

ELECTRIC CONNECTION

A photograph of a modern building with a large glass-enclosed walkway. The building has a dark facade and a prominent chimney. The walkway is made of light-colored stone tiles and is bordered by a concrete base. The sky is clear and blue.

A Space for Living and Learning

Intense Planning and Close Cooperation

Pollution-Control Upgrade Completes on Time, Within Budget

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Editorial Mission Statement

The *Matco Electric Connection* is a resource for commercial end users, property managers, building owners and operators, facilities managers, general contractors, architects, and consulting engineers. Designed to feature topics affecting the electrical and construction industries, *The Matco Electric Connection* also highlights the achievements, capabilities, and projects of Matco Electric Corporation.



A Message from Ron Barber

We have received many great comments from our first issue of the *Matco Electric Connection*, and we at Matco Electric Corporation will do all we can to make each issue better than the last.

Matco Electric was recently named one of the 100 largest electrical contractors in the country by *Engineering News Record* for the 18th year in a row. We are proud that we can continue to grow and still maintain the personal service we try to give to all our customers, some of whom are highlighted in this issue.

We have been very successful in the market since our last issue and have been awarded four major projects — Cornell West Campus Phase 3, Cornell East Campus, Tioga Downs Racetrack, and the Lockheed Martin 101A, which totals more than \$17,400,000 in electrical work. This gives us the largest backlog in the 40-year history of Matco Electric.

We are very proud of this success, and we realize that this success comes from the great customers, suppliers, and more than 200 employees who continue to believe in Matco Electric. Thank you for your continued trust in Matco Electric.

Sincerely,

Ron Barber
President

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Rich Siebecker, Matco General Foreman, credits communication and trust as the foundation of the relationship between Matco and Guthrie.

In Reliability We Trust

Dependable Contractors Enhance Health Care Construction Relationships

By Peter Fretty

Nothing is harder to earn or easier to lose than trust. Trusting someone means relying completely on a person's or a company's integrity, ability, and character. In other words, you have no doubt about their dependability no matter what the situation. Trust forms the cornerstone of any long-lasting relationship. In business, in particular, trust means you can ask someone to do something and rest assured they will do it on time, on budget, and to the highest standards.

Guthrie Health, which serves the Twin Tiers Region of Northern Pennsylvania and Southern New York, is keenly aware of building confidence when it comes to health care. Guthrie provides superior quality and highly accessible family-health services. The entire focus of the organization — which includes primary care and specialty physicians, a tertiary care teaching hospital, community hospitals, a research institute, home care, and long-term care facilities — is on winning and keeping each patient's trust in its capabilities and reliability.

Guthrie expects, indeed requires, the same attitude and approach from contractors that provide maintenance and construction services, and the organization has been fortunate to find two companies that fit the bill completely: general contractor Welliver McGuire and electrical contractor Matco Electric Corporation. Since 1979, Guthrie has relied on these two firms to help it expand existing facilities and build new care centers.

Familiar Faces

Much of the solid nature of any relationship comes from dealing with the same people consistently. With Matco, for example, Guthrie has worked with only two Project Managers — Ken Elliott and Ron Barber — and two General Foremen — Jim Baldwin and Rich Siebecker — since 1979.

"The foundation of our relationship with Guthrie is communication and trust," says Elliott. "This keeps everything moving in a positive direction." Elliott notes that Matco's partnership with Guthrie was solid at the start and has strengthened ever since. "We take special pride in knowing they feel comfortable coming to us whenever they need something," he says.

Elliott adds that Matco and Guthrie enjoy a rapport where everyone is open to all possibilities for solving potential problems before they arise. He also takes pride in the attention Matco pays to the sensitive work setting. "As a health care provider, Guthrie's main concern is the patients," he says. "Any construction we do for them cannot have a negative impact on the care being provided. We take this responsibility very seriously."

Another plus for Guthrie is Matco's willingness and ability to work efficiently to whatever schedules and constraints the health care organization requires. "We keep administration to a minimum by addressing needs as they come up," says Elliott. "This eliminates a lot of headaches and allows everyone to focus on completing the tasks at hand rather than dealing with time-consuming issues that cut productivity."

Care and Caution

Guthrie's general contractor, Welliver McGuire, shares Matco's dedication to keeping patient well-being first and foremost. Since its initial contract with the health care provider, Welliver McGuire has earned the client's trust through its attention to detail and its constant dedication to working in the most efficient, least obtrusive manner.

"The key to the success with this on going relationship has been the foresight of management to put the right people in place."

— Welliver McGuire
Project Executive,
Harry Ritzler

According to Harry Ritzler, Welliver McGuire Project Executive, the way that the entire team has worked on the Guthrie project has served as a template that each member company has been able to take on to other owners and other projects.

"The key to the success with this on-going relationship has been the foresight of management to put the right people in place," says Ritzler. "This is all about people and working together as a cohesive team. The tribute really is to the people on the site. It has never been just one person it has always been a team that has blossomed to include other prime contractors over time."

In addition, giving the client a high level of confidence that they are continuously receiving the best treatment, quality, delivery, and price possible has been a consistent driver, explains Ritzler. "Over the years, the hospital personnel have changed, but we were still able to keep the construction team intact because we were able to demonstrate that as a unit we were in place to help protect them," he says. "We are not just talking financially, but also operations. We are always cognizant of the work environment and work to make sure

that we are not conflicting with patient care."

Ritzler adds that there were always conflicts, but the key to success has been the ability to work them out to everyone's satisfaction. "We all know the importance of keeping the customer happy."


The efficiency stems from the firm's ability to handle many projects simultaneously and its time-and-material design/build approach to health care construction engagements. The latter is rarely seen in a sector where a low-bid philosophy dominates. Time has shown, however, that the design/build method saves Guthrie money.

Total Confidence

Guthrie trusts Matco to complete every aspect of its work to the highest standard. A good portion of this confidence comes from knowing Matco stays current on codes and new technology.

Having this information on hand makes it possible for Matco to provide accurate, timely, cost-effective technical advice to the Guthrie team on every construction project.

"Matco is a wonderful resource and a great member of each construction project team," says Guthrie's Facilities Director Jeff Heath. "We do much of our on-site work with Matco because of its expertise and in-depth knowledge of our facilities. They complement our internal maintenance and engineering staff wonderfully."

According to Heath, Matco has been very responsive to the hospital's demanding requirements. In emergency situations, he notes, the firm always has personnel in place, and it never forgets the restraints of working in a delicate hospital environment. "Matco's service is above and beyond the average outside contractor," says Heath. "We get real value for every dollar we spend." 



Since 1979, Guthrie has relied on general contractor Welliver McGuire and electrical contractor Matco Electric Corporation to help it expand existing facilities and build new care centers.

A Space for Living and Learning

By Diane Calabrese

Forget traditional notions of student life — a classroom here, a dorm room there. At Cornell University in Ithaca, New York, living and learning are tightly linked.

In one part of the Cornell community, a group of 4 to 12 students live in residences designed more like large houses than dormitories. Each group creates and implements a year-long, structured learning experience around a societal issue. For instance, some living-and-learning groups serve as mentors to children in the community, while others raise funds for charitable causes.

Perfecting space for living-and-learning groups is a priority at the University. In March 2003, the West Campus Residential

Initiative project broke ground, aiming at buildings tailored to the interaction of their occupants.

“We are currently in phase 3 of a 5-phase project,” says Art Fives, Project Manager for Cornell University. Completion is slated for August 2008. “Our biggest challenge on this project is scheduling — and the sequencing,” says Fives. Not only must the plan maintain the bed count for students even as new housing is built to supplant the old, but contractors must also work carefully around occupied buildings.

“These phases are reaching completion in an average of 12 to 14 months, which is very aggressive,” says Norm Aidun, PMP, LEED AP, Senior Project/Construction Manager for Welliver McGuire, Inc., of Montour Falls, New York, general contractor for the project.

While certain symmetry is built into the Cornell living-and-learning communities, the collaboration the housing fosters is achieved through a similar sort of group effort on the construction side.



Students eat lunch in the cafeteria of the Alice H. Cook House at Cornell University. The house, which was the first phase of the 5-phase West Campus Residential Initiative project, provides living quarters for 350 students.



The North Campus Residential Initiative project for freshman, completed by Matco in 2001, added 1,750 beds to Cornell's residence program.

The sustained "team atmosphere" is an exciting part of the West Campus Residential Initiative, says Aidun. "Being well into the third phase with most of the same construction team members enables us all to work more efficiently and effectively, producing the product for the owner while optimizing the three constraints of these projects — schedule, quality, and cost," he explains.

According to Ken Elliott, Project Manager for Matco Electric Corporation of Vestal, New York, the electrical subcontractor for all three phases to date, participating in this kind of project is a rewarding experience. "These residential facilities that Cornell is installing are second to none," he says. "As a parent, I understand that it is important to the student."

Matco contributed to the West Campus Residential Initiative from an early stage, explains Elliott, by offering suggestions for value engineering. For example, with copper prices rising, Matco suggested the use of aluminum as a substitute metal for distribution systems.




Left to right: Spike Fisk, Welliver McGuire Superintendent; Ken Elliot, Matco Project Manager; Tony Augustine, Matco General Foreman; and Skip Duff, Matco Foreman

"We get it done" encapsulates the commitment of Matco, says Tony Augustine, General Foreman for the company. The compressed schedule at Cornell is a challenge, he explains, but by overlapping on successive phases "there becomes a bond with all the trades — heating, sheet rock, electrical — that makes it easier."



Throughout the course of the project, construction crews had to maintain the bed count while adding new space. Students moved into the first phase of the project, the Alice H. Cook House, in August 2004.

Every phase has come in as projected, says Spike Fisk, Superintendent with Welliver McGuire. The dedication begins with the Welliver McGuire employees, he explains, and it includes all subcontractors, the Cornell project team, and the architects at KTA.

"We are very lucky to have such good subcontractors on this job," says Fisk. "The big ones are Matco — electrical, Frey and Campbell — HVAC, Ferillo — plumbing, Lowery — dry-wall, and JP Reilly — earthwork." 



All suites have a common living room and bathroom so students can live, learn, and exchange ideas together. Each house in the program has its own dining hall, common room, and library.

Intense Planning and Close Cooperation

Pollution-Control Upgrade Completes on Time, Within Budget

By Dave Morningstar



Left: As part of the pollution-control systems upgrade at Norbord's MDF mill, Matco was responsible for the installation of a new control panel and all of the necessary wiring for the two-pump system. **Right:** Paul Miller, Matco Electric Foreman, and Daryl Koch, Norbord Project Manager

When it opened in 1965, the medium-density fiberboard (MDF) mill operated by Norbord Industries, Inc., in Deposit, New York, was the first in the world designed to produce this now widely used product. The Deposit mill represented what was then "state of the art," and thanks to an aggressive and ongoing maintenance and upgrading program, it still does.

MDF is an important product for Norbord. The material, made in part from recycled wood fibers in a process that includes both heat and pressure, is used extensively for products like cabinets, paneling, doors, jambs, millwork, laminating, finishing, and moldings. The mill, Norbord's only North American MDF mill, produces approximately 160 million square feet (3/8" basis) per week. That translates to more than 100 truckloads shipped each week to key industrial markets in Canada and the United States.

So, when the mill was recently scheduled for an important upgrade of its pollution-control systems, finding ways to minimize the required downtime was a high priority. In fact, General Manager Sheri Weeks brought in a firm of scheduling specialists to handle the details associated with the project. The decision was made to schedule a seven-day shutdown, during which all the pollution-control upgrades and installation of a new wood-drying line was accomplished.

"This really was a major construction project," observes Mark Freije, Project Manager for prime electrical contractor Matco Electric Corporation. "It involved a lot more than just installing new pollution-control devices. The plant's floor plan was significantly rearranged, and the chemical-unloading dock was moved. We had to install 400 hp fans and the entire supporting electrical infrastructure. We had to work quickly with a whole series of specialized contractors who were also under intense time pressure. It made for a very interesting work site."

Even before the project started, Matco had completed an extensive investigation of the new system's power requirements and worked with Norbord and system designer Hinz Automation on the specifications and installation plans. While Norbord purchased

all the equipment for the project, Matco worked with them and the supplier, General Electric, to develop specifications and coordinate delivery scheduling.

Matco also completed important work on the jobsite before the actual installation. Existing plant wiring scheduled for re-use was labeled, traced, and tagged, and new wiring was installed wherever possible while the plant was in operation.

Equipment and components were staged on the jobsite so they were available when needed. Steel structures for the new equipment were preassembled, and motor disconnects and other devices were prefitted and installed to the greatest extent possible in the weeks before the scheduled plant shutdown. All this activity was fully coordinated by Project Manager Daryl Koch, the plant team, and the scheduling group.

“There really was a lot going on. The scheduling was very tight, but we were able to complete most of the prep work by working around the other contractors.”

— Matco Project Foreman,
Paul Miller

Relocating the plant’s chemical-unloading area marked the beginning of the project. A new truck-unloading ramp and a spill-containment structure were built, along with all new pumps and plumbing.

Although Matco was the electrical contractor, the firm was heavily involved in this part of the project. While Matco installed a new control panel and all of the necessary wiring for the two-pump system, mechanical subcontractors were hired to move the plant’s wax-resin-unload pumping station.

Once completed, installation of the two pollution-control systems began. These consisted of three regeneration thermal oxidizer (RTO) units, one regenerative catalytic oxidizer (RCO) unit, and all supporting infrastructure. The RTO units thermally destroy volatile organic compounds (VOC) from the plant’s drying line, while the RCO units handle emissions from a press line.

RCO and RTO units are state-of-the-art pollution-control systems that destroy VOCs by thermally decomposing and then oxidizing them. They are fired by natural gas, and both are designed to recover much of the heat generated by the process, using it to heat the incoming waste/air stream to achieve high thermal efficiency and reduce operating costs.

Installation of the three RTO units was especially challenging because it required replacement of two process cyclones that feed into a conveyor system used for the process with a four-cyclone unit.

This phase involved replacement of the cyclones, plus their support structures and the conveyors. This part of the project needed to be accomplished during the shutdown while the other work was ongoing.

A significant upgrade of the plant’s substation and electrical infrastructure was required to support the mill’s new systems. Matco installed a 5kV feeder and a 2000 kVA outdoor, oil-filled transformer. Inside the plant, Matco constructed a control room to house the variable-speed motor controls needed for a pair of 400-horsepower electric motors to drive the fans feeding the pollution-control systems.

Seven Matco electricians, including Foreman Paul Miller, were on the job from the beginning of the shutdown until installation was completed. In addition to the infrastructure work and installation of the pollution-control systems, they also performed a variety of maintenance and upgrade operations on plant equipment, often while waiting for other subcontractors to finish their tasks.


“There really was a lot going on,” recalls Miller. “The scheduling was very tight, but we were able to complete most of the prep work by working around the other contractors. We would go as far as we could with a job — running conduit, setting junction boxes, pulling conductors — and then move on to something else while other equipment was moved or installed.

“At one point we also disconnected a 5kV motor so it could be removed. That wasn’t really part of the upgrade project, but we were there and had time to do it. So we did.

“It was an interesting week, but everything arrived as planned and was finished on time,” adds Miller. “It’s pretty impressive when you think about how much was going on.”

Norbord is an international panel board company based in Canada. Matco is a New York-based electrical contractor. The electrical engineering was performed by Hinz Automation, and KTC Panelboard was responsible for the foundation and slab on grade engineering, both of British Columbia. The pollution-control systems came from MEGTEC of Wisconsin. The subcontractors came from all over eastern North America. There were hundreds of people involved in the installation and supporting activities.

Specialist teams developed the specifications for the project, while Norbord handled the purchasing. Koch and his team at dispatch worked on the scheduling.

“I am not going to say there were no glitches and everything ran like clockwork, but in the end, it all came together on time and within budget,” notes Freije with satisfaction. “It was all completed safely. And when we threw the switch, it all worked. It is really amazing what you can do when you put the right people in place, and then let them do their jobs.” 



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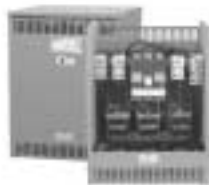
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Coming to Grips

with Proactive Maintenance Fix Problems Before They Arise

By Dave Morningstar

People tend to take electrical systems for granted. If the lights work and the circuit breakers are not tripping, building owners and managers are not likely to think about regular maintenance. But that is a big mistake for many reasons, with safety and economics high on the list.

Figures cited by the National Fire Protection Agency dramatically make the case for safety, as electrical systems are the source of many fires. As *USA Today* recently reported, "A 1-hour electrical outage costs an estimated \$1,437 at small businesses (up to 250 workers)." And "Over 88% of owners had from 1 to 6 power outages a year." With incident rates like that, it is easy to see how the bill could quickly add up to \$30 billion.

But how is an owner or manager to know how well a building's electrical system is working? One answer that is rapidly growing in acceptance is a proactive maintenance program that uses high-tech analytical tools to find and repair problems before they cause an outage — or worse.

Matco Electric Corporation has performed proactive and preventative maintenance on more than 200 customer facilities in the last 4 years.

"We have five storage racks, each of which is six shelves high," reports Vince Carpineta of Matco. "And they are all full of binders that detail every aspect of every piece of electrical equipment we have inspected and/or worked on in every one of those buildings. Customers get the same information on a CD after each inspection. That way, we both know exactly what was found, we can prioritize and schedule repairs, and if there is a problem, we both know the history of the piece of equipment in question. It saves a lot of time and confusion."

A proactive maintenance inspection can include anything from a simple physical inspection of panels, junction boxes, and wiring to a detailed examination of an operating electrical system using infrared cameras, ultrasonic detectors, and sophisticated electronic tools that analyze voltages, amperages, and harmonics. Each inspection is custom tailored to the customer's needs as well as the age, condition, and use of the facility. No two programs are exactly alike.

"The proactive maintenance program we supply for the Johnson City Central Schools is a good example," Carpineta notes. "We separate the equipment into three categories: main distribution, critical, and noncritical. We then perform a full-energized maintenance tasking on the main distribution equipment and complete infrared and ultrasonic testing on all remaining components. The second year we focus on the critical equipment and do a full-energized program while doing infrared and ultrasonic on the distribution and noncritical components. The third year we complete the cycle and perform the full-energized portion on the noncritical components and again do infrared and ultrasonic testing on the distribution and critical equipment. This allows us to touch every component, every year for three years."

The infrared and ultrasonic scans are used to detect "hot spots" produced by bad connections, deteriorated circuit breakers, and other system conditions. Over- and under-torqued connectors are the most commonly found system fault, and they are easily detected with the infrared scan because they invariably produce a hot spot.

Ultrasonic testing finds low-level arcing, tracking, and corona. These are three critical anomalies that will not be detected by the infrared camera due to low temperature ranges. "Ultra-sonic testing has allowed us to detect medium- and high-voltage

anomalies on equipment that due to interlocks and other safety devices could not be opened," says William Newman Sales Engineer. "This allowed my customer to plan a scheduled shutdown, make the proper repairs, and avoid a catastrophic outage that could have cost this facility hundreds of thousands of dollars," adds Newman.

Each inspection includes visual verification to assure that hinges, locks, and other safety devices are functioning properly. Then we make sure that the components are free of any dirt, dust, and other debris that could be a potential hazard. While performing our test procedures, we make any minor repairs that can be done safely under energized conditions. All other repair work will be priced and brought to the owner's attention when the report is delivered. We can then schedule these repairs so that it is convenient for the customer.



Even though load readings and a visual inspection did not indicate a problem, the infrared readings (below) revealed a problem with the buss section.

"Our maintenance people take care of things like changing light bulbs and other minor repairs," says John Mauro, Business Manager at Johnson City Central Schools. "But we are not trained or equipped to handle more complicated or dangerous jobs. We depend on Matco for that. Our primary concern is for the safety of the students, of course, but we also need to avoid unscheduled shutdowns. The proactive maintenance inspections certainly have helped in both areas."

Energized maintenance always requires a two-person team equipped with the proper PPE and safety equipment. Newman also adds, "The safety equipment that we are required to wear for this type of work cost roughly \$1,000.00 per technician. Matco has also invested more than \$100,000 in test equipment

in order to provide the testing for this type of service program." While on site, all nameplate and electrical data is logged into a laptop computer. When problems are found, additional data is collected along with infrared and digital images that are then logged into the computer. "Safety is our number-one priority for both our customers and our technicians," says Newman.

Another regular customer of Matco's proactive maintenance program is the regional network of United Parcel Service (UPS). The Matco teams perform infrared and ultrasonic testing on 27 UPS facilities in their area, a number that has grown steadily over the past few years.


"Infrared scanning is a very specialized capability," says Terry Deeds of UPS. "Matco has the ability to service nearly all of our locations, and it's usually the same people who do the job. That means we don't have to repeat the learning curve at every location, which makes the whole process a lot more efficient."

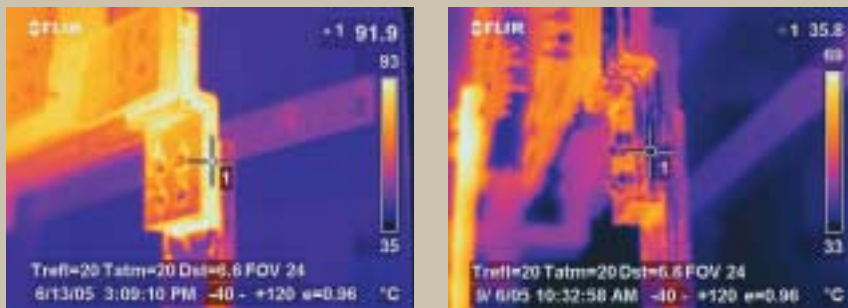
"UPS is a highly efficient organization," Carpineta explains. "And they simply will not tolerate unscheduled downtime. Our inspections are designed to 'keep the belt running,' which means we focus on the things necessary to keep packages moving through the facility."

In fact, Matco has also installed transfer switches in most of the UPS buildings they service, and when weather or other conditions threaten to interrupt grid power, they preposition generators and portable heating units for their use.

"During the big Northeast blackout we spent a lot of time on the phone trying to line up local sources for generators to get our facilities back in action," Terry Deeds recalls. "Now, when it looks like we may get hit by a major storm I can call Matco and simply reserve the generators we're likely to need for the locations in the storm's path."

"All we need to do is send someone to the site to make the connections, and they are back in business," Carpineta explains. "Making the connection is a safety issue, and UPS is not prepared to do it themselves. The whole point is to keep them in business, and between the proactive maintenance and the other services we provide, we have done a very good job for them."

According to Carpineta, it is all about avoiding surprises. "The best way to do that is to find them and fix them before they become reactive maintenance," he says. "We are very good at that." 



Left to right: Infrared reading from a 4000amp 480V section of Switchgear, showing that the temperature of this buss section was 33.5C higher than the ambient temperature of the Switchgear; after repairs, the infrared reading shows the same buss section within normal heat limits.

Resource Directory

Matco Electric Corporation thanks the following companies, without whom this magazine would not be possible.

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