Institute of Power Engineers On-line Magazine

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Produced by the Windsor Branch	

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Ray Stiers

Dan Rosenfeld

The Greenfield Energy Centre

The 1005 MW of the Greenfield Energy Centre is on the verge of coming on line

PlascoEnergy Group and the City of Ottawa

A win win for Ottawa and Plasco Energy . Solving tomorrow's problems today

Coming On-line The Greenfield Energy Centre

The Ontario power generation market is seeing some 3000MW of new generating capacity under construction fuel by natural gas. These plants include; Portland's E.C. 550 MW; St Clair Power 570 MW; Sithe Power 875 MW and the largest the Greenfield Energy Centre 1005 MW.

On a summer like day in May the editorial staff of the I.P.E. magazine had the honour to sit down with Tom Schneider the G.E.C.'s site manager for the Greenfield Energy Centre Project. The G.E.C. team is currently overseeing a construction staff of over 700 craftsmen who are breathing life into this massive project. The G.E.C. is going to become the largest combined cycle gas generating station in Canada. The 1005 MW facility along the St Clair River outside of Sarnia Ontario is the pride of the Greenfield Energy Centre LP, a limited partnership between subsidiaries of Calpine Corporation and the Mitsui and Co. Ltd.

The G.E.C.is targeting early 2008 for commercial operations, just in time to meet the ever increasing electricity needs of Ontario. The plant will also meet the green desires of the provinces

The three Deltak HRSGs taking shape

political wishes being solely fuelled with natural gas.

The three Siemens Westinghouse 501FD2 gas turbines are used to drive their water cooled Siemens Westinghouse 185 MW generators. The GT's will make use of inlet air fogging supplied by American Moistening Company's Fogging Systems. The discharge gases from the GTs will go into the Delak H.R.S.G.s which are equipped with Coen duct burners. Each H.R.S.G. will be able to produce 876 000lb/hr of steam at 1000psi. The HRSGs will each deploy ammonia SCRs which will enhance its already low emissions.

As we toured the site Mr. Schneider pointed out the HRSG's 14" P-91 steam headers that will supply the plants 500 MW Toshiba steam turbine. Tom explained that by using the P-91 chrome piping material, reduced pipe wall thickness was needed for the header system that helping to accelerate its installation and lower costs.

The turbine will make use of dual flow LP, IP, and HP steam cylinders to drive its hydrogen cooled generator. The turbine will make use of IP reheat as well extraction for feedwater heating to improve its thermal efficiency.

The water-cooled condenser is a shell and tube design, and is in turn cooled by a 14 cell cooling tower bank.

Terra Nitrogen which is across the road from G.E.C. was looking at upgrading its water intake plant. G.E.C. also being in need of a water supply was able to pool their resources with Terra to meet the needs of both companies. Terra will also supply the G.E.C. with its ammonia supply for their SCRs.

The water will further undergo demineralization and then R.O. treatment to meet the plant's feedwater needs. The HRSG s will each have their own 4200Hp feedwater pumps which will make use of dual pressure supplies.

Ontario has put out a call for new greener energy supplies and The Greenfield Energy Centre will be coming on-line to fulfill this need. The plant will also supply about 26 operations and maintenance staff positions for the community and employ a full-time maintenance staff as well. The IPE magazine staff would like to thank Mr. Tom Schneider and all the staff of G.E.C. for making this article possible.

The condenser being installed

The steam header being put in place

I.P.E. 2007 National Convention

TORONTO TO HOST IPE 2007 National Convention October 12 & 13

We will be having a full day seminar on Friday, October 12th along with a trade show where you may view products and displays of today's technology. If you would like to have a booth at the trade show please contact Ralf Klopf for more details.

For all the details go to **http://www.ipe.org/**

Institute of Power Engineers National Convention Agenda - Toronto
Friday, October 12, 2007

7:30 am - 8:30 am	**Continental Breakfast** Georgian "A/B"	**I.P.E. Exhibits** Windsor "A/B"	**Continental Breakfast** Windsor "C"
8:30 am - 9:00 am	**Keynote Speaker T.S.S.A.** Windsor "A/B"		
9:00 am - 10:00 am	**I.P.E. Seminar (G.E. Water)** Windsor "A/B"		
10:00 am - 10:15 am	**Mid-Morning Break** Georgian "A/B"	**I.P.E. Exhibits** Windsor "A/B"	
10:15 am - 11:15 am	**I.P.E. Seminar (T.S.S.A.)** Windsor "A/B"		
11:15 am - 12:45 pm	**Buffet/Luncheon** Windsor "C"	**I.P.E. Exhibits** Windsor "A/B"	**Hospitality Room** Georgian "A/B"
12:45 pm - 1:45 pm	**I.P.E. Seminar** **(Cooling Tower Maintenance)** Windsor "A/B"		
1:45 pm - 2:45 pm	**I.P.E. Seminar** **(Carma - Energy Profiling)** Windsor "A/B"		
2:45 pm - 3:00 pm	**Afternoon Break** Georgian "A/B"	**I.P.E. Exhibits** Windsor "A/B"	
3:00 pm - 4:00 pm	**I.P.E. Seminar** **(Arctic Combustion)** Windsor "A/B"		
4:00 pm - 6:00 pm	**Hospitality Room** Georgian "A/B"	**I.P.E. Exhibits** Windsor "A/B"	
6:30 pm - 9:30 pm	**Horse Racing at Woodbine** (Additional Cost) Click Here for more information		

Leak Detection & Repair Tips For Industrial Refrigeration Systems

By Paul Appler,

With the emergence of refrigeration leak detection equipment and automotive sealants over the last 10 years, there has been a flurry of misinformation.

Refrigeration leak detection has become much more sophisticated since the days of brushing on dish soap and looking for bubbles to appear. More reliable methods are sophisticated electronic sniffers, newly-developed dyes, and advanced fluids with high sensitivity have broken away from the traditional soap/water methodology.

More importantly, recent developments have produced dependable industrial refrigeration system sealants for leaks that are undetectable or inaccessible for repair. While relatively unknown, these new sealants stop leaks without affecting system components or performance. Thus, they are helping to produce an environment with reduced refrigerant emissions. But sealants will be discussed later. With a leaking system, most facility engineers are walking a tightrope. On one side of the tightrope are the moral and lawful obligations of eliminating all leaks of refrigerant into the environment.

But on the other side, a plant or system shutdown due to leaking refrigeration system repairs can sometimes cost a company millions of dollars in lost productivity.
In industrial situations, facility engineers should know leak detection basics regardless of whether they have a maintenance contract from an outside vendor or they perform service work themselves.

Additionally, knowing leak detection basics can sometime avert a large repair or equipment replacement bill. Tearing apart refrigeration systems in a quest for a leak is obviously profitable for the outside maintenance vendor, but it's really the contractor's moral duty to solve the leak problem with the least amount of work and billing possible.

Knowing the basics of leak detection can help plant personnel make better judgments on refrigeration system repair work or even perform the repairs themselves.

Is the System Leaking?

One key sign in determining a leak is observing a large differential between the evaporator's saturation temperature and the chilled water's discharge temperature.

A system might be working fairly well; however any variation from the manufacturer's specifications and current operating condenser, evaporator, chilled water, or oil temperatures, might also suggest a refrigerant leak.

These are all telltale signs, but many times tech people disregard these signs of leaking and continue putting new refrigerant into a leaking system. While plant productivity or budget considerations are important, continually filling a system that's leaking is unlawful according to the Canadian Environmental Agency regulations and harmful to a system over its life cycle.

That's why leak detection is just another helpful tool in plant maintenance for the technician.

It's Not The Dye, It's The Applicator.

A conservative approach is usually best when dyes, leak detection and/or a sealant is involved. This approach should never be used when a piece of equipment is still under the manufacturer's warranty. Secondly, leak detection and repair should be done within the Montreal Protocol and Canadian Environmental Agency. Dyes, leak detection and sealants are tools, and all tools can be abused.

Dye leak detection involves a dye that's injected into the system. Dyes used for leak detection are generally of two chemical types—Perylene and naphthalimide. These two fluorescent dye types have the ability to visibly fluoresce even in small traces and when highly diluted with other fluids.

Its mixing with the unit's oil via the refrigerant transports it to all parts of the system. If there's a leak, the dye will leak out with the refrigerant and leave a stain on the external areas near the hole. This is true for even the smallest leaks that might take longer periods to accumulate enough visible residue.

Since these dyes are fluorescent, an ultraviolet (UV) light is used to visibly observe the leaking area.

In the early days, the rule of thumb was to inject as much dye into the system as possible to easily locate the leak. Since excessive amounts of dye can possibly lead to damage of internal components, these practices unfairly labeled dyes as harmful to refrigeration systems.

When used properly, dyes are not harmful to internal components. Annually, tens of thousands of failing refrigeration systems around the world are injected properly with dyes without adverse effects.

There are dozens of dye method leak detection manufacturers to choose from today. Generally, most of the high quality manufacturers use the same type of dye. What separates manufacturers from one another is the injection method and suggested dosages. What a technician should look for is an injector that accurately controls the amount of dye that's injected into the system and complies with the manufacturer's suggested oil to dye ratio for air conditioning and refrigeration systems.
Uncontrolled, excessive uses of dye not only lessen the heat transferability of the refrigerant, but also lower the system oil's viscosity. Since excessive dying can damage a system, it makes sense to use a small dye dose combined with a powerful dye detecting UV light to visibly ascertain the leak.

Dye applicators that have incremental injections are invaluable for safeguarding against excessive dying. Combining with stronger UV lights, which concentrate the light even at great distances or in bright outdoor lighting circumstances, is what elevates fluorescent dye leak detection into an invaluable tool for today's technician.

Applying Dyes

Once it's determined the system is leaking refrigerant and the leak is either undetectable or inaccessible, applying the dye is the first step in repairing a leak. A good rule of thumb is putting .04-ounces (1.25 ml) of dye per 7 pounds of refrigerant or 20 to 30 ounces (887.2 ml) of crankcase oil. For example with incremental dye injectors, two doses would be sufficient for a system containing 60 ounces of oil.

Typically, a return trip is needed after injection because it will take days or maybe even weeks, in the case of slow leaks, for the dye to reach the hole and leak out. A larger leak will be detected in only a few hours after injection.

Sniffers should be combined with dye detection because of situations such as intermittent leakage or wind in outside locations. A dye will confirm the leak visually

at a specific location. This confirmation is also invaluable if repair funds must be approved by a company manager for an outside service contractor or equipment purchases.

Intermittent leaking generally occurs when oil or particulate matter plug a hole temporarily. This is why investigating suspected areas of leakage with a dye as well as electronic sniffing techniques should be used. The dye gives a good historical account of where a leak is intermittently occurring, however an electronic sniffer can indicate if refrigerant is currently leaking from the hole.

Seeing the Dye

UV lights, which are a combination of lamps and projecting lenses that process the light from a flashlight sized container, are used to detect fluorescing dye at a leak's exit point. High powered lights can detect even the smallest traces of dye even in maximum lighting situations such as outdoor sunlight.

Generally dye inspection lamps produce UV, violet, and/or blue light to detect the dye. Violet or near UV lights cause fluorescence of naphthalimide dyes popularly used in auto and stationary refrigeration systems. Blue light lamps are more universal because they cause fluorescence of naphthalimide and perylene dyes. Inspection lamps range from LED (light emitting diodes), halogen, fluorescent type black light, to HID (high intensity discharge or sometimes referred to metal halide) bulbs. LED lamps are more popular because they require less power to produce a specific narrow range of wavelengths that other methods. LED's, which are cool to the touch, produce a range of wavelengths sufficiently narrow so that no filter is needed in the lamp to block wavelengths outside the desired range.

Preparing the System For Repair

Preparing a system for repair requires refrigerant reclamation and system cleaning in most cases. On large industrial systems, the leak area can be isolated. For example, preparing to fix a leak occurring in the evaporator would follow system pump-down into the condenser.

Medium-sized systems such as roof-top package units for office a/c or small systems such as water coolers, window units, etc., would need total refrigerant reclamation and a triple evacuation down to a recommended 350 microns. Micron gauges are useful in this determination because they are more precise than conventional pressure gauges.

Using an in-line drier to trap particulate matter or refrigerant moisture while reclaiming the (if none is available on the reclaiming machine) also guarantees the refrigerant is clean once it is put back into the system with the exception of a compressor burn out. All driers on the system should be changed out as well. Anytime the drier's inlet and outlet psi differential surpasses 2 psi, it should be replaced. Cleanliness within the system is essential, especially if the leak can't be found or is inaccessible and then a sealant will be used later on.

Using dry nitrogen in the system while brazing the repaired leak area is also essential to keeping oxidized copper particulate matter from sticking to the piping and later dislodging into thermostatic expansion valves or dryers.

It's always a good idea to examine the acidity of the system's oil. The best sampling tests on the market are those that use two chemical reagents. Reclaimed oil with acidity over .05 on the acid scale needs to be changed out. Acid testing can also alert the technician to the presence of excess moisture leaking into the system through the process chilled water side. Considering the value of refrigeration systems especially in industrial applications, it's probably worth the minimal expense to change the oil during pump downs, regardless of the acidic value.

Once the system has been cleaned and the leak has been determined as undetectable or inaccessible, a sealant can be used. Using a sealant can save expensive equipment replacement and possible plant shut-downs. For example, at the Ford Motor Company's Windsor, Ontario engine block plant, a chiller used in cooling thousands of gallons of honing oil developed an undetectable leak that was suspected to be in the evaporator coil. Instead of shutting down the plant for days to tear the machine apart and with the looming problem that replacement parts might not be readily available, Gerry Miller, the plant's compression equipment engineer, used a sealant. The chiller system is still operating four years later without incident and up to the manufacturer's performance specifications.

A sealant is applied via a charging hose connecting the vacuum-packed sealant can and the system's low side. Shut down the system and purge air from the charging hose by slightly backing off the can's connection for a minute or less to allow the system's refrigerant to push air out of the hose. Then, tighten the connection. Open the valve slowly so that refrigerant enters the can slowly and doesn't disturb any residual particles in the suction line.

The refrigerant will rush into the vacuum-packed can and mix with the sealant. When the can has cooled down to ambient temperature, the technician can proceed to the next step of injecting the sealant into the refrigeration system.

Because the sealant application could fill another entire story, instructions and tips have been brief. However, sealant manufacturers do have step-by-step instructions and troubleshooting tips available for users.

A sealant works from the inside out. It crystallizes from a chemical reaction with atmospheric moisture when it exits a leak point. Therefore, it's critical that moisture is removed from the system prior to injection to assure there's no damage to internal parts. Once the system is sealed, the sealant stays within the system and continues to do its job in the event another leak might occur months or years later.

If a sealed system is reclaimed, the sealant can easily be separated from the refrigerant during the cleaning process.

As mentioned before, sealants should be used only as a last resort when all conventional means of locating and/or repairing a leaking system have been exhausted.

Whether a system is repaired conventionally or by a sealant, if performed correctly, the service technicians should have the gratification that their efforts will make a difference in saving the environment from the harmful release of refrigerants, not to mention their company will significantly reduce the repair costs.

Paul Appler
Power Engineer

I.P.E. MERCHANDISE

Wilesco D106 Steam Engine

Brass parts are lacquered to reduce discolouration or oxidation. Engine equipped with reversible brass cylinder and piston, safety valve, and a real working steam whistle, centrifugal governor, steam jet oil lubrication and brass boiler. Operates for approx. 15 minutes per fueling. Flywheel shaft has a grooved pulley to run additional Wilesco accessories. Unique piece for hobbyist or collector. This steam model will give pleasure to young and old alike and will be treasured for life. Measures 10 1/4´´L x 8 1/2´´W x 10´´H (including smoke stack).

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PlascoEnergy, Solving Tomorrow's Problems Today

An ever- growing problem for urban planners and municipal politicians has become waste disposal. The city of Toronto is starting to face a crisis when it comes to what they are to do with their garbage. Shipping our garbage out of the country is no longer an option, and our own landfill sites are quickly filling. Our nation's capital, Ottawa is taking a leadership role in the problem with a partnership with PlascoEnergy Group Inc. PlascoEnergy Group has developed a revolutionary way of converting municipal solid waste (MSW) to syngas, and then to electricity, which, will address the waste crisis and also provide clean electricity.

A demonstration plant has been set-up at Ottawa's Trail Road Landfill site that will convert 85 tonnes of garbage a day into 85 kg of waste and 5 MW of power. This isn't a garbage incineration project -but the launch of the PlascoEnergy patented Plasco Conversion System. Just the mention of garbage incineration will send a shiver down the spine of any municipal politician with our ever-growing green desire to cut emissions. PlascoEnergy's PCS converts MSW to stable, clean syngas in a sealed

system, without producing any emissions. The only emissions produced are from the exhaust of the engines used to process the syngas to electricity.

HOW IT WORKS

This is a non-incineration thermal process that uses the intense and controllable heat from plasma arc generators (pictured below) in an oxygen-starved environment to convert the gases produced from the initial conversion of the input material into simple molecules (e.g. H_2, N_2, CO, CO_2, etc).

PlascoEnergy's (PCS) controls the conversion so that a consistent quality fuel that is rich in CO and H_2 is produced without air or emissions and with valuable by-product gas.

Municipal waste arrives by truck daily and is dumped on the tip floor of the MSW Storage Building. Although the process requires no pre-sorting, ferrous materials and larger objects that have greater value in being recycled are removed prior to shredding (for the purpose of homogenization), mixing and introduction to the 1st stage of

the converter. Recognizing the variability of MSW feedstock, and in order to achieve the required syngas characteristics, a dual waste feed system has been adopted.

Waste like non-recyclable plastics or paper, which have consistent heating value is blended with variable MSW to be converted into syngas.

The consistent heating value waste comes from waste rejected from recycling, which would have normally been landfilled.

Solid waste is introduced into the lower chamber of the converter, where the initial conversion process occurs. The plasma torches, located on the upper level of the converter, supply the heat and energy required to complete the conversion process and control the conversion temperature. The conversion process produces the hot syngas that is rich in CO and H_2 . The non-volatile components of the waste that cannot be converted into gas is then melted to produce an inert solid that can be sold as road aggregate or construction material.

The raw syngas passes from the refining chamber to the recuperator, where heat is recovered and piped to the lower chamber to supply the heat for gasification of incoming solid waste.

The gas is then conditioned through the Gas Qulaity Management Suite. The heat recovered through the recuperator can either be recycled back to the primary and secondary conversion chamber to aid in the conversion process or used to produce steam for electrical generation or both.

In order to meet strict environmental guidelines and as well to satisfy gas engine specifications, the syngas is routed through the Gas Quality Management Suite. Solid particulates are removed from the syngas stream and reprocessed, while heavy metals are recovered in an activated carbon stream. Less than 1kg/tonne of heavy metals remains once a tonne of MSW is processed; a 1000:1 mass reduction.

Heavy metals are periodically removed for controlled disposal in approved sites.

The syngas is scrubbed of HCl and H_2S using well known processes, resulting in 5-10 kgs of salt and agricultural grade sulphur, which can be recovered for sale. The hydrophilic sulphur is recovered in solid form at a rate of approximately 5 kgs sulphur per tonne of MSW.

The Syngas storage tank allows for homogenization of the product gas to within a range acceptable by the gas engines. This also accommodates for rapid changes in the product gas pressure, resulting in smooth engine performance.

The PlascoEnergy demonstration plant is now in commissioning. It is expected to produce initial power from syngas in August, and then expand the next months to achieve 85 tonnes of MSW per day. Each tonne of waste is expected to produce enough power for an average Ottawa household for forty-five days, with less than zero net CO2 emissions.

Tesla...Death Rays and Particle Beams

By Ray Stiers

Last time, I focused on the outstanding accomplishments of Nicola Tesla, the brilliant scientist and inventor. Today, I intend to delve into a few of the lesser-known (some, maybe rightfully so) facts, facets and tales that surround his remarkable life. They are not meant to take away from the genius that he was, only to provide some insight into his amazing, sometimes eccentric mind.

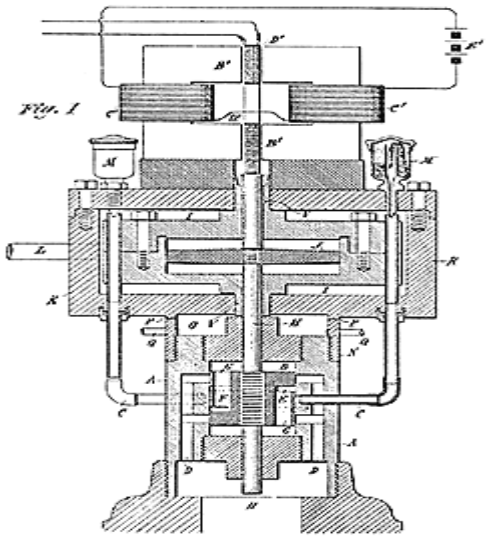
A recent episode of the TV show Mythbusters, attempted to disprove one of Tesla's inventions. The invention they put to the test was his Earthquake machine. That's right, Tesla had been experimenting with mechanical oscillators that generated such a resonance in his, and surrounding buildings, that he was forced to dampen the dangerous vibrations by striking a wall with a sledge hammer. Luckily the shaking stopped, but not before causing great modification to the fault lines in the earth's crust. OK, I added the last part, but the part about the hammer is true. Mythbusters applied similar forces to a modern traffic bridge using jackhammers and a computer-controlled actuator, and found that, while they could feel the vibrations on the other side, they were not severe enough to cause any significant Richter spikes. They did acknowledge, however, that the bridge was built to withstand such forces, and that Tesla's lab was not. Still, they claim to have busted the myth of the Earthquake machine.

One of Tesla's most famous inventions was the Tesla Coil. This device would create spectacular high-voltage lightning displays, and was originally intended to be used to transmit electricity wirelessly.

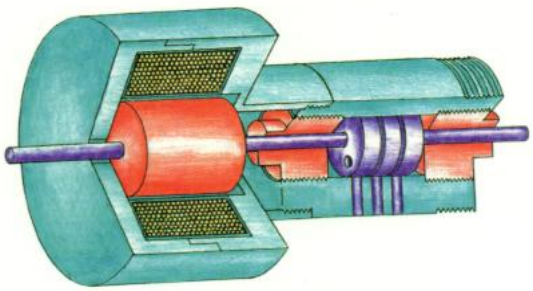
A Tesla coil in use

Though he did succeed at lighting florescent lights from a distance without any connecting wires, it's usefulness proved to be limited more to impressing (terrifying) crowds by sending a scattering of lightning bolts throughout the room during his conventions. To this day, magicians and hobbyists use these devices to generate oohs and ahhs from audiences, and co-workers alike.

Perhaps his strangest idea was the Thought Photography Machine. He figured that a thought generated in the mind would appear in the retina in some form, thereby offering an opportunity to capture and process the information. This would then allow it to be projected onto some kind of screen for all to see. It also would have allowed me to figure out Nicole M. back in grade 6.



Patent No. 511,916



Tesla's earthquake machine

For a good part of his elder years, he suffered from germ phobia and obsessive-compulsive disorder. He did things in threes. He would walk around the block three times before entering a building. He insisted on hotel rooms with a room number divisible by three. His disorder was not well understood at the time, leading some to believe he was going insane, which surely took away from his credibility.

Among other things, Tesla spent the remaining years of his life trying to contact Mars. Sounds comical at first, but one has to wonder why immediately after his death in 1943, the Federal Bureau of investigation had the Alien Property Custodian Office confiscate his documents and property. The government was also quite interested in keeping hidden any of his research related to the Particle Beam Teleforce Weapon, or 'Death Ray' as he called it. J. Edgar Hoover was apparently advised that he should take the case very seriously, thus it is reported that much of this research has now gone missing.

Another invention lacking documentation is his electrical generator that did not consume any fuel. He said that he had managed to harness the 'cosmic rays' and use their energy to power some sort of motive device. Solar? Maybe. But knowing Nicola Tesla...there was likely much more to it than that.

Ray Stiers

SO, WHY DO I CARE ABOUT EXPERIENCE?

Dan Rosenfeld

A man who carries a cat by the tail learns something he can learn in no other way. ~Mark Twain

This quote emphasizes what a real education is. Learning from books and manuals is an excellent way to better understand principles and theories. However, the key word here is **theories.** In the real world things don't work as they should. This is where experience and hands on learning separates true engineers from gauge watchers. This experience will tell you that a boiler will work a certain way and maybe not the theoretical way. Just like people equipment has its individual characteristics.

Experience is by far the best teacher compared to theoretical learning where there is little pressure and the only negative end result being a lower grade. In reality equipment fails, minutes seem like seconds because of the sudden demands created by the outage. This means quick thinking, and the experience to anticipate how individual equipment will be able to respond so that production is not lost. Many industrial processes, if suddenly interrupted must be scrapped because of poor quality or at the least rerun. For this reason we must diligently respond immediately to any system changes, especially in today's economic climate. This is what keeps companies running and people working.

So, why do I care about experience? Because recent college graduates that I've dealt with have very limited experience with a false sense that they know everything they need from their college program. The schools only give the information to understand the principles and theories of operation of equipment.

Experience shows what the operation actually does and also prepares you for the pressure and stress of addressing situations when equipment failure must be reversed with no time to spare. With experience, you are better prepared to handle these sudden pressures and it makes your job much more enjoyable.

As an example I would like to summarize a recent Marmaduke Surfaceblow reprint in Power Magazine.

The problem : a diesel generator set won't start. WHY?

Lesson 1 Everything is grade A. When I troubleshoot I trust no one (Experience will tell you that anyone can overlook something that will bite you later.) The engine won't start so everything isn't grade A.

Lesson 2 By visual inspection the battery showed it was fatigue exhausted by the colour of the negative and positive plates. Again, experience shows what to look for and how to tell what is indicated by these telltale signs.

Lesson 3 Tested the battery cell with a hydrometer. The hydrometer read "full charge." WHY? Marmaduke then tests distilled water with the hydrometer. This test also indicated "full charge". After further tests all four new hydrometers were found to be improperly calibrated. Don't assume that it is correct because it is" new in the box".

Lesson 4 Engineer connected a voltmeter across the battery which indicated "full voltage". Don't confuse full voltage with full charge. To prove this point Marmaduke tried to start the engine and voltage drops to almost zero.

With experience you will gain a better understanding of equipment and critical situations. Just because everything appears ok, keep testing and looking, never assume anything.

I always enjoy reading Marmaduke Surfaceblow. The stories are about normal plant problems that are solved through common sense and experience applied to problems. This is why I feel strongly about anyone new getting more hands on experience than theory. This is what truly makes a good engineer and this is something that we all should strive toward.

Older experienced trades people should be encouraging new people to increase their hard skills and be supportive in failed attempts to resolve problems. In this way young people will become more eager to learn and the older participants will gain the respect from their involvement.

Experience is what makes an engineer, and there is a difference between experience and putting in time in a building. If I were to work in a hospital for a year, would that experience make me a surgeon? Would you want me to perform open heart surgery? The same applies to any career. Time served does not equal experience gained. We need **experienced, hands- on** people. People starting out should expect to be required to perform a wide variety of jobs and tasks that they may feel is beneath them. Remember that you may feel that way but in a crunch that little bit of experience that you gained could be handy.

WHY CAN'T I GET EXPERIENCE?

This is the real question. Most plants don't hire apprentices anymore. College's fast track their students which results in minimal actual hands on training. Three months of hands-on training is hardly adequate. The current plant staffing levels don't leave room for trainees.

To train someone today plants are concerned with liability insurance, personal injury, worker's compensation, and the time their full-time employees must divert for the training to mention a few. College's will get coverage for their students and can get their students into plant where self-studied people seldom even get in the plants door. Another drawback to training can come from the applicants themselves. Some are looking for high paying jobs that are easy to perform with a bare minimum of effort. This attitude of indifference, showing little interest and performing tasks with a bare minimum of effort affects us all. If potential trainees try to get in somewhere and that plant has had a bad experience, they are more inclined to forgo any more grief. This is not fair to any future trainees and to the current employees either.

IS THERE A SOLUTION?

There has to be a system (apprenticeship?) that would enable people starting out to gain the valuable experience that is required. This system should level the playing field between the college graduates and self studies persons. There must be some type of documentation for experience gained. Even college graduates who have not achieved these levels of expectations should not be allowed to gain certification.

This sounds harsh but the reality is that incompetent, inexperienced workers can cause accidents that result in losses, in both economic and personal safety. That is why this subject can't be taken lightly. Personally, I feel that anyone who is self-disciplined and motivated enough to work on their own and achieve the theoretical is worth the investment of time toward their certificate.

That's how I did mine. To this day I still find myself learning something new. That is one reason why I enjoy what I do so much and I will readily admit that I don't know everything and I don't have all the answers. This career path I have chosen still keeps my curiosity piqued.

Hope you enjoy this column. Controversial this time, maybe. Someone needs to say something, because otherwise we are left with what we have good or bad, and there is always room for change, because change can be good for all of us.

Happy Reading!!!
Dan

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Are you a member of the Institute of Power Engineers? If not, why? Do you think it's a club just for chief engineers? …

WHAT IS THE INSTITUTE OF POWER ENGINEERS

- It is a professional organization with membership Canada wide, in all provinces.
- Members are power engineers and associated occupations.
- The IPE is a registered in Canada as a Charter Organization.
- The IPE represents people like you and me. It can be a lot of fun.

WHAT GOES ON AT MEETINGS

- Guest speakers present new technologies, products, services…….
- Information is exchanged on what's going on in our field in your area and across Canada
- Tours of new and existing plant
- Many activities which might surprise and interest you

MEMBERSHIP APPLICATION FORM

(PLEASE DOWNLOAD, TYPE/PRINT IN INFORMATION, THEN FORWARD VIA EMAIL OR POSTAL)
(IF APPLICATION IS FILLED IN ELECTRONICALLY, EMAIL A COPY TO YOUR BRANCH)

Date :

1) ARE YOU APPLYING FOR (Check one only):

☐ New Membership (full Member)

☐ Associate Membership

2) IDENTIFICATION:

First Name: Surname:

Credentials: Date of Birth ((DD/MM/YY):

Address: P.O. Box # (if applicable):

Bldg #: Street: Apt. #:

City: Province: Postal Code:

Country: Canada or:

Home Phone #: Fax # :

E-Mail Address Prim:

Sec :

3) EMPLOYMENT:

Company Name:

Position or Title:

Address: P.O. Box # (if applicable):

Bldg #: Street:

City: Province: Postal Code:

Country: Canada or:

Work Phone #: Fax # :

4) POWER ENGINEERING STATUS

a) Are you a Power Engineer? Yes ☐ No ☐

b) If yes, do you currently hold a valid Certificate of Competency? Yes ☐ No ☐

c) If so, issued in what jurisdiction? ☐

d) Is your Certificate interprovincially recognized? Yes ☐ No ☐

e) Provincial Jurisdiction File Number: ☐

f) If not, then to what allied trade or profession do you belong? ☐

5) BRANCH SELECTION

Please select which Branch you would like to be affiliated with. If you are unsure which Branch is closest to you, then you may check the website "AREA MAP" for Branch locations. Applicants from remote areas, or from outside of Canada, may select the Branch of their choice. If you have no preference for a specific branch, you are invited to select the York Branch. French-speaking applicants may select the Montreal Branch for French language service, or the Ottawa Branch for bilingual service.

Note : All membership applications are subject to Branch approval.

☐ Calgary	☐ Edmonton
☐ Hamilton	☐ London
☐ Montreal	☐ Newfoundland/Labrador
☐ NovaScotia	☐ Ottawa
☐ Sarnia	☐ Sault Ste-Marie
☐ Sudbury	☐ Toronto
☐ Vancouver	☐ Victoria
☐ Windsor	☐ Winnipeg
☐ York	

6) DUES PAYMENT

Please note that dues payment in the form of a cheque or money order payable to the INSTITUTE OF POWER ENGINEERS must accompany this application which is to be mailed to the National Office.
The dues amount is $105.00, including a one-time initiation fee of $10.00. Future annual dues of $95.00 will be invoiced annually on the anniversary date of your membership acceptance, and are subject to a $5.00 discount if paid within 30 days.

The mailing address is:

Institute of Power Engineers
PO Box 878
Burlington, Ontario, L7R 3Y7
Forward to : ipenat@nipe.ca

Please also note that the dues constitute an Income Tax deduction if you live in Canada.

For further information : Website: www.nipe.ca