Evolution

ISSUE 39 April 2005 A PUBLICATION OF MAGNETEK POWER CONTROL SYSTEMS

Automation Provides the Solution!

Magnetek's Engineered Systems & Solutions Group does it again

Automated dipping tank line paints automobile parts more safely and efficiently with better coverage.

It was a big boost for the Mississippi economy! In 2000, Nissan, Japan's number-three automaker, announced that it would build a new assembly plant in Canton, Mississippi—and Mississippi would be forever changed. Nissan invested $1.4 billion to build a 3.5 million square foot automotive manufacturing facility, where over 400,000 full-size pick-up trucks and sport utility vehicles, as well as minivans, would be produced each year. The Nissan Mississippi project was in the top 1% of all economic development projects announced in the entire U.S. that year. Of course with this high volume production, opportunities abounded for suppliers to locate in Madison County, Mississippi to serve Nissan. That's where Systems Electro Coating (SEC) came in. SEC, a joint venture between PPG Industries, Inc. (Pittsburgh, PA) and Systems Automotive, Inc. (Jackson, MS), built a 125,000 square foot facility in the Central Mississippi Industrial Center. The new company was dedicated solely to applying anti-corrosion electro-deposition primer to automotive frames and parts for Nissan.

Nissan Quest is just one of the vehicles manufactured at the Canton, Mississippi plant.

Automation Provides the Solution

The process of electro-static painting involves submerging metallic products in a charged paint bath and electrically depositing the paint onto the product. With this process, paint only adheres to the intended product. The coating thickness is dependent upon the voltage applied to the paint and the temperature of the solution. This method of electro-static painting provides better overall coverage than traditional methods of painting, with little wasted paint.

One drawback to electro-static painting, however, is that the voltages applied can be as high as 700 VDC. With these high voltages, it is recommended that the area be clear of personnel while parts are being painted. SEC approached George Koch Sons, LLC, a world leader in the design, construction and installation of finishing systems, for a solution. Partnering with TC/American Monorail (TC/A), a leading provider of overhead crane and monorail systems, and Magnetek, a leader in control

Continued Page 2

INSIDE

Continued p. 1—
Automation

and automation systems, an automated painting system was designed. The process consists of a series of dip tanks that first clean the parts and then paints them in an electro-static process. Automating the process not only removes personnel from harms way, but also improves the consistency and overall efficiency of the application.

The system was initially designed to paint truck frames, but was soon modified to accept other auto parts as well. By varying the voltage applied and the amount of time parts are charged, the electro-static painting process is customized to meet the requirements for each individual part.

Magnetek's Engineered Systems & Solutions Group Handled the Controls Automation from Start to Finish

- Project evaluation
- Application solutions
- Engineering design
- PLC/PC program development
- System manufacturing
- Project management
- Installation assistance
- Field start-up and test
- Customer training

System Design

According to Wayne Flury, Special Projects Manager for TC/A, the automated electro-static painting system designed for SEC consists of four identical dipping cranes, working congruently over one tank line. Each crane's rigid mast contains two hoists that are controlled either independently or synchronously by two of Magnetek's Electromotive IMPULSE® VG+ Series 2 Vector Drives. This allows the hoists to raise and lower the load evenly into and out of the tanks, and allows them to tilt in order to drain excess liquid from the parts before moving to the next tank. According to Bill Erkfitz, Project Manager for George Koch Sons, "When too much liquid is moved between tanks, the tanks become contaminated. If contamination occurs, the tanks must be drained and cleaned, causing down time, lost productivity and increased chemical costs." The automatic tilting process reduces the amount of liquid moved between tanks, thus reducing system downtime and costs associated with cleaning the tanks.

The bridge motions are controlled by Electromotive IMPULSE® G+ Series 2 Adjustable Frequency Drives. All four cranes communicate with an off-board PLC mounted in a console enclosure, which provides traffic control, interfaces with the conveyor and tank control systems, and communicates with an operator interface.

System Operation

The main operation of the crane system is fully automatic. Parts enter the system via fork truck loading onto an entrance conveyor. The entrance conveyor transfers the parts onto a pre-treat carrier. When the pre-treat carrier is loaded, Dipping Crane #1 picks the carrier and processes it through a series of clean and rinse tanks. Dipping Crane #2 retrieves the carrier from the conditioner tank and proceeds to process it through zinc phosphate, rinse and sealer tanks. Dipping Crane #3 then picks up the carrier from the sealer and processes it through the rinse tanks to the transfer conveyor. The transfer conveyor unloads the parts from the pre-treat carrier and loads them on the next available paint carrier. Dipping Crane #4 then processes the paint carrier from the e-coat tank, through the permeate tanks, and finally to the unload conveyor.

Each crane runs independently of the others. If a fault occurs on one crane, the other cranes continue to operate, unless the other cranes are unaware of the faulted crane's position. The entire automated e-coat process consists of 16 tanks, five conveyor systems and four fully automated cranes that communicate information between the cranes, tanks and conveyors. Eight carriers typically run through the system at a time, with a 445 second (approximately 7.5 minute) cycle time per carrier.

An Electromotive SBP2® Pushbutton Pendant Station is used for manual operation of the cranes during maintenance conditions.

SEC Successfully Meets their Customer's Needs

"SEC is so pleased with the current automated electro-static painting system, they are planning, with the purchase of additional cranes, to increase production from eight to 11 carriers per hour," according to Wayne Flury of TC/A. The automated process applies the coating consistently, safely and efficiently.

Benefits of Automating the Electro-static Painting Process

- Improve production efficiency and material flow
- Increase manufacturing throughput
- Enhance overhead equipment performance and reliability
- Reduce maintenance costs
- Improve painting consistency
- Improve operator safety, and more!

The effect of the Nissan production facility on the Mississippi economy cannot be overstated—creation of over 5,300 direct jobs and 30,000 indirect jobs! The Nissan plant opened in spring of 2003, with SEC ready to roll! SEC's use of an automated electro-static painting process enables them to meet Nissan's demands for priming components and parts in a timely and consistent fashion—and allows them to play an important role in the success of this enormous automotive production undertaking.

For more information on how automation can improve your particular application, please call 1-800-288-8178 and ask for our Engineered Systems and Solutions Group.

New DataLogger microprocessor recording device now available!

The next generation troubleshooting tool is here.

The DataLogger Series 3 is a microprocessor controlled, flash memory drive recording device that allows you to easily access the Run, Alarm and Fault histories of Electromotive Systems' IMPULSE®•G+/VG+ Series 2 and Series 3 drives. The Series 3 DataLogger has been improved to include expanded memory and easy-to-use display screens.

Electromotive DataLogger Series 3

This user-friendly device is now more compact and simply plugs into the keypad pocket of the Series 3 drive, or is connected by cable to the Series 2 drive. All data acquisition is automatic. Data viewing and analysis is available via the new LCD scrolling display, or by downloading and viewing on your PC with DataPulse™ Series 3 software. No docking station is needed for connection to the PC—just plug it into your USB port.

The DataLogger System consists of three (3) components: the DataLogger, the USB cable (for PC communication) and DataPulse™ Series 3 software.

The DataLogger was designed to include even more memory to log the last 1400 Run events, the last 200 Alarm events and the last 200 Fault events. In addition to storing the Alarm and Fault history, a Trace function is provided for viewing drive data that led to the Alarm/Fault condition. It also stores five parameter sets. The parameters can be uploaded, stored and downloaded into drives of the same model and control method.

The DataLogger is powered by the inverter's five VDC internal supply when connected to the drive, or by the USB cable when connected to the PC.

It supports all software versions for Series 3 drives and several versions of the Series 2 drive software.

Contact Magnetek's Electromotive Systems division today at 1-800-288-8178 for more information on DataLogger.

Electromotive IMPULSE®•G+/VG+ Series 2 and Series 3 drives

Coming Soon!

Complete marketing materials for Mondel Heavy Duty Disc Brakes

Magnetek's Mondel Heavy Duty Disk Brakes are designed for high speed and high performance applications. Our advanced design features, combined with fabricated steel construction, make this range of brakes suitable for applications requiring reliable braking with minimal maintenance and downtime.

Applications Include

- Steel Mills
- Ship Loaders
- Port Cranes
- Shipyard Cranes
- Offshore Drilling Rigs
- Large Gantry Cranes
- Swing Span Bridges
- Bascule Bridges
- Verticle Lift Bridges

Standard Features

- External Torque Spring
- Auto-adjust compensates for lining wear automatically
- Main pivot points are fitted with anti-friction composite bushings
- Replaceable, waterproof Hy-Thrust Actuator
- Easily replaceable brake shoes
- Non-asbestos brake linings
- Floor mountings

Optional Features

- Time delay on Set ("S") and release ("H")
- Manual latching hand release
- Limit switches for release proving
- Braketronic Controller
- Nitride Corrosion Protection

Should you have any questions, please contact the Product Manager, Michael Pabich @ 1-262-252-2919.

Changes to the NEC affect overhead material handling products

Magnetek is working with vendors and manufacturers to keep you up-to-date.

Updates have been made to the National Electrical Code (NEC) in 2005 as it relates to Power Control Delivery Systems and Pendant Stations. Two changes affect both Pendant Cable and Conductor Bar.

Pendant Stations:

Article 610 Section II-D states that suspended pushbutton stations "shall be supported in some satisfactory manner that protects the electrical conductors against strain." (National Fire Protection, Inc. p. 70-489) Customers will want to use Electromotive's Strain Relief Pendant Cable with wired pendants, or cable for pendants, unless they are using a separate external strain relief cable. *Note: Wire mesh cord grips that use the cable jacket to provide strain relief do not provide sufficient protection of conductors against strain and should not be used as a primary strain relief method.*

Conductor Bar:

Article 610.61 redefines grounding of overhead traveling cranes. The new code states the following: "The trolley frame and bridge frame shall not be considered as electrically grounded through the bridge and trolley wheels and its respective tracks. A separate bonding conductor shall be provided". (National Fire Protection, Inc. p. 70-494) Magnetek will provide customers with a grounding conductor in all new bridge and runway conductor bar systems effective 2005. Electrobar® FS has always had separate green covered grounding conductors available. Any new Electromotive 8-Bar application will have white covered grounding conductors, and green covered grounding conductors are available for 8-Bar applications.

- NEC 2005 is not a retroactive document so the newly published requirements do not apply to existing installations (pre–2005) unless there are extreme safety concerns or if deemed necessary by the local Authority Having Jurisdiction (AHJ).
- The addition of the grounding conductor on existing conductor bar system extensions is determined by the AHJ or building code requirements during additions to a building or structure.
- On conductor bar system repairs, the addition of the grounding conductor is strongly recommended to adhere to the new NEC Code. The actual requirement, however, is still under the jurisdiction of the local AHJ.

Flat Festoon Cable:

There has been some discussion in the industry that the NEC 2005 code has been interpreted to read standard Flat Festoon Cable requires a green grounding conductor. After reading the code and discussing it with our flat cable vendor and manufacturers, we do not see the green grounding conductor to be a requirement. The code does state that if one of the flat cable conductors is used as a grounding conductor, "The insulation shall be permitted to be covered with an outer finish to provide the desired cover". (National Fire Protection, Inc. p. 70-238). One of the concerns of just adding a green conductor is that the code clearly states if a green conductor is provided it may only be used as a grounding conductor. This could limit the number of conductors available in control wiring and would increase cost, as additional cable runs would need to be added. Given this flat cable code is open to interpretation, Electromotive Systems will continue to work with our vendors and manufactures to keep you up-to-date should there be any changes. If you have any questions please contact Michael Pabich @ 1-262-252-2919 for more information.

Fast Delivery!

Telemotive products now in stock

Complete Radio Systems Available To Ship In Three Days Or Less!

Magnetek is now stocking complete, high quality Telemotive radio systems for fast delivery. We offer the full range of *tele*Pilot™ and *tele*Pendant™ Transmitters, in conjunction with one of our *intele*Smart™ Receiver packages.

Call Magnetek today at 1-800-288-8178 for fast delivery on Telemotive radio control systems and your order will ship in three days or less!

Dial direct for the fastest service

At Magnetek, we're committed to being your "one source" supplier for all your material handling control needs. That's why we've consolidated most of the Material Handling business functions in our Menomonee Falls, Wisconsin facility. In order to answer your phone calls more quickly, we added a new toll free number for technical support and repairs: **1-866-MAG SERV (1-866-624-7378)**. Additionally, below you will find a list of direct dial numbers for customer critical Magnetek personnel. Calling direct will give you faster access to the information you need. Please keep in mind direct dial numbers are subject to change, so for access to the most up-to-date and complete Magnetek contact list at any time, log onto **www.magnetek.com,** click on Material Handling, and then access the Support section. Or log onto the Support section of one of the following websites: **www.electromotive.com**, **www.telemotive.com** and **www.mondelengineering.com.**

Please note: *The phone system at Telemotive's former Glendale Heights, IL facility has now been shut down. Please use the contact list below for all your Telemotive needs.*

Magnetek Material Handling Contact List

Inside Sales/Application Engineers

Controls, Radios, Brakes, Electrification, Motors, & Soft Starters	Sales Application Engineer Supervisor	Wayne Goodspeed	262-252-2946
Controls, Radios, Brakes, Electrification, Motors, & Soft Starters	Sales Application Engineer	James Young	262-252-2920
	Sales Application Engineer	Jon Walters	262-252-2915
Electrification	Inside Sales Representative	Lyle Zettel	262-252-2922
	Inside Sales Representative	Jason Acker	262-252-2996
	Inside Sales Representative	Glen Norton	262-252-2982
PulseStar Radios	Sales Application Engineer	Bob Schmitt	262-252-2925
Telemotive Radios	Sr. Sales Engineer	Jeff Bruce	262-252-2931
Engineered Systems	Engineering Manager	Dan Beilfuss	262-252-2938
Mondel Brakes	Sales Application Engineer (U.S.)	Bob Schmitt	262-252-2925
	Inside Sales Representative (U.S.)	Glen Norton	262-252-2982
	Inside Sales Representative	Jason Acker	262-252-2996
	Inside Sales Representative (Canada)	Wendy Haines	800-792-7253 x32

Sales Management

		Phone	Cell
Controls, Motors, Electrification, Radios, Brakes, Soft Starters, & Traction Drives	Perry Pabich–VP Sales & Marketing	x2912	262-339-9550
PulseStar and Telemotive Radios	Ben Stoller	x2980	630-561-9619 262-389-5765
Soft Starters	Michelle Goeman	x2994	262-853-4696
Mondel Brakes–U.S.	Mike Astemborski	x2902	262-227-9876
Brakes, Controls, Radios, Electrification, Soft Starters–Canada	Mike Birch	800-792-7253 x22	416-277-0666
Engineered Systems	Dan Beilfuss	x2938	262-853-6858

Service Department 1-866-MAG-SERV

Controls, Radios, Electrification & Soft Starters	Director Service & Technical Support	Jim Swenor	262-252-2975
Telemotive Products	Manager Service & Repair	John Downey	262-252-2985
Electromotive Systems, Telemotive, & Soft Starter Products	Administrative Assistant	Debra Jansen	262-252-2976
Electromotive Systems, Telemotive, & Soft Starter Products	Service Supervisor	Todd King	262-252-2965
Electromotive Systems & Soft Starters	Senior Service Technician	Loren Weisensel	262-252-2960
Electromotive Systems & Soft Starters	Senior Service Technician	Steve Suleski	262-252-2972
Telemotive	Senior Service Technician	Tim Baker	262-252-2947
Telemotive	Senior Service Technician	Len Stella	262-252-2949
Telemotive	Senior Service Technician	Ken Loar	262-252-2951
Electromotive Systems & Telemotive Products	Repair Supervisor	Wendy Schulz	262-252-2961
Electromotive Systems & Telemotive Products	Customer Service Specialist I	Lynda Czapinski	262-252-2968
Electromotive Systems & Telemotive Products	Customer Service Specialist II	Cheryl Janzen	262-252-2948
Mondel Brakes	Service Support	Wendy Haines	800-792-7253 x32

Customer Service & Billing Inquiries

Customer Service Supervisor	Keeley Arredondo	262-252-2955
Customer Service Specialist	Tammy LaCourt	262-252-2971
Customer Service Specialist	Char Stawkowski	262-252-2928
Customer Service Specialist	Alisa Kaminski	262-252-2970
Customer Service Specialist	Dawn Wagner	262-252-2987

Register today for in-house training classes

Technical Training Program for IMPULSE®•G+/VG+ Series 3 and IMPULSE®•P³ Series 2 Drives

This comprehensive 3-day training program starts with a review of basic drive theory and the "how to's" of selecting and applying adjustable frequency crane controls for overhead material handling applications. Programming information for the IMPULSE®•P³ Series 2 and the IMPULSE®•G+ Series 3 Drives in both V/F and open loop vector mode is also covered. The second half of this session covers introduction, theory, and programming of our closed loop flux vector crane control, IMPULSE®•VG+ Series 3, and is ideal for anyone involved with the start-up and maintenance of flux vector motor controls. The training session concludes with a discussion of troubleshooting for all adjustable frequency crane controls.

Upcoming Dates

Tuesday-Thursday

June 7–9, 2005	**FULL**
July 12–14, 2005	**FULL**
Aug. 23–25, 2005	**FULL**
Sept. 13–15, 2005	**FULL**
Oct. 11–13, 2005	**FULL**
Nov. 15–17, 2005	
Dec. 13–15, 2005	

Telemotive Radio Products

Our one-day program details all the features and benefits of our Telemotive radio product line. You will learn about the application, use and troubleshooting of the *tele*Pilot™ and *tele*Pendant™ models, and about the various technologies included in these advanced radio remote crane controls.

Upcoming Dates

Friday

June 10, 2005	**FULL**
July 15, 2005	**FULL**
Aug. 26, 2005	**FULL**
Sept. 16, 2005	**FULL**
Oct. 14, 2005	**FULL**
Nov. 18, 2005	
Dec. 16, 2005	

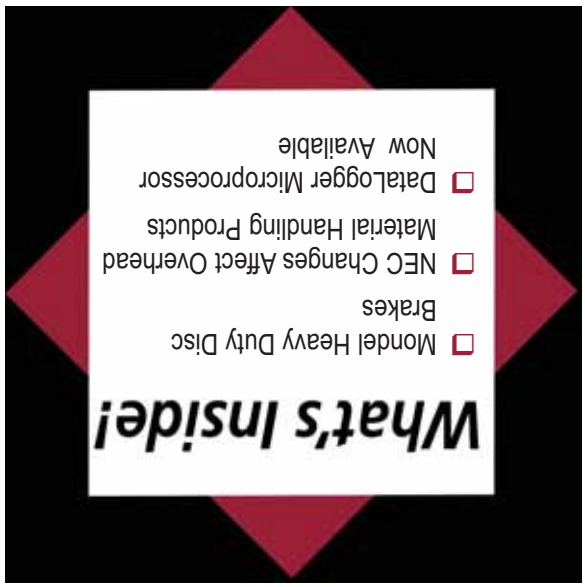
Training

Provide the industry expertise, products and services to enhance the success of our customers.

MAGNETEK UNCOMMON POWER

Evolution is published by Magnetek. Questions and comments can be directed to Editor, Evolution, Magnetek, Post Office Box 13615, Milwaukee, WI 53213-9866 phone (262) 783-3500 www.magnetek.com

Magnetek–Power Control Systems
P.O. Box 13615
Milwaukee, WI 53213



PRSRT STD
U.S. Postage
PAID
Milwaukee, WI
Permit No. 1071