana Loomis, associate professor of epidemiology, all at the UNC-Ch School of Public Health.

Statistical programmer Dr. Robert C. Kleckner also contributed to the project.

We believe this work is important because suicide is the eighth leading cause of death in the United States, and many people in this country are exposed to electromagnetic fields, van Wijngaarden said. While these findings definitively do not prove EMFs cause suicide, they do indicate more research needs to be done on the effects of exposure on depression and suicide.

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WORKER SUICIDE
CONTINUED FROM PAGE 21

Using employment files, death certificates and other records, van Wijngaarden and colleagues found 536 suicides among current or former electric utility workers in the group between 1950 and 1986 and identified 5,348 non-suicides of the same race and age to serve as controls. Researchers also analyzed various job titles and duties and estimated occupational exposures to EMFs based on devices randomly selected workers wore to monitor exposures.

Why low frequency electromagnetic fields might contribute to suicide among chronically exposed workers is not known, van Winjegaarden said.

One biologically plausible explanation is that EMFs depress production of melatonin, a hormone that is important for sleep and mood, he said. Decreases in melatonin can lead to depression, which in turn can lead to suicide.

Rats subjected to electromagnetic fields showed altered production and excretion of the hormone but comparable data on humans is limited and inconclusive, the scientists said. The possibility suggested by the new findings that EMFs could affect young workers more than older ones is entirely new, he added.

The Electric Power Research Institute of Palo Alto, Calif., supported the study. Cooperating electric utility companies were Carolina Power and Light, Pacific Gas and Electric, PECO Energy Co., Tennessee Valley Authority and Virginia Electric Power Co.

Van Wijngaarden and colleagues did the new study because other work in the early 1980s found indications of an association between EMFs and suicide, but later studies could not replicate those findings.

Women were excluded because at the time they rarely worked as electricians, linemen or power plant operators.

Researchers could not control for past mental health problems, addictions and family disturbances such as divorce since such information was not available.

Van Wijngaarden can be reached at (919) 966-6896, Savitz at 966-7427. School of Public Health contact: Lisa Katz, 966-7467; News Services contact: David

While these findings do not prove it, they do indicate more research needs to be done on the effects of EMFs.
The AFSPC is the largest UPS user within the entire U.S. Air Force, and purchases about $2 million worth of lead-acid backup batteries a year for its 45 sites worldwide. In most of these command locations, the need for reliable power is absolutely essential for some activities; even the smallest fraction of a second disruption can put vital national security operations at a risk.

The problem stems from power quality, which is always a concern in many overseas AFSPC locations. Even in Colorado Springs, lightning strikes cause frequent, short power outages, of less than one second or power glitches, particularly during certain seasons. These small glitches can compromise the overall reliability of the system by unnecessarily exercising the battery, said MSgt Bills of Powerware and Active Power, Inc., have installed a Powerware Cleansource flywheel energy storage system at Air Force Space Command headquartered in Colorado Springs.

It was important to Air Force Space Command to find ways to improve overall system reliability and redundancy as well as prolong the battery life of their uninterruptible power supply (UPS) applications, said Mark A. Ascolese, vice president and general manager of the Large Systems Group for Powerware. With the installation of the flywheel systems AFSPC was able to reduce annual battery expenditures and improve system reliability at the same time.

The AFSPC in Colorado Springs. With the installation of the Powerware Flywheel we can eliminate these small discharges, extend battery life, improve reliability and reduce cost.

The flywheel was designed and manufactured by Active Power and integrated with Powerware’s Powerware 300 UPS. The installation is located at Peterson AFB.

One of the reasons AFSPC chose the Powerware-Active Power flywheel was its small size, noted Jim Balthazar, Active Power’s vice president of marketing. The 480 kW system displaces only 10 square feet, compared with the 100 s of square feet of batteries required to provide the same level of power. The typical UPS backup string configured by AFSPC consists of 188 to 240 battery cells at 2.2 volts per cell, and takes up a lot of room, Balthazar added.

CONTINUED ON PAGE 24
FLYWHEEL ENERGY STORAGE
CONTINUED FROM PAGE 23

Under a recently announced initiative, Powerware Corporation and Active Power have teamed to provide the most reliable end-to-end power solutions available. The goal of the Strategic Power Partners Program is guaranteed system availability, and it provides customers like AFSPC the opportunity to create a power system specifically tailored to their needs, Ascolese said.

The purpose of the flywheel in AFSPC's UPS installation is to absorb the nuisance hits and prevent the backup batteries from discharging during most power glitches. When the flywheel senses a drop in voltage or a complete power outage, it instantly begins to generate power at its programmed voltage level. This action keeps all computers and other electrically powered systems and machines operating smoothly and avoids a costly cycling of the backup batteries.

For the much less frequent power outages lasting longer than one minute, the standby generator takes over supplying electricity to vital guidance systems until power either can be restored from the utility grid or the mission can be handed off successfully to a different AFSPC location. The batteries are for added redundant backup.

The system was put in place in December of 1998. AFSPC is so certain the flywheels will show a marked improvement in preventing battery degradation that it already is planning other flywheel installations.

Headquartered in Colorado Springs, CO, AFSPC is involved in four primary areas of national defense. These include launching satellites and other high-value payloads into space; counterspace operations such as surveillance, negotiation and protection; providing weather, communications, intelligence, missile warning and navigation; and maintaining and operating a rapid-response, land-based ICBM force as part of the nation’s strategic nuclear weapons program. Its World Wide Web address is www.spacecom.af.mil.

Powerware Corporation offers power protection and management solutions for enterprise-wide applications from workstations and networks to specialized medical, industrial and communications equipment. Solutions encompass uninterruptible power systems (UPS), power management software and services that give customers the ability to easily manage power in a way that increases systems availability. Powerware Corporation is headquartered in Raleigh, NC. Inversys plc. is a...
The Esperanza, a 124MW floating power barge constructed by Cascade General at the Portland, Oregon shipyard, is completing trials prior to delivery to Guatemala in May. Esperanza is designed to provide a reliable, electric, power supply to the Guatemala power grid.

This self-contained electrical generating facility is constructed on a deck barge 279 (86m) long and 104 (31m) wide and will be transported on a submersible cargo ship. It is the largest diesel-powered, mobile unit ever built in the U.S. The overall design is by Kvaerner Masa Marine of Vancouver, Canada and the prime contractor is Man B&W Diesel AG.

The system is powered by seven (7) Man B&W V-18 engines each weighing 330 tons and producing 25,000 hp, coupled to seven Siemens 13.8 kv generators, with a total output of 124 MW, sufficient to supply 60,000 typical US homes. The engines arrived from Europe on a heavy-lift ship and were unloaded directly onto the barge at the Portland Shipyard in December, 1999.

Testing of the individual generators has proceeded since February, with 20 MW of power being fed into the local power grid via the year’s sub-station/transformer.

The massive engines are serviced by seven 40-ton engine-support modules, containing oil...
The barge's advanced design has enabled us to use the most efficient building systems throughout this project, emphasized Suren Menon, Cascade General Executive Vice President. These have included modular construction on numerous systems and structures and the pre-outfitting of much of the seven miles of piping and thirty-five miles of wiring. A 15-year paint system was applied at all steel surfaces including the interior of tanks, voids and bilges. The first steel was cut on June 15th, 1999 and mechanical completion was achieved on April 10th, 2000—a total contract period of less than 11 months.

The power barge is owned by The World Bank for new power generation projects.

The emissions will be regularly analyzed by instruments in the exhaust stacks to ensure compliance with environmental standards set by The World Bank for new power generation projects. From the air-conditioned control room, the engineering staff are able to view all engine parameters and monitor performance via an advanced computer control system. The barge's advanced design has enabled us to use the most efficient building systems throughout this project, emphasized Suren Menon, Cascade General Executive Vice President. These have included modular construction on numerous systems and structures and the pre-outfitting of much of the seven miles of piping and thirty-five miles of wiring. A 15-year paint system was applied at all steel surfaces including the interior of tanks, voids and bilges. The first steel was cut on June 15th, 1999 and mechanical completion was achieved on April 10th, 2000—a total contract period of less than 11 months.

The power barge is owned by The World Bank for new power generation projects. From the air-conditioned control room, the engineering staff are able to view all engine parameters and monitor performance via an advanced computer control system.

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POWER BARGE
CONTINUED FROM PAGE 25

PQP Limited, a joint venture between Enron, one of the world’s leading electricity, natural gas and communications companies, and Centrans Energy Services, a consortium of Guatemalan and foreign investors, that develops and operates projects in Central America and the Caribbean.

Under the leadership of CEO Frank Foti, Cascade General has been the sole operator of the Portland Shipyard since 1995. This is the largest marine construction project to come to Portland in twenty-five years and represents an important step forward for this company. It is a landmark in the long history of the shipyard, he declared during the christening ceremony. The power barge project is a key element in our strategy to diversify and develop the full potential of the yard into new construction in the coming years.

Photo A: Using this method, not just power plants, but any type of barge-mounted industrial facility can be delivered from Portland Shipyard to any navigable harbor in the world, and conceivably towed further inland on any river with sufficient depth of water.

Photo B: The engine hall, which stands 50 feet above the main deck was pre-fabricated in three pieces on the dockside and lifted into place by two of the Portland Shipyard’s whirley cranes. The three sections were united, the cooling fans installed in the exterior wall.

Photo C: All fuel tanks, pumps and filtering systems were pre-installed below the main deck in separate, fire-proof compartments, as was much of the wiring and plumbing.

Photo D: When the engine mounts were secure the 65-ton generators were lowered into place. The engines were operational and load testing began in February.

All photos supplied by Cascade General.

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Recent studies have indicated that resident goose population exceeds one million in the Midwestern Mississippi Flyway and is increasing at a rate of six percent a year. Canada geese reproduce at high levels and have a high survival rate due to ideal breeding conditions, lack of predators, and an abundance of preferred habitats provided by current landscaping techniques. Also, the lack of waterfowl hunting in suburban locations, coupled with free food handouts by humans, are causing the goose population to increasingly conflict with human activities on both public and private property.

Many short-term management strategies have provided temporary relief, but the Service has finally agreed that new long-term approaches will be needed. The following alternatives will be considered based on both the mission of the Service and public input:

1. No action. No additional regulatory methods would be authorized, with the exception of issuing special hunting permits and other similar permits.
2. Increased Promotion of Non-Lethal Control and management. Tools such as habitat manipulation, harassment techniques and trapping/relocation would be promoted.
3. Nest and Egg Depredation Order. Direct population control techniques would be implemented and authorize the taking of nests and eggs and implementation of population monitoring programs.
4. Depredation Order for Health and Human Safety. Here, an order would be established to authorize taking of nests, eggs, goslings and adults from populations posing a threat to health, human safety and property.

The U.S. Fish and Wildlife Service has agreed that wild goose populations in the Midwest are posing threats to health, human safety and property. The Service is in the process of preparing an Environmental Impact Statement (EIS) under the authority of the Migratory Bird Treaty Act.

Many people have expressed concerns about the health risk to the general public and property posed by exposure to Canada goose droppings. Elected officials at all levels have been asked to protect their citizens as well as they protect the Canada goose. The Service scheduled a series of meetings nationwide encouraging public participation. Locally, one was held in Palatine, IL last February.

### U.S. Fish and Wildlife Service

Acts on Canada Geese Problem

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Illinois has enacted legislation (HB2164) designating fluorescent and HID lamps as Universal Waste (a category of Hazardous Waste).

It is illegal to dispose of lamps in landfills or incinerators in Illinois.

A fine of up to $25,000 can be imposed per occurrence.

What does a company do with these lamps when they are removed from service?

We can dispose of your lamps by recycling them to reusable products. Our processing facility in Ingleside, IL meets or exceeds standards set by the Illinois EPA and United States EPA.

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- Fluorecycle performs the complete process of recycling your lamps.
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- Fluorecycle tracks your lamps from pick-up to disposal.
- Fluorecycle has an interim RCRA Permit Status from the State of Illinois to allow for proper storage of your lamps as needed.
- Fluorecycle carries $8 million of liability pollution insurance for our mutual protection.
- Fluorecycle can process your lamps in 24 hours with a current annual capacity of 14 million lamps.

Fluorecycle, Inc.

27780 W. Concrete Drive
Ingleside, IL 60041
Phone: 815-363-4411
Fax: 815-363-4422
Email:
CANADA GEESE PROBLEM

threat to human health and safety at locations such as airports and water supply reservoirs. Population monitoring programs would be implemented.

5. Conservation Order. Direct population control strategies would be implemented, including nest and egg destruction, gosling and adult trapping and culling, or any other general population reduction strategy utilized only where human health and safety conflicts exist.

6. General Depredation Order. Direct population control strategies would be implemented, including nest and egg destruction, gosling and adult trapping/culling, or any other reduction strategy allowing authorized persons to take gosse posing threats to human health and safety, and/or personal or public property.

The majority of public comment at the Palatine meeting favored alternatives 5 and 6, with a smaller number favoring alternative 2. Many representatives from local park and recreation districts provided both written and verbal comments severely chiding the Service for not being proactive enough in dealing with this problem, and the extreme expense incurred from ongoing cleanup efforts initiated to reduce resident complaints and eddy current probes in the steam generator. Position had typically been determined solely by manipulator software that geometrically computed the angle versus length of tooling using on-board encoders.

The laser tracking system we have developed makes location errors within the steam generator nearly impossible, said FTI’s Mark Briers, of FTI’s Outage Services. This system is an independent location verification system and can be used for both ECT and repair workscopes.

FTI used the system to independently verify the location of its Framatome Technologies, Inc. has successfully used a laser tracking system during eddy current testing of steam generator tubes at Baltimore Gas and Electric's Calvert Cliffs Nuclear Plant, Unit 1, to more accurately track and position inspection and repair equipment within the steam generators.

Laser Tracking System

Calvert Cliffs Nuclear Plant, Unit 1, to more accurately track and position inspection and repair equipment within the steam generators.

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Despite the fact that U.S. coal production increased during 1998, recent events have led many to believe that the coal industry is facing a difficult period. Reports have fallen, natural gas has become the fuel of choice for almost all new generating units, and the Environmental Protection Agency has launched numerous initiatives that will raise the cost of using coal.

A two-volume study, Coal Demand and Price Projection (GRI-00/0019.1 and GRI-00/0019.2), recently completed by GRI and Hill & Associates, Inc. of Annapolis, Md., examines these challenges in detail. It features an extensive analysis of the competitiveness of coal in the industrial and electric generation sectors, key markets for natural gas. The study concludes that total coal demand by electric generation and industrial customers is expected to increase slowly from 980 million tons in 1998 to 1,123 million tons by 2015. After 2015, coal use is projected to decline to 1,101 million tons by 2020, due to the impact of stricter environmental regulations. The study also projects that the average real (1999$) FOB mine-mouth coal price will decline over the projection period. Real FOB price is projected to decline from $15.79 to $12.62 per ton between 1998 and 2020. The decline is due to continued improvement in productivity, lack-luster demand growth, and an increase in the market share of low-cost Western coals.

The key to the continued viability of coal as a fuel option has been productivity improvement, said Kathy Nice, GRI principal energy analyst. Coal-mine productivity has increased steadily since 1978, at 6.5 percent per year. While some in the coal industry believe that productivity improvement will slow sharply and will no longer be able to offset inflation, there has been virtually no evidence to support this view over the past 20 years. Improvements in technology and competitive market pressures are expected to continue to drive productivity higher.

Among the study’s other key findings are:

- The availability of adequate coal supplies depends on the timely opening of new mines by producers. The last series of capacity expansions led to the development

CONTINUED ON PAGE 32

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COAL SITUATION
CONTINUED FROM PAGE 31

of surplus deliverability and low prices. Given this experience, producers may be unwilling to continue to expand capacity ahead of demand requirements. Future supply expansions are likely to be completed in a more measured fashion than in the past.

In the near term, Western low-sulfur coal, primarily from the Powder River Basin, is projected to increase its share of total U.S. coal production from 52 percent in 1998 to over 55 percent by 2005 at the expense of Eastern coal supplies. Post-2005, Eastern coal is expected to regain some market share as more scrubbers are built, allowing increased consumption of higher-sulfur coal from the North Appalachian and Illinois Basin.

The steps involved with working through major rail consolidations in the Western and Eastern U.S. have created some turmoil in transportation markets in recent years. In the short term, these problems have led to growing dissatisfaction with rail service. However, these mergers have also helped to keep transportation costs stable. There have been no significant increases in overall rail rates since the early 1980s.

These productivity improvements are expected to continue and, as a result, rail rates are not anticipated to increase over the projection period, putting no upward pressure on delivered coal prices.

The wild card in coal markets will continue to be environmental regulation. Environmental regulations are expected to require the coal industry to further reduce sulfur dioxide ($SO_2$), nitrogen oxide ($NO_x$), and fine particulate emissions. Calls for the regulation of mercury emissions (and other trace toxic materials) are expected to grow and, ultimately, there are likely to be limits on carbon emissions. While the final impacts of the anticipated regulations are unknown, they will put downward pressure on coal prices because capital investments will be required for coal to remain a viable fuel option.

Demand for U.S. coal exports grew sharply starting in the late 1970s. However, export demand for coal has begun to decline in recent years due to growing environmental concerns in Europe, weak economic growth in Asia, and new low-cost international competitors. The decline in U.S. coal exports is expected to persist. Exports are projected to decline dramatically, from 78 to only 24 million tons between 1998 and 2020.
vehicle to slip-and-trip, preventing the losses associated with insurance claims, absenteeism, administrative paperwork, accident clean-up, and litigation. Fewer accidents can also generate savings from lower insurance premiums. In retail situations, better lighting can help improve customer attraction and stimulate purchasing.

According to National Lighting Bureau President Cary S. Mendelsohn, the High-Benefit Lighting Awards Program is easy to enter. We want to encourage designers, managers, owners, sales representatives, and others associated with a lighting system upgrade or installation to submit case histories underscoring how High-Benefit Lighting contributes to the bottom line. While a system must be energy-efficient in order to be considered High-Benefit, the dollar value of energy-efficiency typically is not significant compared to other factors. The dollars saved even by operating and maintenance cost savings of 70 percent can be dwarfed by the value derived from a productivity increase of just one or two percent, Mr. Mendelsohn said.

This year, as last, the entire program is located at the Bureau’s website (www.nlb.org). Those without Internet access can obtain a copy of the materials by contacting the Bureau directly at 301-587-9572; email info@nlb.org.

The High-Benefit Lighting Awards Program can be entered by owners, managers, lighting designers, property managers, facility managers, consulting engineers, electrical contractors, and virtually any other party who had some role in influencing modification of an existing lighting system or development of a new one. Submissions should document how the new lighting contributed to improved productivity, increased retail sales, or any of the other
Trane Chicago Co-sponsors May Educational Meeting

CEAC was very fortunate in securing the Director of Environmental Affairs for the Trane Company, Gene Smitty Smithart as keynote speaker for the evening.

Smitty not only knows the ins and outs of the CFC situation and is highly respected throughout the industry for his smarts, he is a very accomplished public speaker that has the where-of-all to deliver a message so important he can make it interesting and often humorous.

Smitty is a very busy man. He has published numerous articles and worked directly with the U.S. Environmental Protection Agency on various aspects of the Clean Air Act amendment regulations toward a CFC-free nation.

He sold me on his abilities many years ago when he spoke to CEAC on the CFC issue. Just when he was to begin his talk the sound system konked out and didn’t skip a beat. He so stated that he had served in the Marine Corp and if he learned anything it was how to talk.

CONTINUED ON PAGE 35
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TRANE SPONSORS MEETING

He held everyone's attention for better than an hour delivering the very important message that would affect us for some time to come.

Trane Chicago has supported CEAC for many years. Their involvement has been in numerous projects. Responsibility for that in part goes to Kirk Clousson and Susan Peters for their efforts in securing the Midland Hotel and arranging the meeting. Not only was the meeting excellent, the food and surroundings were unequaled.

For those who missed this meeting, you missed a great deal. Plan on attending meetings starting in September. This will kick off our
REMINDER !!

C.E.A.C offices have moved to larger space.
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Fax (708) 293-1432

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Does Lighting Your Facility Cost A Fortune?

For anyone on the lookout for better ways to save energy and save money, Wattmanfi Lighting Voltage Controller is a simple, cost-effective one-step solution. Sodium and Mercury Vapor lamps) require less power to burn than to start. Wattmanfi allows full power to be supplied only when lights are first turned on, then reduces the amount of electricity that flows from a lighting panel to the individual lamps. When the lamp is first switched on, it needs all the power it is rated for in order to start. Once it is ignited and stabilized after a predetermined warming up period of ten to fifteen minutes, Wattmanfi automatically reduces the voltage. The lamp will continue to emit light at this lower voltage, saving energy and money with no perceptible loss of light.

Wattmanfi is installed directly at the electrical panel; it requires no delamping or relamping, and individual fixtures are never touched. Installation is simple, does not interfere with plant or business operations, and can be done by an electrical contractor. The unit has an average life expectancy of twenty maintenance-free years.

Installing Wattmanfi Lighting Voltage Controller has a genuine and measurable impact on overhead and operating expenses. Energy savings are immediate, and complete payback typically takes two years or less. Greatest savings are found in applications where lights are on all day long and Wattmanfi can save on energy consumption 24 hours a day. BPI offers 100% financing for all Wattmanfi installations; the customer enjoys no cash out agreement and pays from savings only.

For additional information visit the website at wattman.com or contact Bristol Park Industries, 6059 Bristol Parkway, 2nd Floor, Culver City, CA 90230, telephone...
The long-awaited opening of the distribution center and corporate headquarters was achieved this month. It is believed that this facility will significantly help improve the company in the area of logistics and thus enhance services to the customers.

The 75,000 square foot state-of-the-art facility will also provide for future expansion and allow testing and implementation of some new concepts in the areas of project management and customer services. The opening of the Lincolnshire headquarters and distribution facility will have some immediate impact on goals to improve the logistics and services to the customers.

A new centralized phone system one convenient number reaches the entire support team throughout out three facilities 847-353-6300. This new number is now in effect.

Integrated computer system linking together three Brook facilities and providing real-time inventory, sales and delivery information.

New and improved wire and cable service center with a large on-hand inventory of building wire, power cable, voice/data/signal and specialty cables with the ability to cut and parallel for next day deliveries.

Training center offering a wide curriculum on products and applications, new technologies and business practices.

An overall re-dedication by each and every Brook associate to listen first and find a solution that meets or exceeds the expectations of our customers.

We are indeed very excited about the changes happening at Brook. One thing that will not change however is their straightforward approach, their desire to build credibility, trust and mutually beneficial partnerships with their customers. They look forward to and welcome your comments and feedback.

Brook would also like to welcome new members to the Hot Seat. Their new e-mail informational news service is designed to give you industry news as quick as they receive it. They’ll send you information on innovative products, upcoming events, manufacturer promotions and more at

CONTINUED ON PAGE 39
Illinois Power Company formally inaugurated its newest power station, the Tilton Energy Center, Tilton, IL. Doyen and Associates, Inc., a Chicago-based engineering firm, managed the engineering of the new facility that will enhance electric reliability in Illinois Power’s service territory.

Illinois Power recognized the need for expanded power generation facilities to meet customer needs. The fast-track design and construction of the Tilton Energy Center allowed Illinois Power Company to have increased power resources within a matter of months. Doyen and Associates, Inc., provided the fast-track engineering and procurement support for the installation of the four 44 megawatt natural gas-fired combustion turbines commonly known as peaker units.

Having the Tilton Center fully in service completes another major step in the preparations Illinois Power has made to ensure it is ready to meet customers’ electricity needs this summer.

We are very pleased with the project, said Mike Kreckritz, Regional Systems Engineer for Illinois Power and Project Manager of the Tilton project. It was extremely timely and well-organized. We felt like Doyen had a strong project management team and concept.

With this project, time was of the essence, noted Don Pacer, Project Manager. We had essentially nine months from the start of engineering until the facility was declared commercial.

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Fuelcell Energy Selected By Department of Energy

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THE CHIEF ENGINEER      AUGUST, 2000

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Brook Electrical Co. now serving you at three locations: 645 Heathrow Dr, Lincolnshire IL 60069, Fax 630-353-6301; 2500 W. North Ave., Chicago, IL 60647, Fax 773-276-2812; 170 Alexandra Way, Carol Stream, IL 60188, Fax 630-588-9900. One convenient number reaches our entire sup-

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Hudson Boiler & Tank Company

- High and Low Pressure Boilers
- Smokestacks and Breechings
- Tanks and Pressure Vessels
- Steel Fabrication and Erection
Dur O Lokf, The Lightweight, Threadless, Boltless Coupling Alternative

The performance superiority and space and weight provided by Dur O Lokf couplings will make them the preferred choice in many pipe connecting applications. Dur O Lokf couplings are all-purpose, lightweight connectors designed to replace ANSI series 150-2500 flanges. The design of Dur O Lokf couplings ensures reliable operation over a wide range of temperatures. Dur O Lokf couplings have been used in refinery applications for many years and are specified by UOP for use in CCN'TM, OleflexTM and Sorbex TM processing units, as well as in OptimILX™, FBC feed nozzles.

Dur O Lokf pipe couplings are designed to reduce maintenance, reduce materials costs, and reduce space requirements for pipe racks.

Features include:
- Compact length and outside diameter reduced by 30% - 50%, compared to flanges. Allows double the number of pieces per rack. Provides improved external flow distribution for immersed couplings. Reduces shadowing for couplings used in process vessels.
- Light weight weight reduced by 60% - 90%, compared to flanges
- Simple number of parts reduced by 55% - 75% per connection, compared to flanges
- Fast, save up to 10-15 minutes to make or break each connection
- Non-restrictive full port inside diameter eliminates pressure drop and allows pigging.
- Smooth interior bore minimizes flow disturbances. Eliminates attrition in catalyst and other solids conveying applications.
- Boltless and threadless no wrenches required. No torque measurements required. No bolt holes to align. No need to tighten connections after thermal cycling.
- Simplifies painting and insulating.
- Self-energized seal sealing force increases with pressure. Less chance of leaks.
- Thermally stable design minimizes thermal expansion effects on sealing. Tolerates very rapid changes of external or internal temperatures.

For more information contact Robert McNew, 50 Greenwood St, PO Box 1438, Greenfield, MA 01301. Phone 413-772-2166 ext 118; fax 413-772-6729; email bmc-
Flange Maintenance Tools

Enerpac has broadened its line of Flange Maintenance Tools by introducing a versatile new series of hydraulic and mechanical industrial spreaders and alignment tools. Designed for flange repair and maintenance and gasket replacement, Enerpac’s new

1/6 HP Series PL circulator.

Easy-to-Install: clearly marked terminal board and pigtail wires simplify installation.

Multiple Zone Applications: the Add-A-Zone controller can be daisy-chained for multiple zone applications.

Compact Design: fits in tight locations and presents a clean professional appearance.

Five-year Warranty: the best in the business.

For more information contact Bell & Gossett, 8200 N. Austin Avenue, Morton Grove, IL 60053; phone 847/966-3700; fax 847/966-

Flange Maintenance Tools

Enerpac has broadened its line of Flange Maintenance Tools by introducing a versatile new series of hydraulic and mechanical industr-

Take Control with Innovative Submetering Solutions

Provide Customer Billing
Create electric bills that precisely allocate energy costs to your ten-

Allocate Energy Costs
Identify and measure electricity usage by tenant. Pinpoint where lights are being left on...and when your HVAC and other

www.cutlerhammer.eaton.com
Flange maintenance tools are intended for application in the petrochemical, natural gas, water treatment and power generation industries.

Enerpac’s FSH/FSM spreaders feature a tip clearance/maximum spread of 0.24 in./3.16 in., a maximum spread force of 8 to 14 ton, and a maximum operating pressure of 10,000 psi/700 bar (FSH-14).

Additional features of Enerpac’s industrial spreaders include:

- An integrated wedge concept for friction-free, smooth, parallel wedge movement that eliminates flange damage and spreading arm failure
- A unique interlocking wedge design, which removes first step binding and prevents the risk of slipping out of joint
- A step spreader arm design that enables each step to spread under full load
- Both the hydraulic and mechanical spreaders are lightweight and easily used by one person and no hammers, chisels, slings or chain blocks are needed.

Enerpac’s new ATM alignment tools are available in two hand-operated models: ATM-1 for smaller flanges and ATM-3 for larger, higher-pressure flanges. Both models feature a bolt hole range of 0.69 to 2.13 in., flange wall thickness of 0.69 to 4.50 in., and a maximum lifting force of 0.3 to 3 ton. These tools are most commonly used for ANSI, API, BS and DIN flanges.

In addition, the ATM series:
- Corrects twist and rotational misalignment without additional stress in pipelines
- Requires no slings, hooks or lifting gear
- Installs in any position, any location
- Offers ease of use and portability.

For additional information on Flange Maintenance Tools contact an Enerpac distributor, or write:

Handheld Device Detects Motor Rotation Quickly and Safely

Bell & Gossett has developed a revolutionary new handheld Motor Rotation Detector that determines the rotation of any electric motor in seconds. The compact, hand-held device features a microprocessor able to sense the magnetic field of an energized motor and identify its rotational direction at the touch of a single button.
An indispensable tool for anyone working on equipment with concealed motor shafts or covered rotating elements, the new Motor Rotation Detector works on all 60-cycle, alternating-current motors and can fit easily in a toolbox.

For more information, contact Bell & Gossett, 8200 N. Austin Avenue, Morton Grove, IL 60053; phone 847-966-3700; fax 847-966-9052. Or visit the website at fhs.ittind.com.

Boiler Tube Expanders

A new series of boiler tube expander kits that are used to create a mechanical seal for precisely sealing tubes to tube sheets is being introduced for sale or rental from ESCO Tool of Medfield, Massachusetts.

Esco Millhog Tube Expanders feature torque limits that can be preset from 25- to 325 ft.-lbs., depending upon the motor selected, for mechanically sealing tubes to tube sheets. Easy to operate, users simply attach the expander assembly to the air-powered rolling motor, then insert it into the tube and actuate the motor which pushes a mandrel and expands the tube. When the preset torque limit is reached, just reverse the motor and remove.

Suitable for any type of tube material, including stainless steel, and varying gauges for tube sheet thicknesses up to 4-3/8. Kits include a 6 ft hose whip with an in-line air filter, oiler, quick-disconnect couplings, and tools.

For more information contact Esco Tool, 50 Park St., PO Box 530, Medfield, MA 02052. Phone 800-343-6926; fax 508-359-4145.
New Eye-Trek Glasses

Comparing View To That Of A 52 Screen

The new Eye-Trek glasses introduced by Olympus America Inc. Industrial Products Group (IPG) allow users to view remote visual inspection images on a display that is worn like a pair of goggles. According to Olympus, Eye-Trek provides video images comparable to those seen on a 52 screen.

Leslie Boegel, IPG’s Assistant Marketing Communications Manager, explained that Eye-Trek images are four times brighter than those produced by conventional concave mirror optics, so it can be used even in brightly lit surroundings and in bright sunlight. The See-Around-Design assures that you never lose awareness of your surroundings.

Eye-Trek incorporates a free-shaped prism, a highly developed optical technology that allows an optically eccentric complicated surface to be produced within the FMD (Face Mounted Display). Using surface optics enabled Olympus engineers to achieve sustainable brightness levels four times those of standard concave mirror optics. At the same time, advanced optical technology corrected various aberrations, such as unevenness in the image. Other aberrations were also reduced, resulting in clear, high-resolution images over the entire screen.

Eye-Trek weighs under 4 ounces, can be worn over eyeglasses, and adjusts to comfortably fit individual users. It is compatible with Olympus portable video inspection systems.

Olympus Industrial Products Group is a leading manufacturer of borescopic inspection equipment, high-speed video, and digital microscopy systems. For more information, call 1-800-446-5260 or write to Olympus Industrial Products Group, Two Corporate Center Drive, Melville, NY 11747-3157.

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Zero Loss Drain Lowers Overall System Pressure Loss

Finite Filter Division of Parker Hannifin Corporation is introducing the ZLD-10 zero energy loss con-

densed drain. This drain is effective for all applications in a com-

pressed air system, from compressor condensate to dryer condens-

ate, as well as filter receiver tank condensate. The ZLD-10 economi-

cally removes unwanted water, oil emulsions and other liquids.

Features include:
- Rated flow for filters is 3600 SCFM
- Rated flow for dryers is 720 SCFM
- Automatically adjusts to all common power sources 24V to 230V
- Conserves compressed air energy, zero compressed air is expelled
- Supplied with adapters for NPT threading
- Condensate entry from top or bottom of drain simplifies difficult installations
- Internal electronics continuously monitor operation

To receive information on Parker Finite's new zero loss drain, contact Parker Hannifin Corporation/Finite Filter Division, 500 Glaspie St., Oxford, MI 48371, phone 248-628-6400, fax 248-628-1850.

NFPA Self-Laminating Labels

Protect your written chemical information with Seton's Self Laminating NFPA Labels. These 3

x 1 adhesive labels have a clear flap attached to them for convenience. Simply write in your chemical information and then apply the clear overlay. For a free catalogue, samples, or more information, write to Seton Identification Products, Dept. YOX, PO Box 819, Branford, CT 06405-0819. For faster service call 800-243-6624.
A new 352-page full-line catalog from Lovejoy Inc., provides an updated reference on ten broad lines of shaft-to-shaft couplings, plus Universal Joints, Variable Speed Drive Pulleys and Lovejoy/Rosta elastomeric tensioning products. It also offers a handy engineering data reference section to help users determine PT application requirements and coupling specifications. In addition to line updates throughout, the new catalog includes completely new sections on Centa/Lovejoy torsional couplings and the most recent addition to the Lovejoy coupling family, the Jaw In-Shear design. The Jaw In-Shear, a patent-pending industry first, employs a wider elastomeric spider that converts standard in-compression Jaw Coupling hubs into an in-shear configuration for Jaw applications that require non-failsafe operation with more torsional softness.

The majority of catalog pages detail Lovejoy's more familiar coupling lines: Jaw, Curved Jaw, S-Flex (rubber-in-shear), Miniature, Gear, High-Performance Gear and Specialty couplings. Among these lines, users are offered the industry's largest selection of standard bore/keyway combinations in inch and metric measurements.

Each section, including U-Joints and Variable Speed Drives, presents detailed technical data and selection criteria, application information, dimensional drawings and reference charts to guide accurate specification. Many sections also include a step-by-step selection guide, with hypothetical examples, for specifying products for maximum efficiency and optimal performance. All sections also provide features/benefits overview, relevant application/product data, CAD drawings, photographs and UPC number charts.

The Lovejoy/Rosta section explains self-adjusting chain/belt tensioners, motorbases, anti-vibration mounts, belt scrapers and other equipment based on pre-tensioned elastomeric suspension modules developed by Swiss firm Rosta Ag.

Lovejoy Inc., certified under the ISO-9001 International Standards for Quality Management, has been a pioneer in advancing the manufacturing technology for power transmission components since patenting the jaw coupling in 1927. The company's broad line of products is available through a worldwide network of PT distributors, supported by 20 sales offices and regional warehouses across North America and Europe.

For a free copy contact:
Lovejoy, Inc., 2655 Wisconsin
Hoists and Slings Safety Training Video From Summit Training Source

Hoists and slings are vital in lifting and transporting heavy material. They also create the potential for serious accidents. Summit's new program trains workers on proper procedures to prevent material lifting incidents. This broad-based program covers a wide range of uses for hoists and slings in different industries. Types of hoists and slings featured include: hand operated; air or electric powered wire rope; electric chain operated; and vacuum powered.

Training topics include:
- Types of hoists and slings and their proper uses
- Factors to consider when choosing a hoist or sling
- Inspection procedures
- Best safety practices
- Load handling

Safe use, care and storage
Summit training Source produces and markets 300 environmental health and safety training programs in video, interactive CD-ROM, Digital Safety Video, and on-line formats.

Free previews of Hoists and Slings are available by calling 800-842-0466, faxing 616-949-5684 or email previews@safetyontheweb.com.

Buried Line Curb Markers

Buried Line Curb Markers bond to concrete curbs, sidewalks or clean dry surfaces. Easily identify buried cables below. These bright orange 3 x 2 rigid oval markers are available in packages of 25 in 4 telecommunication legends. Tube of special bonding adhesive available to affix 75-100 markers designed for outdoor applications.

For a free catalogue, samples, or more information, write to Seton Identification Products, Dept YPE, PO Box 819, Branford, CT 06405-0819. For faster service call 800-243-6624; fax 800-345-7819.

Hazardous Materials Transportation Video Training For Sales and Service Professionals

Many sales and service professionals can be subject to detailed government regulations when transporting even small amounts of hazardous materials. Product samples, test kits, and common chemicals necessary for their everyday work may be classified as hazardous. A new video, Hazardous Materials for Field Service: Materials of Trade, will educate and motivate sales and service professionals about:
- What materials in their work are subject to DOT regulations under what conditions
How to meet the requirements of hazardous material regulations
How to protect themselves, the public, and the environment from potential hazards while they are transporting hazardous materials.

A mistake transporting hazardous materials can be surprisingly easy to make. Adding an extra can of gasoline to a service truck already carrying two gas cylinders, or delivering two five-gallon containers of product to a customer could put the sales or service person in violation of hazardous material transport regulations.

The results of such a mistake can be serious. Fines of up to $27,500 per day and up to five years of imprisonment can be applied with personal responsibility. That means the sales or service professional is personally responsible for the fine. It cannot be paid by the employer. To protect themselves, the public, and the environment, it is essential that sales and service professionals know and understand the material presented in Hazardous Materials for Field Service: Materials of Trade.

Summit Training Source produces and markets more than 250 environmental health and safety training programs in video, Peak Training interactive CD-ROM, Digital Safety Video, and on-line formats.

Free previews are available and the programs can be ordered through Summit Training Source.

Suretyship for Construction Contracts Simplified

Surety Bonds for Construction Contracts presents the complex field of suretyship for construction contracts by describing and analyzing each element of the surety bonding process in basic terms for contractors, owners, design professionals, construction accountants and attorneys, and other construction industry personnel.

Author Jeffrey S. Russell unravels the suretyship puzzle through numerous examples and extended case studies drawn from real-world experience. Sample bond forms and surety documents, as well as an extensive glossary of key terms, serve to further illustrate each step of the bonding process.

The only comprehensive book on surety bonding for construction contracts, Surety Bonds for Construction Contracts explains the details of suretyship as well as:

- How surety bonds function
- How a contractor can secure bonding
- Who the key players are in the surety relationship and how they interact
How to properly structure key documents
What a contractor should look for in a surety and in an independent surety agent
Why the private owner should consider surety bonding to guarantee projects
How surety bond claims are handled
The steps a surety company may take when contractor default occurs.

In addition to exploring the numerous facets of the bonding relationship, the book moves through many of the subtleties of this endeavor, including: the surety’s role in prequalifying contractors and why an owner might consider requiring or waiving surety bonds; opportunities to benefit from the financial analysis of the underwriter; and alternatives to surety products for contractors who may have experienced difficulties acquiring bonding.

Additionally, this book covers such issues as international guaranty, reinsurance, surety and design/build, and emerging surety market trends.

For more information contact Environ.com And The Association Of Energy Engineers

Environ.com, the leading internet environmental compliance portal and AEE, an association on the forefront of energy efficiency assistance have announced their revenue sharing partnership. The partnership will allow Environ.com to co-brand AEE’s Energy Seminars, Books, and Conferences from their site, www.environ.com. This will allow Environ.com to offer AEE’s extensive selection of books and seminars to their users at a discount price directly from Environ.com’s Refrigerant Management Information Center.

This partnership will bring quality books, seminars, and conferences to our customers and website users to continue to bring them the best resources available on the internet, said Robert Johnson, Chairman and CEO of Environ.com.

Environmental Support Solutions is an internet-based business to business software/internet portal, that creates web-enabled software, internet-based training, on-line consulting, and internet-delivered information services, to help organizations with regulatory compliance requirements. Products and services help these organization with regulatory compliance requirements imposed by the Environmental Protection Agency (EPA), Organizational Safety and Health Agency (OSHA), and Department of Transportation.

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