



CFM

CANADIAN FINISHING & COATINGS MANUFACTURING

\$12.00

December 2008

CASF Conference A Success



Braving what turned out to be Southern Ontario's first real snow-storm of the season, organizers were pleased with the attendance to the Canadian Association of Surface Finishing's (CASF) Conference on Nov. 20, 2008 at the White Oaks Conference Resort & Spa in

Niagara-on-the-Lake, ON. Attendees enjoyed a delicious breakfast and lunch with their admission as they gathered to hear the latest trends in the industry through several speakers, as well as view the suppliers' booth displays.

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Ken Thompson, Niagara Piston, discusses the special coating on the plating rack with Glenn Fowler and Rob Bazzo, Peerless Custom Rack, during the CASF Conference in Niagara-on-the-Lake.

ALSO IN THIS ISSUE

- Biocides, Fungicides, Algaecides and keeping your plant clean
- Parts Cleaning
- Process Control
- Year-end reviews and plans for the future from CPCA and TOSOT presidents
- Water Wise with John Seldon: Giving Sludge its Due

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The Color Change PROCESS

BY JOHN OWED - ITW RANSBURG

As the desire for variety and the need to differentiate oneself increases, manufacturers are required to provide a broader range of colors in the products that they offer. This is true for everything from automobiles and bicycles to digital music devices and mobile phones. Current manufacturing trends (JIT, MRD) and the desire to reduce inventory levels has also increased the need for greater flexibility in the manufacturing process. Within the paint shop, this flexibility translates to the ability to change from one color to the next as quickly as possible.

Depending on the industry and the level of automation employed, "quick" is a relative term. When evaluating a customer's requirements,

this is the first item that needs to be defined. If you ask the paint line supervisor, in an automotive assembly plant or tier 1 facility, they will define quick as 7 - 10 seconds. This is because they need to have the ability to change colors between each job as to not risk creating voids or gaps in the line if the change over took longer. In some industrial accounts 30 - 60 seconds is considered "quick" and is quite acceptable. Color change cycles completed in these time frames are done automatically through interface with automation. In other industries, it may be quite acceptable to change colors in 5 or 10 minutes. These times are more typically related to manual application

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IN THE NEWS

Company News

Dow Streamlines, Cuts 5000 Jobs

The Dow Chemical Company, on December 8, announced a series of aggressive actions to transform itself into a lean Corporate Center. Dow will eliminate approximately 5,000 full-time jobs, close 20 facilities in high-cost locations and divest several non-strategic businesses. The job cuts represent a reduction of roughly 11 per cent of Dow's global workforce. Once fully implemented, these actions are expected to result in \$700 million in annual operating cost savings by 2010 and are additional to the previously announced cost synergies of \$800 million in the same timeframe for the anticipated Rohm and Haas acquisition.

In addition, reflecting poor current market conditions, Dow will temporarily idle approximately 180 plants and significantly reduce its contractor workforce worldwide by approximately 6,000.

"Transformation, by definition, requires a commitment to working differently. We are moving from a highly centralized and standardized approach, to operating three very different business models with a lean and efficient Corporate Center. Today's restructuring is designed to support the Dow of Tomorrow," said Dow Chairman and CEO Andrew N. Liveris. "However, we are accelerating the implementation of these measures as the current world economy has deteriorated

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TIME TO BUY A CAR

As I write this exactly 20 days before Christmas, I try not to be as depressed or recessed as the rest of the country and the US seem to be. In fact perhaps I'll just run out and buy a car. (A white car, because it is the most popular colour according to the 2008 DuPont Automotive Color Popularity Report.) Because according to Aron Gampel, Vice president and Deputy Chief Economist of Scotiabank, the best time to buy a car is within the next six months. Gampel who spoke to the paint and coatings industry earlier this year at the Ontario Paint Association's (OPA) Annual General Meeting, most recently spoke at the Canadian Association of Surface Finishing (CASF) conference in November.

Gampel explained that economically it is going to be "very rough ride over the next year or two" and "this is a period of unprecedented change." He talked about the dismal picture in the US with the stock market and the housing market and how the whole world economy is interconnected, even Swiss banks, which have always been secure, are having problems. But the picture in Canada is slightly different.

"Canada is more conservative... US is the gunslinger," says Gampel. "I can't sugar coat it," he says. "The US banking system has collapsed and is driving the system right now."

Gampel says the economy is driven by credit and without it everything falls apart.

Both the automotive and the housing slump has had a direct affect on our paint and coatings industry. Chemical plants are also facing closures. Canada's largest auto parts company, Magna International, is shutting down two Toronto-area plants, with 850 jobs on the chopping block. Earlier this year GM and Ford announced closures. "The next 6-9 months is best time to buy a car," says Gampel. "There is going to be massive discounts."

The US isn't selling cars and the big three plead to Washington for relief from their financial troubles and get slapped on the wrist. Meanwhile, in a Canadian Press article published in November, Canada's industry minister, Tony Clement, says that the Auto executives he met with were "optimistic about having a domestic continent-wide auto sector that can build cars and sell cars that people want to buy." In a recent Financial Post article, General Motors of Canada, the country's largest automaker by sales, sold 23.5 per cent fewer cars in November than the previous year. Meanwhile, Toyota, in the number two sales spot sold 1.9 per cent more than the same month in 2007.

Canadian auto plants meanwhile are shipping overseas. Ford is looking at the market niche in Brazil for example. Gampel says that in the next few



Brigitte Roth, CASF Conference organizer and Sandy Anderson, CFCM Editor.

years we will see Canada's money going into building infrastructure, roads and transmission lines.

Meanwhile, it is the developing countries that have all the money, such as China, Russia, India and Brazil. These countries are growing the fastest, generating domestic demand, as they want better homes, technology and cars.

"We condense and they expand, we have to reverse some of our trade flows in order to attack that," says Gampel. He visualizes a wave of foreign investment in Canada and more fiscal stimulus.

Gampel says that the assumption that Canada will meet the same fate as the US is not true. Our dollar will stabilize. He is confident that system will right itself.

Gampel says that while everyone is using the word recession, he likes to use the word retrenchment (reducing spending in response to economic difficulty). Some of us need to retrench in our personal lives.

We can only hope that 2009 will eventually give us better economic news.

Some economists and large suppliers in the paint and coatings and finishing markets are actually optimistic. We can only try.

Meanwhile, Canadian Finishing and Coatings Manufacturing magazine wishes you the best of the holiday season and the greatest New Year.

Sandra Anderson, Editor
sandra.anderson@cfcf.ca

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EDITOR

Sandra Anderson
519-442-4071
Fax 519-442-1359
sandra.anderson@cfcf.ca

PUBLISHER

Pete Wilkinson
416-255-1808
Fax 416-519-1313
pete.wilkinson@cfcf.ca

VICE PRESIDENT

Brian Jones
905-405-1500 #223
brian.jones@cfcf.ca

COPY EDITOR/PROOFREADER

E. J. Burns Anderson

GRAPHIC DESIGN

Allan S. Bates
416-485-9229
Green Apple Prepress
allan.s.bates@sympatico.ca

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continued from front cover

sharply, and we must adjust ourselves to the severity of this downturn."

The new Dow will comprise three different business operating models: Joint Ventures/Asset Light; Performance Products; and Health & Agriculture, Advanced Materials and other Market Facing Businesses. Specific details on these business structures will be outlined early 2009.

Rohm and Haas Co. and Dow Chemical vote to merge

With the potential result of creating a company with annual revenue of approximately \$13 billion, Stockholders for Rohm and Haas have voted in favor of the proposed merger with The Dow Chemical Co. The terms of the agreement give stockholders \$78 in cash for each share of Rohm and Haas.

The merger is expected to close early 2009, pending regulatory approvals. Rohm and Haas Co. will retain its name and Philadelphia headquarters. Dow will contribute several specialty chemicals business segments to the Rohm and Haas portfolio.

Ashland Completes Acquisition of Hercules

Ashland Inc. has completed its acquisition of Hercules Inc. and now incorporates paper and water technologies, specialty resins and specialty additives and functional ingredients.

Ashland's new structure, incorporating the former Hercules businesses, is composed of: Ashland Hercules Water Technologies, a \$2 billion specialty paper and water chemicals business formed from the related operations of Hercules and Ashland; Ashland Performance Materials, the specialty resins business; Ashland Aqualon Functional Ingredients, a business of specialty additives and functional ingredients derived from renewable resources; Ashland Consumer Markets, which comprises the Valvoline lubricants, automotive appearance and service business; and Ashland Distribution, a North American distributor of chemicals, plastics, composite materials and environmental services.

Ashland will remain at its headquarters in Covington, KY. The Hercules administrative facility in Wilmington, DE, now becomes the operations center for the Ashland Aqualon Functional Ingredients and the Ashland Hercules Water Technologies commercial units. The operations center for its Ashland Performance Materials commercial unit is now in Barendrecht, the Netherlands, where it can serve growing demands in Eastern Europe and serve as a central point for operations in the Americas and Asia Pacific. Ashland Consumer Markets (Valvoline) will maintain its operations base in Lexington, KY, and Ashland Distribution will continue to be based in Dublin, OH.

Wacker Breaks Ground on New American Facility

Wacker Chemie AG, Munich, Germany, and its North American headquarters office, Wacker Chemical Corp., Adrian, MI, are building a new 67,000 sq ft Wacker Polymers America headquarters facility in the Lehigh Valley, PA, area of Allentown. All of the company's North America-based Wacker Polymers operations will be together under one roof. The new facility and that



Palmer Instruments, Inc. announces major contract for Thermometers used on the F-16 Fighting Falcon

Palmer Instruments, Inc. of Asheville, NC, has received a major contract for a special thermometer for the F-16 Fighting Falcon Multi-Role Fighter Aircraft, built by Lockheed Martin of the USA. This contract will result in several new jobs being created at the Palmer Wahl facility located in the Town of Woodfin, NC. The F-16 is the world's most prolific fighter in the air force today. Palmer has been a major supplier to the military since World War I, supplying temperature measuring products for submarines, ships, airplanes, helicopters, jets and satellites. The current contract is a result of retooling the F-16, with modified product specifications more suitable for the jet's need for increased temperature demands.

remaining in the Allentown area follows the acquisition, announced earlier this year, by Wacker Chemie AG of Air Products Polymers (APP) and Wacker Polymer Systems (WPS), its two former joint ventures with Air Products and Chemicals Inc.

The new single-story facility, being built in the Lehigh Valley Allentown area on a site in Upper Macungie Township, will house research and development and applications testing laboratories, as well as sales and marketing and business support offices. It is expected to be completed in the summer of 2009.

DuPont Opens New Facility to Serve Titanium Metals Industry

DuPont, Wilmington, DE, has opened a new titanium tetrachloride purification unit at the New Johnsonville, TN, titanium dioxide site. Most of the production of the high-purity chemical will be used in the growing titanium metal manufacturing industry. Titanium metal increasingly is being used in everything from airplanes to sporting goods and chemical processing equipment. Titanium tetrachloride is an intermediate chemical produced during the early steps of the chloride process for manufacturing titanium dioxide. In addition to its use in titanium metal manufacturing, it is essential to the production of certain plastics. It also has specialized applications in pearlescent pigments used in products ranging from cars and cosmetics to bicycle helmets.

Lanxess Distribution expansion in Canada and U.S.

L. V. Lomas is pleased to announce that as of January 1, 2009, they will be the exclusive distributor for LANXESS Corporation's inorganic pigments (Bayferrox), Natural Iron Oxides and chromium oxide green for the following applications: Plastics, rubber, coatings, inks, adhesives and composites. It will be distributed to customers in Ontario, Quebec and the Maritimes.

In western Canada, J.F. Shelton Co. will serve customers in Canadian provinces of Alberta, British Columbia, Manitoba and Saskatchewan.

Besides Canadian distribution, LANXESS Corp.'s Inorganic Pigments Group (IPG) continues to

expand its distributor network, with CNX Distribution to serve customers in Arkansas, Oklahoma and Texas. Dowd and Guild, Inc. will serve customers in Arizona, California, Colorado, Hawaii, Nevada, New Mexico and Utah. J.F. Shelton

Co. will serve customers in Idaho, Montana, Oregon, Washington and Wyoming. McCullough & Associates will serve customers in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee. Palmer Holland will serve customers in Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia and Wisconsin. All these distributors will begin selling the pigments to paint, coatings, plastics and specialty application accounts on Jan. 1, 2009. In addition to selling BAYFERROX inorganic pigments, all companies will distribute IPG's Chrome Oxide Green and natural iron oxide pigments. All distributors will sell the inorganic pigments to the plastic, rubber, coatings, ink, adhesive, composite and pet food industries.

Brookfield Engineering Acquires RheoTec

Brookfield Engineering, Middleboro, MA, has acquired RheoTec Messtechnik GmbH of Dresden, Germany. Brookfield and RheoTec have been partners for the past 10 years in the sale of the R/S family of Rheometers and this recent acquisition is a natural conclusion to their successful partnership. In addition to R/S Rheometers, RheoTec manufactures complementary instruments that will soon be made available to Brookfield customers

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 250 The East Mall Suite 1103
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 Phone: 1-416-255-1808 Fax: 1-416-519-1313
 E-mail: pete.wilkinson@cfc.ca
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around the globe. These include Rheotec's Hoeffler Falling Ball Viscometer and a variety of in-line process viscometers.

BASF Reduces Production Worldwide

Facing a massive decline in demand for its products, BASF is temporarily shutting down 80 plants worldwide and is reducing production at approximately 100 plants. The company previously announced reduction for polystyrene and caprolactam.

BASF reports that customer demand in key markets has significantly declined, since October. Customers in the automotive industry have canceled orders at short notice.

Sales volumes are being negatively impacted by customers' increased reduction of inventory and lack of credit. The production cuts will affect approximately 20,000 employees worldwide. Flexible working time arrangements will be used wherever possible. The adjustments are primarily being carried out in units that supply the automotive, construction and textile industries. This includes ammonia, styrene and polyamide, which manufacture precursors for engineering plastics, coatings and fibers. The shutdowns will be coordinated throughout BASF's global production Verbund and will involve all six Verbund sites in Europe, Asia and North America, as well as other sites. Reduced capacities are expected to last until January 2009 for individual plants.

BASF will continue to follow market develop-

ments very closely and will adjust production planning accordingly.

Altana Acquires Wax Additives Business of Clariant for EUR 17.5 Million

The specialty chemicals Group Altana has signed a contract to acquire the Dutch manufacturer of wax additives, Dick Peters B.V., Denekamp, the Netherlands, a subsidiary of the Swiss specialty chemicals company Clariant. Through its BYK Additives & Instruments' division, Altana will acquire the major part of the wax additives business; the remaining part of the business stays with Clariant. At the same time, ALTANA takes over the production site in Denekamp as well as its staff of about 35 employees. Within the ALTANA Group, Dick Peters B.V. will be integrated into BYK Cera B.V., which is also located in the Netherlands. The purchase price amounts to about EUR 17.5 million.

Doing Well Despite the R Word?

Despite the bad R word being tossed around (recession) companies such as PPG and Rhom and Haas are reporting higher than expected earnings.

Rohm and Haas Co. has reported higher than expected third-quarter 2008 sales of \$2,471 million, a 12 per cent increase over the same period in 2007. The company says the increase was driven by their timely pricing actions, favorable currencies, acquisitions and growth in rapidly developing economies. The increase was partially offset by decreased demand in North America and Western

Europe. The company reported third-quarter 2008 earnings from continuing operations of \$129 million, or \$0.66 per share, compared to \$129 million, or \$0.61 per share, for the third quarter of 2007. This quarter's results include special items totaling \$0.24 per share: \$0.09 per share in costs associated with the proposed merger with The Dow Chemical Co. announced in July; \$0.07 per share in costs resulting from the impact of hurricanes on the company's operations in the quarter; and \$0.08 per share in asset impairments and costs resulting from restructuring actions announced in June. Adjusted earnings per share, excluding the special items noted above, were \$0.90, up 3 per cent compared to \$0.87 in the prior-year period.

PPG Industries has reported record sales for the third quarter of \$4.2 billion, surpassing the 2007 third-quarter results by 37 per cent. Third-quarter reported net income was \$117 million, or 70 cents per share. Adjusted net income excluding unusual items was \$227 million, or \$1.37 per share.

The company attributes its financial performance this quarter to successful execution of its transformation strategy and the continued strength of its commodity chemicals business. It has expanded its geographic reach, entering new end markets, and strengthening its ability to generate cash. The company's adjusted earnings per share were comparable with last year despite the negative impacts from two U.S. Gulf Coast hurricanes and the significantly weaker automotive original equipment manufacturer (OEM) production. During the quarter, the company finalized the sale of an approximate 60-percent interest in its automotive glass and services business, and it announced business restructuring that will result in expected savings at an annual run rate of approximately \$100 million by the end of 2009. Reported third quarter 2008 net income includes after-tax charges of \$110 million, or 67 cents per share, for business restructuring and \$3 million, or 2 cents per share, to reflect the net increase in the current value of the company's obligation under its proposed asbestos settlement agreement reported in May 2002, which is pending court proceedings. Net income also includes an after-tax gain of \$3 million, or 2 cents per share, on the divestiture of the automotive glass and services business.

Performance Coatings segment sales in the third quarter 2008 increased \$266 million, or 28 percent, versus the prior year's quarter. Sales grew as a result of acquisitions, most notably the SigmaKalon protective and marine coatings business, higher pricing in all businesses and currency gains. Volumes were flat, as declines in the U.S. architectural coatings business were offset by growth in all other business units. Segment earnings improved by \$8 million, or 6 percent, mostly due to the positive performance of acquisitions.

Industrial Coatings segment sales for the quarter increased \$121 million, or 13 percent, due primarily to the acquisition of SigmaKalon's industrial coatings business, stronger foreign currencies and improved selling prices. Volumes were lower, particularly sales in the automotive OEM industry. Segment earnings decreased by \$41 million, or 46 percent, due to the negative effects of lower volumes and inflation.

The Architectural Coatings EMEA (Europe, Middle East and Africa) segment represents the largest business from the SigmaKalon acquisition. Segment sales for the quarter were \$632 million,

up a double-digit percentage over SigmaKalon's corresponding sales in 2007. Segment earnings were \$61 million and included a combined \$30 million of ongoing quarterly depreciation expense and amortization related to acquired intangible assets.

Meanwhile, *Celanese Corporation*, a leading global chemical company, announced that its full year 2008 results are expected to be below its previous outlook. The company says that due to continued weakening of the global economy, significant inventory de-stocking throughout its end-consumers' supply chains, and unplanned situations at its AT Plastics facility impacting its fourth quarter results, as well as increased uncertainty in global demand, it has chosen not to provide an updated full year outlook for 2008. The company's previous guidance issued on October 21, 2008, should no longer be relied upon. Dramatically lower consumer and industrial demand, driven by global recessionary trends, has caused an acceleration of inventory de-stocking throughout the company's end-consumer supply chains. As a result, demand for many of the company's products has declined significantly during the fourth quarter of 2008, particularly in Asia.

AkzoNobel buys Enviroline

AkzoNobel has acquired Enviroline, supplier of high-performance, corrosion-resistant linings for the oil and gas industries, from Florida-based Industrial Environmental Coatings Corp.

As well as supplying leading brands for specialist tank linings for chemical storage vessels, Enviroline also provides corrosion control for steel and concrete structures. One of its most recent product launches was a thin-film, VOC-compliant, fast-cure epoxy coating for the oil and gas and chemical processing industries.

Sale of Pulcra Chemicals Now Formally Completed

Global specialty chemicals supplier Cognis and Fashion Chemicals GmbH & Co. KG have announced that the sale of Pulcra Chemicals has now been formally completed for EUR 23.1 million. Fashion Chemicals additionally took over EUR 15 million of financial liabilities (including debts and pensions).

Pulcra Chemicals, which supplies process chemicals to the textile and leather industries, was previously the Process Chemicals strategic business unit (SBU) of Cognis. The SBU was carved out into separate legal entities on July 1, 2007, and renamed Pulcra Chemicals.

Bayer MaterialScience enters joint development agreement with Ultimate Holographic Reproductions Inc.

Bayer MaterialScience AG, Bayer MaterialScience LLC and Canadian-based Ultimate Holographic Reproductions Inc. (UHR) have entered into a joint development agreement to advance the broad commercialization of high-quality, true-color holographic images. Bayer MaterialScience is supplying color-sensitive photopolymers that are ideal for the mass replication of the true-color master holograms produced by Ultimate Holographic Reproductions. Full-color holograms have potential uses in applications, such as in the advertising industry, the packaging and entertainment sectors, product design and the manufacture of a whole range of high-quality print products.

Bayer MaterialScience plans to launch the new photopolymer film commercially in 2010.

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People



Leaving CASF

The Canadian Association for Surface Finishing (CASF) will miss the enthusiastic hard work of Brigitte Roth as she leaves the association and the surface finishing industry to take on the position of Quality Assurance Coordinator Waterworks Environmental Services for the City of Guelph. Roth says she will help in an advisory capacity to ease the transition at the association. Christine Matys-Ballinger will be taking over the bulk of the administration duties within CASF.



New at Tennant

Sandy Gentile has joined the Charles Tennant & Co. sales staff in the capacity of General Technical Sales Rep., serving a variety of PC

and I&I/Coatings accounts in Central Region, Southwestern Ontario and the Niagara Peninsula. Gentile will serve existing accounts in the area, as well as develop new business for the Sales group. She comes to Tennant highly recommended, with 12 years past experience in Distribution Sales for JLM Chemicals Canada.



Motoman VP

Motoman Inc. is pleased to announce that John P. Donlon has joined Motoman as Vice-President, U.S. Sales. For more than 28 years, Donlon's career has centered around executive-level sales and marketing positions for major multinational companies involved in process, automation and control technologies. Most recently, Donlon was Vice-President, Sales and Marketing for Union Switch & Signal (Pittsburgh, PA), a division of Ansaldo STS. He earned his Bachelor of Science (BS) degree in Chemical Engineering from Virginia Polytechnic Institute

and State University in 1979.

Changes at Eliokem

Eliokem International, a leading global specialty chemical provider, has named Philippe Carabin Chief Executive Officer. In his new role, Carabin replaces Jacques Collonge, who has been CEO of Eliokem since the creation of the company in December 2001.



Jacque Collonge will retire at the beginning of 2009 after 35 years of service with the Company.

"Under the leadership of Jacques Collonge, Eliokem increased its global presence and reinforced its leadership position through innovation and operational performance. There are many on-going projects at our locations worldwide concerning many of our business lines; these will be continued, even if possible accelerated," said Philippe Carabin, the new CEO.

Carabin joined Goodyear's Le Havre plant in

1971. In 1991 he was named Administration and Accounting Manager of Goodyear Specialty Chemicals; and in December 2001 he was appointed Chief Financial Officer of Eliokem. Since 2005, in addition to his role as CFO, he has been responsible for IT, General Administration, Supply Chain and the purchase of non-strategic raw materials.



The company also announces the appointment of John Malloy to Director, Eliokem, Inc. Malloy was previously the Director of Finance &

Administration for Eliokem, Inc. and will retain those duties along with the new Director appointment, effective immediately.

"John's dedication and commitment has stood out in the last 7 years," states Philippe

Carabin, Global CFO and member of Eliokem's Global Executive Team. "We know that he will do an outstanding job in his new role as Director of Eliokem, Inc. and wish him nothing but the best," states Carabin. Eliokem is the former Specialty Chemical Division of Goodyear Tire & Rubber Co. that spun off from Goodyear in 2001.

Pricing Updates

Dupont on all Performance Coatings

In November, DuPont Performance Coatings increased prices from 12 to 25 per cent, for all of its products for DuPont Original Equipment (OEM) finishes, DuPont Automotive Refinish Systems, including DuPont Industrial and Coatings Solutions and DuPont Advanced Coatings Systems. The company says the increases are in response to increasing costs for energy and feedstocks.

World Minerals

World Minerals Inc. will raise prices 6 to 12 per cent globally on all products effective Jan. 1, 2009. The price increases will affect all diatomite, perlite and silicate products, as contracts allow. The current energy surcharge will remain in effect.

Clarification

In the September issue of CFCM in the "In the News" section the magazine mentions that "DuPont Coating Solutions will increase prices 10 per cent" The article should have read that prices will "increase up to 10 percent."

Association News

Dollars to Sense workshop by Natural Resources Canada

Dollars to Sense energy management workshops, offered by Natural Resources Canada, will explore the latest in energy management techniques while networking and sharing ideas with business, utility and government representatives.

Energy Efficiency Financing (Private Sector), Tuesday, January 20, 2009, Holiday Inn Toronto Airport East, 600 Dixon Rd., Toronto, ON, M9W 1J1, tel: 416-240-7511. Energy Efficiency Financing is a full-day workshop that addresses the challenges engineers and energy managers face in securing funding for their energy efficiency projects. Learn about the financial decision-making process that impacts energy efficiency projects, the ways energy efficiency projects create financial value, developing and presenting a winning business case for your project, the basics of third-party financing mechanisms such as energy performance con-






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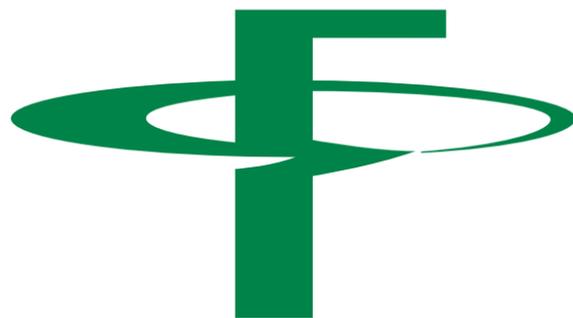
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IN THE NEWS

tracting, how to analyze your energy efficiency projects from an internal and third party financing perspective using take-home software. Pierre Chantraine and George Holland of Energy Efficiency Facilitators Canada will lead this workshop. Registration Fee, \$340 per workshop, (additional participants from the same organization pay only \$250). Visit the Dollars to \$ense Web site or contact Johanne Renaud at 613-996-6585 or jrenaud@nrcan.gc.ca for more information.

Paint Industry Challenge

The 10th Annual Strike Out Arthritis Paint Industry Challenge Bowling Tournament will be held Saturday, February 7, 2009, at the Brunswick Zone in Mississauga, ON. The 10 pin bowling tournament is supported by Ontario paint manufacturers and suppliers and over the years has raised more than \$265,000 for arthritis research, education and community support services.

To enter a team in the tournament, a minimum donation of \$300 per four person team is required. Individual or team entries can be registered by calling Lorna Catrambone at The Arthritis Society at 905-455-6273 x221 or email: lcatrambone@on.arthritis.ca. Catrambone also manages the sponsorships available at the event.

New this year, participants will have the chance to register teams online for the event. The online system enables bowlers to collect pledges, design a team page, email contacts requesting pledges, and monitor fundraising. The event also features a Silent Auction and a special Try For-Prize Lane. Paint Industry committee members

this year are: Mary Bray, Brenntag Canada; Lisa Martella, Univar Canada; Chris McDougall, Univar Canada; Pasky Oliveria, Serif Coatings; Larry Bonikowsky, Coatings Magazine; Jason Young, Dempsey Corp; and Lorna Catrambone, The Arthritis Society.

TOSCOT Education Courses

A new season of courses toward attaining the Diploma in Coatings Technology, hosted by the Toronto Society of Coatings Technology (TOSCOT) begins Thursday, January 8, 2009. The first semester series of lectures covers the topic "Coatings Raw Materials". The courses may be of interest to employers in paint manufacturing, and/or those engaged in raw materials distribution to the coatings and related industries, that wish to train their new employees in the basics of coatings technology. Also, those already working in the paint and coatings field wishing to upgrade their skills and knowledge of coating matters by earning the Diploma, may also find these courses particularly rewarding. If interested contact Jason Young, Education Chairman, TOSCOT, 416-461-0844, www.toscot.org.

ASSE Announces New Hazardous Energy Standard

The American Society of Safety Engineers (ASSE) recently announced that the American National Standards Institute (ANSI) approved the reaffirmation of the American National Standard ANSI Z244.1-2003 (R2008) "Control of Hazardous Energy – Lockout/Tagout and Alternative Methods," which

aims to protect workers from hazardous energy associated with machines, equipment or processes that could cause injury.

Approved in November, the standard establishes requirements and performance objectives for procedures, techniques, designs and methods that protect workers where injury can occur due to unexpected releases of hazardous energy. An unexpected release of hazardous energy includes any unintended motion, start-up or release of stored energy, deliberate or otherwise, from the perspective of the person at risk.

According to the standard, lockout/tagout is the main method of hazardous energy control. However, when tasks performed on the job are routine, repetitive and integral to the production process, or traditional lockout/tagout prohibits the completion of those tasks, the standard indicates that alternative methods of control that provide effective personal protection and are based on risk assessment specified in the standard shall be used. Routine, repetitive and integral production processes refer to tasks that are: short in duration; relatively minor in nature; occur frequently during the shift day or week; are usually performed by operators, set-up, service or maintenance personnel; and do not involve extensive disassembly.

"A great deal of technical development and capabilities have evolved since the 1982 edition of the standard," said Jeff Fryman, Z244 Committee Vice Chairman. "These new technologies make the control of hazardous energy both more complex and easier to achieve. It is more complex because the traditional 'zero energy state' lockout situation

may not be achievable, or desirable, and it is easier because the technology offers more solutions to control hazardous energy release through new devices and circuit designs. In my opinion, the greatest offering in the standard is the information on the use of 'alternative methods' to control hazardous energy. Based on the results of risk assessment, workers are afforded more protection and flexibility in performing necessary tasks on machines, equipment and processes."

International Surface Finishing Academy Announces 2009 Powder Coating Courses

The International Surface Finishing Academy (SFA) recently announced dates and locations of its Powder Coating Courses to be held in 2009. The courses, instructed by the powder coating experts of TIGER Drylac USA, cover the fundamentals of powder coating from both commercial and industrial perspectives.

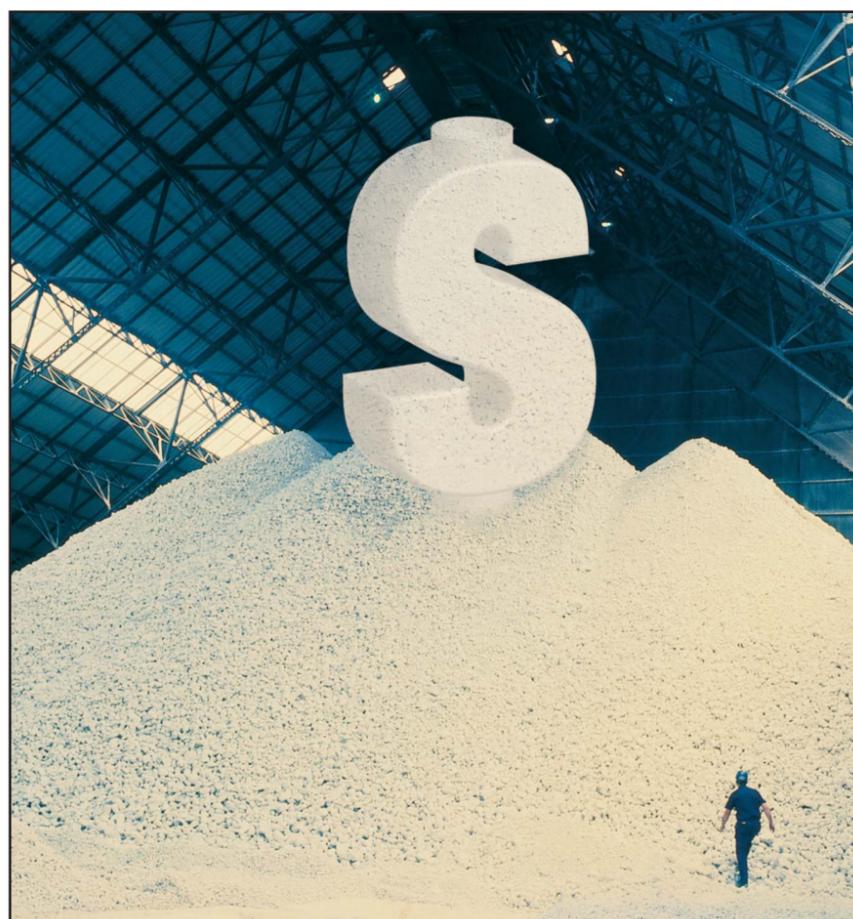
Over a period of two days, students will be instructed in a wide variety of relevant topics, including pretreatment, shop and equipment maintenance, equipment selection, oven and cure issues, powder selection, troubleshooting, and tips and tricks for the custom coater. Participants will be fully instructed in the formulation and manufacture of powder coating.

Locations and dates for the 2009 courses are as follows:

Dallas, TX, January 27-28

Philadelphia, PA, March 4-5

San Jose, CA, April 7-8



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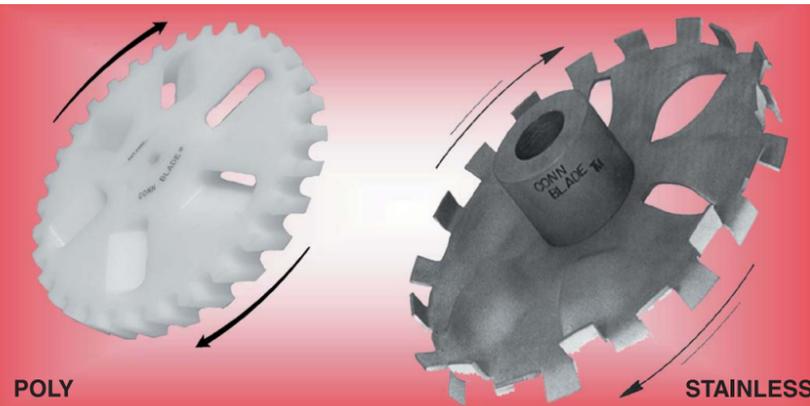
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An emerging chemical world order, heightened environmental and health concerns, new regulatory initiatives, new points of collaboration and cooperation, new opportunities for industry leadership—the past year has posed remarkable challenges for Canada's paint and coatings industry.



New chemical world order

Canadians link environmental sustainability and quality-of-life, and they demand strong public policy frameworks to protect it.

Reflecting this, in December 2006 the federal government announced a new Chemical Management Plan (CMP).

In response, this past year, the Canadian Paint and Coatings Association (CPCA) created its Paint and Coatings CMP Working Group. The Working Group exchanges information about the CMP, and about legacy substances and what they mean for our industry.

The CPCA has also worked with federal regulators to develop volatile organic compound (VOC) regulations for paints and coatings. Sound science

A Year in Review in the Canadian Paint Industry

BY JIM QUICK

has helped the CPCA influence emerging rules in areas such as VOC limits, labelling requirements, product exemptions and production requirements.

This past year, we have also engaged government on developing policy areas such as nanomaterials and the Globalized Harmonized System of Classification and Labelling of Chemicals (GHS). And we have taken first steps on a road that leads to the creation of a Paint and Coatings Centre of Excellence.

New opportunities for industry leadership

Product stewardship is a top priority for Canada's provincial governments, and in this area the paint industry is an acknowledged leader.

Thanks to our proactive, cooperative approach and the work of stewardship partners Éco-peinture and the Product Care Association, we now have stewardship programs in place in British Columbia, Québec, Saskatchewan and Nova Scotia, and in development in Manitoba, New Brunswick and Alberta.

In the past year, Ontario has approved its

Municipal Hazardous or Special Waste (MHSW) program. We have been asked to chair the MHSW program's planning committee, which is responsible for plan development and critical program decisions and approvals.

Work with our provincial counterparts has yielded new mandates for the Ontario Paint Association (OPA) and l'Association québécoise de l'industrie de la peinture (AQIP). Discussions with Paint and Coatings Manitoba have helped advance our understanding.

New services for an industry navigating in an increasingly complex landscape

To help our Members gain a surer footing in a rapidly changing world, we have enhanced our member communications.

Our government relations strategy has been redefined, to move past traditional issue management and lobbying, and engaging in partnering, coalition building, sector branding and government awareness programs.

Through our committees, we have developed new predictive sales models and reviewed the scope of our survey program. We have also taken steps to enrich the roles played by our supplier members.

A Stronger Industry

In the past year, the CPCA's ranks have increased by 16 new or returning members. We are increasingly recognized at the national voice of the paint and coatings sector. We have strengthened the foundations that support the success of our industry in Canada.

Jim Quick is the president of the Canadian Paint and Coatings Association based in Ottawa.

- Louisville, KY, June 17-18
- Jupiter, FL, July 14-15
- Charleston, SC, September 14-15
- St. Paul, MN, October 20-21
- Las Vegas, NV, November 17-18

Tuition for the courses includes registration for the two-day workshop, course binder and study materials, lunch each day, admission to a private networking reception with drinks and hors d'oeuvres, and a certificate of completion for each student. Hotel rooms are not included, but a discounted rate is available for those who register in advance. Call the hotel directly for these rates and make sure you let them know you are with the "Powder Coating Academy." Scholarships are available for those in need.

www.surfacefinishingacademy.com

Parts2clean 2008 Satisfied Exhibitors and Visitors

Visitors totalling 4482, 17.5 per cent more than last year, from 37 countries gathered in Stuttgart, Germany for the 6th Parts2clean. The show presented the world's most comprehensive offerings for cleaning within the production process. With 1591 visitors, the parts2clean expert forum was once again a crowd-puller. The next leading international trade fair for cleaning within the production process will again take place in Stuttgart from the 20th through the 22nd of October, 2009. Bookings and reservations for booth floor space which have already been received indicate that further growth can be expected. The new COROSAVE international trade fair for corrosion protection, preservation and packaging, will be held concurrent to parts2clean 2009.

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CALENDAR OF INDUSTRY EVENTS 2009

January 8: A new season of courses toward attaining the diploma in coatings technology begins with the first semester series of lectures covering the topic "Coatings Raw Materials". Contact Jason Young, Education Chairman, TOSCO, 4164610844, www.toscot.org.

January 20: Energy Efficiency Financing (Private Sector), Holiday Inn Toronto Airport East, 600 Dixon Rd., Toronto, ON M9W 1J1, tel: 416-240-7511. Visit the Dollars to Sense Web site or contact Johanne Renaud at 613-996-6585 or jrenaud@nrcan.gc.ca for more information.

February 7: The 10th Annual Strike Out Arthritis Paint Industry Challenge Bowling Tournament, Brunswick Zone in Mississauga, ON. Enter this 10-pin bowling tournament supported by Ontario paint manufacturers and suppliers for a minimum donation of \$300 per four person team is required. Contact Lorna Catrambone at The Arthritis Society at (905) 4556273 x221 or email: LCatrambone@on.arthritis.ca.

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TOSCOT President's Message: **Changes Ahead**

Possible Merger with CPCA discussed with Educational Emphasis

BY DAVE SAUCIER



When I wrote the message for the September TOSCOT newsletter as the incoming president, I indicated that the new season would bring a fresh and new perspective on the direction of our association. I pledged to serve the membership by laying the foundation for the long-term sustainability of TOSCOT. I also indicated that it was time to engage our companion associations to look toward joining forces.

Since then we have seen significant changes in the economy lead by a CDN\$ that went from 1.07 to 1.24, the price of crude from approaching US\$150/br to its current US\$52/br. The TSX has lost almost half its value and all of our collective retirement savings, once again, have lost on average about 25 per cent of their value. The financial community has gone through a meltdown, and all industry is going into era-1982 mode.

Historic Meeting

Amidst all this bad news an informal, but nonetheless historic meeting, was held recently with Jim Quick, President of the CPCA; Greg Corning, TOSCOT Treasurer; Rod Paterson who was an observer for OCCA and myself. The topic was sustainability of TOSCOT and the issues and mechanics surrounding merging TOSCOT to become an "Education Committee" of the CPCA.

The dialogue has begun and I will be asking the TOSCOT board of directors for their approval to

advance discussions to merge our association with the CPCA if their board of directors agrees. The reason is simple and relates to our core business – education. Since we have purchased the copyrights to the Diploma in Coating Technologies we have a responsibility to all those who have come and gone and are yet to enter our industry. Our responsibility can not be fulfilled at the local regional level where we restrict this precious gift we have. Although we have adequate funds, marketing an education program is not our forte, delivering it is. The CPCA has the expertise to market our education program on our behalf.

Since the FSCT has merged with the NPCA and TOSCOT has no voting rights on how the FSCT operates, we are no longer bound to fulfill a regional role by representing FSCT member interests. In fact it is a waste of energy and resources to continue to try and push a boulder uphill with respect to sustaining our association in its current format.

What are we giving up by merging and what are we gaining? Many may or may not agree, but what we are giving up is the futile attempt to continue to deliver additional services to a declining membership in a diminishing market. There has been a paradigm shift over the last 20 years where the current board of TOSCOT would not and could not have been elected as each director is from the supply chain and not from a paint company or raw material manufacturer. All the current directors and most of the committee chairs are from the chemical distribution side of the supply chain. We all believe, rather strongly, that the education program needs to grow and can not do so within our current bor-

ders. What about the money we have amassed? It was donated by the local industry to sustain and grow the education program, not for any other reason. Have we used it yet to sustain and grow the education program – yes, a very tiny percentage (3.8 per cent) was used to acquire the copyrights to the diploma program text and teaching materials.

What do we stand to gain? We can access industry decision makers who will gladly support an education program that is accessible to all their employees, not just those that live in the GTA. We can delegate bookkeeping and administration of the day to day operations of TOSCOT to an organization that is established and can provide these services with little or no fuss. In fact, having the experts take care of the functions where we have no expertise only makes sense.

We need to update and upgrade the course content to be able to go beyond the Toronto borders. Who better to provide support to getting this task done – our volunteer committee members or the decision makers who run our industry? I think that it is only fair to permit the CPCA to assess the economic impact providing administrative and bookkeeping services and that we cover those expenses. In exchange we receive a commitment from the CPCA to provide us with all the assistance required to successfully market our education program, which is our sole and primary responsibility.

A legal opinion will be obtained from the Association's lawyer on the mechanics we must follow if the decision is made by the membership to merge.

The least important issue of all, but that

received the most discussion time as it is dear to all our hearts, is our annual golf tournament each association sponsors. This past year saw record low attendance. I am in agreement with Jim Quick that it would serve everyone's interest to have an "Ontario Coatings Industry" golf tournament where we invite TOSCOT, OPA and our fellow members from the equipment and applicator side of the coatings industry. We are positive that the management of all member companies would see that as beneficial rather than trying to support 3 or 4 or 5 separate tournaments where manufacturer members have already restricted employee participation.

Economic Concerns

This Christmas season will be very different from past seasons as there are serious concerns about our economy and what the New Year will bring. All predictions are that the situation will get worse before it gets better and that the fittest will survive.

I don't expect anyone to be worrying about the fate of TOSCOT during these challenging times. What I will request from the membership some time during the coming months is their permission to ensure the sustainability of our education program, in a responsible, ethical and professional manner.

During the interim please accept my warmest wishes for a safe and happy holiday season to you and your families on behalf of the members of TOSCOT.

Dave Saucier is the president of the Toronto Society for Coatings Technology (TOSCOT).



Kevin Pelling, Gary McKay and Dave Hazell.



Elf Evelyn and Gerry Gomez.



Urs Hentschel, Steve Gryba and Bob Snyder.



Murray Fletcher and Jake Jevric.

TOSCOT Brings in the Holidays

Organizers are pleased with the overflowing attendance to the TOSCOT Annual Holiday Luncheon at the Airport Marriott in Toronto, December 4, 2008.

President Dave Saucier welcomed the members and was presented the Evonik-Degussa President's Gavel by Natalie Janowsky. All attendees received gifts from Santa's Elves Mervyn Li-

Ying, Christina Pross and Evelyn Thoy. The Jolly Old Man was unable to attend. He was in Ottawa refereeing Parliament until the Governor General made it back into the country. He said that there were very few good boys and girls in that crowd that were going to get gifts.

Here are some photo highlights.

Photos by Pete Wilkinson



Sam Joshi, Noel Shahnazarian, Joe Loncar and Jason Young.



Trevor Cook, Scott Harvey, Kevin Pelling and Fred Forth.



Hema Lakkaraju and Elf Mervyn.



Dave Saucier is presented the Evonik Degussa President's Gavel by Natalie Janowsky.

continued from front cover

CASF PRESENTATIONS

Richard Thibodeau, co-chair of CASF began the day with welcomes and introductions then Brigitte Roth opened the CASF presentations with Surface Finishing Industry News.

Roth began with an update of regulations that affect the industry.

She spoke about: Nonylphenol and its Ethoxylates (NPEs); Chlorinated Paraffins (CP); Perfluorooctane sulfonate (PFOS); Environment Canada PFOS Regulations; US EPA PFOS Wastewater Study; Chromium Electroplating Regulations - Update; CCME Wastewater Regulations; Chemical Management Plan; Concluding Remarks and The Future of the Automobile.

NPEs: She outlined the Nonylphenol and Ethoxylates as part of a group of compounds used in resins, paint and protective coatings and many other uses, considered toxic in 1999, but that are biodegradable best in municipal wastewater treatment plants using the activated sludge process. There is Pollution Prevention (P2) plans prepared and submitted by Canadian manufacturers and importers of certain products that contain NPEs, but they do not apply to NPEs used in: paints, coatings, resins and adhesives, construction, automotive and metal fabrication, personal care products.

P2 calls for a 95 per cent reduction by the end of 2010.

Chlorinated Paraffins: Roth talked about the background of these chlorinated derivatives of n-alkanes, introduced in the 1930's that are anthropogenic compounds.

CPs were produced in Canada at the ICI Chlor-Alkali plant in Cornwall, ON until 1995, then were assessed under PSL 1 and declared "toxic". Risk Management includes reducing the releases of CPs to the lowest level possible and prevent their re-introduction of their manufacture in Canada. The final proposed instrument for CPs is still to be developed and will be published in Canada Gazette Part 1.

PFOS Regulations: Perfluorooctane Sulfonate and its Salts and Certain Other Compounds Regulations were in Canada Gazette Part I: December 16, 2006 and Canada Gazette Part II: June 11, 2008. They are contained in a hazardous waste, hazardous recyclable material or non-hazardous waste and a pest control product.

US EPA Region 5 (Chicago) conducted a survey in July-August 2008

for PFOS in effluents released from MFI. The EPA final report has been delayed. EPA contact: Alexis Cain (cain.alexix@epa.gov) The use of fume suppressants which contain PFOS is allowed by the US EPA to comply with the EPA Chromium Rule. Fume suppressants without PFOS are now available.

Chromium Electroplating, Chromium Anodizing and Reverse Etching Regulations: Chromium regulations were expected late 2008, but the election delayed it. They are expected early 2009. Applies to any facility using chromic acid to carry out chromium electroplating (hard or decorative), chromium anodizing and reverse etching.

Does not apply to any facility using less than 50kg chromium trioxide per year.

The "Chromium" Regulation allows three approaches for compliance: Point Source Emission Limit, Surface Tension and Closed Covers. A Regulatee is required to notify Environment Canada of which approach is to be used; and for surface tension which equipment to be used (stalagmometer or tensiometer).

Wastewater treatment technology: Roth discussed the background of wastewater treatment dating back to 1913. She spoke about various programs such as: City of Toronto ERD program; CEPA Canadian Environmental Protection Act; DSL Health Canada and the Environment Canada approach. She also described the sludge process.

In her concluding remarks Roth said NPEs are subject to P2 plans; Chlorinated Paraffins: Risk Management expected in 2009; PFOS regulation promulgated in

June 2008 and MFI is allowed 5 years use (from June 2008) of fume suppressant which contain PFOS; US EPA (Region 5) has completed a wastewater survey for PFOS in effluents from the MFI; Fume suppressants that do not contain PFOS are now available; Chromium Regulation is expected to be CG II in early 2009. Three approaches allowed for compliance; CCME Sewer Use Bylaw: Revision to metal limits from 2006 draft to 2008 draft; Chemical Management Plan: Ongoing work as assessments of certain DSL substances are completed.

Marc Sider next spoke on the Energy Benchmarking Study. He explained that higher energy costs are expected in the future when it comes to electricity, fuel and natural gas. Metal finishers should consider that improving their energy efficiency (E2) will be good for both the environment and their profitability. Improvements in processes, equipment and operating procedures can save money.

E2 contributes directly to a decrease of greenhouse gas emissions and CASF has already got an Emission Calculator to determine this.

In September 2004, CASF signed a letter of cooperation with NRCAN's CIPEC to formalize its agreement to encourage its member companies to develop and implement plans for improved energy efficiency. NRCAN is currently funding CASF's benchmarking project. The benchmarking project started with a survey to

CASF members addressing good management and technical practices. The goal is to collect info and find where and how energy can be saved cost effectively.

Metal finishing facilities that have not previously implemented any E2 program can expect to cut their energy costs by 20 per cent.

In some facilities, there is a lack of energy sub-metering. The first step is to get a person or a team in charge of E2. An E2 workshop planned for 2009 will be very industry specific.

Next was the presentation of Federal Support for Improving Industrial Energy Efficiency, by Richard Janecky of the Office of Energy Efficiency, Natural Resources Canada.

He first explained how CEPEC operates from the Executive Board down to the CIPEC Leaders, the companies: Mining, Manufacturing and Energy Producers. He outlined how the Canadian Industry Program for Energy Conservation is Industry and government working in partnership. Industrial activities in the program include: Raising Awareness, Building Knowledge, Generating Action and Celebrating Success. Resources include: Sector Task Forces. Employee Awareness Information, Case Studies, Best Practices and Benchmarking Guides, Twice monthly newsletter - "Heads Up CIPEC", Technical Videos and Conferences and Awards.

Janecky explained that very 2 years there is an Energy efficiency conference with the next coming in



Marc Sider



Richard Janecky

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2009 in Ottawa. He also told those in attendance about the downloadable software available, such as the boiler efficiency calculator that evaluates boiler performance. He talked about the Dollars to \$ense Workshops: spot energy savings; energy monitoring; energy master plan, energy efficiency financing and customized workshops.

For more information contact <http://cipec.ca>, rja-necky@NRCAN.gc.ca.

INFORMATION SESSIONS

Session 1: In the first of the session speakers Aron Gampel, VP and Deputy Chief Economist Scotiabank spoke candidly about the Economy. He started by saying that the title of his talk: "Something Old, Something Borrowed, Something New — Canada's Commodity, Construction and Service Economy, was picked six months ago before the US fully revealed its economic situation. He didn't sugar coat things and says we are in for "a very rough ride in the next year or two, hopefully not more than that." (For more on this presentation see CFCM's From The Editor, page 3, this issue). He says www.scotiabank.com will put up report on housing and there is other information of interest on the site.



Aron Gampel

Session 2: Dealt with Environmental Legislation, updates in Environmental legislation that affect the Canadian Surface Finishing industry, by Jackie Campbell, B Sc LLb Dianne Saxe Professional Corporation Saxe Law Office.



Jackie Campbell

Campbell thought it would be of interest to talk about various pollution cases, not mentioning any names, that happened recently within the industry.

She said it is very seldom that jail is an issue.

She spoke about various by-law offences involving aluminum and zinc.

Campbell outlined the roles of government. The Federal Role involves issues of national/international concern such as: Crossing borders (e.g., import/export of hazardous waste, transport of dangerous goods, climate change), Toxic substances and Science/standard setting. Key federal statutes are Canadian

Environmental Protection Act, 1999 and the Fisheries Act. The provincial role in Ontario involves: Most environmental issues, Property and civil rights and Natural resources. Key provincial statutes are Environmental Protection Act Regulation 347 (Waste), Ontario Water Resources Act and Clean Water Act, 2006.

"We have excellent protection in water in Ontario so fines are stiff," said Campbell. She said environmental penalties can be huge.

She said the Municipal Roles are steadily growing as provinces offload to this level. The municipalities tend to end up with more responsibilities than money.

Key statutes in the Toronto area include the Municipal Act, 2001 and the Planning Act. Campbell talked about penalties, offences and enforcement and due diligence.

She talked about what's coming, such as Toronto's Right to Know by-law that would require facilities to report releases of certain chemical substances. Will this be adopted by other municipalities? Also, toxics reduction laws, Ontario with designated (long) lists of toxic substances to be regulated with new reporting and disclosure requirements. Facilities would have to identify how they use toxic substances and find options to reduce these uses. Environmental Penalties regime, which to start, only MISA sector facilities affected. This will look at seriousness of violation; consequences; monetary benefit gained; duration of offence. The Chemicals management plan is a Federal initiative to assess and regulate a large number of potentially harmful chemicals, proposing restrictions under CEPA on 300 substances and screening another 1200 compounds.

Session 3: Environment & Economy had Christian Richter, The Policy Group's Washington Office, talking about Global Environmental and Economic Trends Impacting the Surface Finishing Industry. He also spoke about challenges facing the industry such as: international competitiveness, global financial meltdown, regulatory pressures - EU regulations and the global supply chain, industry cost pressures on energy. He says metals prices are easing. He spoke about what is happening in the US and NASF issues and outlook including: Regulation and emerging issues - Chromium, Nickel, PFOS in processes with an



Christian Richter

Outlook on Green chemistry, precautionary principle, products focus

Collaboration: Government - EPA, Labor/Health & Safety, DHS, USGS, Canada; Industry - Automotive Sector, Aerospace, Nickel Institute; Globalization, Monitoring, Shaping Global Developments - EU REACH, nickel risk; Technology, US Dept of Defense surface finishing strategy with a December 2008 meeting and Pending is a NASF-DoD Coatings Database. Industry involvement in Education & Advocacy includes the 4th Annual Washington Forum set for April 28-30, 2009. "What changes do we need for our regulating structure?" asked Richter. "Minimizing health hazards going forward, collaborate with Canadian friends, we need to collaborate more than less." He said the industry needs a Global Finishing Round Table discussion on what's happening in the future of the industry.

After lunch Richard Thibodeau talked about CASF membership, why they changed their name and member benefits. The association is now under the NASF umbrella. Thibodeau said training is a big part of CASE. He asked for volunteers to help with the annual conference, education, membership, government relations and executive positions.



Richard Thibodeau

Then NASF's Carrie Hoffman talked about looking forward to bringing back job shops and suppliers that are the association's northern partners. She explained how the CASF is a member of the NASF and how the two will work together on a newsletter, help market it and get more members. "Our members learn from each other." She introduced the president of NASF, Ray Lucas who spoke about challenges within the association and regulatory challenges.



Carrie Hoffman



Ray Lucas

"You get out as much as you put in," he said.

Next, Goodrich Corporation, Landing Gear Division was awarded the CASF Pollution Prevention Award from Brigitte Roth.

Session 4: Melanie Wegler, Ontario Ministry of Labour next spoke about Ontario's Targeted Firms initiative.

She explained how the program originated and how the government inspectors are out in the field and will show up at a workplace unannounced. The plant has to let them in and in some cases the owner is irate and refuses. The goal of the program is to reduce fatalities and injuries. She says the violations are written up and dealt with the same as speeding tickets.



Melanie Wegler

Wegler explained what the inspectors looked for and how they will also do Blitzes at a certain time of year. For example in June 2008 the target was new and young workers under age of 25 to see if a training program is in place. In September the blitz was for fall prevention looking for falling hazards and then in November electrical hazards. Forklift operations will be targeted early 2009. "There is zero tolerance for these blitzes," said Wegler.

There are follow-up inspections to see if the violations have been rectified. Some companies can be put out of business due to safety hazards.

WHMIS training must also be met.

If anyone is critically injured or there is a fatality in the workplace it must be reported to the ministry of labour even if it is not an employee.

She explained several types of hazards and how workplaces are targeted for inspections.

www.labour.gov.on.ca

Session 5: Water, How Source Water Protection (under new clean water act) will impact industry in Ontario, was last on the day's agenda with Daniella Molnar, Ontario Ministry of Environment.

Molnar began by talking about how the Drinking Water Source Protection Act for clean water, came out of Walkerton crisis.



Daniella Molnar

The Clean Water Act was proclaimed into force on July 3, 2007.

This legislation sets above all else the concept of prevention as the first principle in the safeguarding of our drinking water for our communities and our health. The objective is to establish a collaborative, locally driven, science-based, multi-stakeholder process to protect their municipal residential drinking water sources. The Act has 19 committees across province, 5 in the north, and 13 to 22 municipal members.

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CASF CONFERENCE: A SUCCESS



Joe Foreman and Charles Ferguson of Process Electronics discuss rectifiers with Robin Leach of Kuntz Electroplating.



Richard Janecky, Natural Resources Canada discusses Energy Reduction Programs with Richard Calnan of C.C.I. Chemicals.



Joe Halahel, Service Filtration Canada demos a spray nozzle.



Janet Rennie and Kevin Janitz of Atotech Canada

John Paul Boisvenue of Stalex chats with Jim Sutherland of The Acadian Group.



Aron Lorenz, WMV Inc.



Andrew Harvey, Cyanide Destruct Systems.



Dena Wolfgang, World Resources Company.

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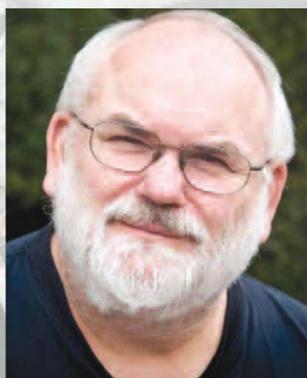
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Goodrich Corporation, Landing Gear Division's Neil Geddes, Hari Gil, Geoff Lilley and Cliff Hohenwald accept the CASF Pollution Prevention Award from Brigitte Roth CASF.

Temporary Operations & Maintenance Inc.



John Seldon, RPP, C.E.T., CCEP
Technical Operations Specialist:
Wastewater Audits, Optimization
Training, and Public Speaking



21 Erius St. P.O. Box 491
Port Burwell, Ontario, Canada
N0J 1T0

Cell: 519-240-2926
Office: 519-874-4213
E-mail: jdseldon@hotmail.com

She spoke about the difference between this act and the Conservation Authority, which is water shed based and created out of Hurricane Hazel and flood management.

"Partnering up with conservation authorities makes sense," she said.

She talked about source protection plans and what kind of businesses are high risk to ground water. Proximity to the water source plays a key factor.

It is all a risk based approach and there are policies for significant risks.

For more information:
www.ontario.ca/cleanwater

The day ended with the giving away of door prizes. ■

Giving Sludge its Due

WATER FACT 1: "In the U.S. alone, about 5,000 liters of water are needed to produce the typical citizen's 3,900 kilocalorie-per-day diet. Water use could thus be restrained by both the types and the amounts of food consumed."

INTRODUCTION

When you clarify a wastewater stream, often the primary focus of the process is the "effluent" portion, the larger volume cleaned of its contaminants. Has it been treated well enough to meet sewer use by-laws or receiving stream regulatory criteria? The "residue" fraction, perhaps 1 per cent of the effluent volume, representing a heavy concentration of undesirable contaminants, is seen as a necessary evil that can be hauled away and out of sight if possible. This residue fraction - or sludge - warrants better understanding of its characteristics and the means available for mitigating its impact on the bottom line and the environment.

HOUSEKEEPING AND STORAGE Keep Your Sludge Clean

Sludge may be contained and - improperly, in the writer's opinion - stored in the bottom of the clarifier that collects it. In some installations it is pumped directly from the

bottom of the clarifier to the next processing step - say, sludge dewatering via a filter press. This is a practice that the author has also found unsatisfactory; it is often associated with an automated approach to dewatering that, in the writer's experience, does not perform well. Otherwise, the solids residue may be pumped from the clarifier to a sludge storage tank until further processing is undertaken. This is the approach most favoured by the writer.

Regardless of which storage approach is taken, tankage containing residue is too often viewed as a convenient garbage pail for any sort of material. Plant personnel of all stripes, when passing a sludge holding tank will take the greatest liberties in throwing waste or broken materials into this container. The writer is known to have found electrical wire, rope, shovels, gloves of all descriptions, large and small pieces of wood, bolts, gaskets, nuts and washers just to name a few, in sludge holding tanks.

Sludge is hard to come by and it is expensive to collect, store, treat and haul away. By treating these holding tanks as garbage dumps for solid waste materials complicates pumping the sludge out of the tank and providing downstream treatment. If the tank is meant for

sludge, keep it free of all other debris. This is good housekeeping and cost-effective.

Keep Your Sludge Composition Uniform

From our previous articles on sludge collection and pumping, the author stressed the need for pumping a consistent sludge stream, minimizing sludge volume and maximizing sludge concentration for any particular sludge stream.

Having gone to all this work, unless there is some treatment process benefit (and no regulatory restriction), keep different sludge streams separate from one another. There can be benefits to combining streams with respect to how they are subsequently treated - one may enhance the de-waterability of another. However, the combination may be dependent on specific ratios. Therefore, having different sludges captured and stored separately, if possible, allows combining them, if efficacious, in appropriate concentrations.

SLUDGE TANKAGE, MIXING, CHARACTERIZATION, VOLUME, SETTLING AND DECANTING Two Tanks, Pumping

Where sludge residue has been pumped to a storage tank it can be isolated and conditioned, if neces-

sary, prior to further treatment.

Where possible, have two storage tanks (properly sized - a topic for another time) available. Working with two holding tanks (or more for that matter) allows an operator to characterize the contents of the one that is filled and condition the sludge, isolated from further pumping, while a second tank is then filled. This is an ideal set-up.

When a sludge is being pumped, some facilities have introduced a Total Solids (TS) meter which "measures" the solids concentration of the sludge being pumped by some means other than actual sampling and running a total solids test in the laboratory. Be cautious of the data provided by these meters. Run comparisons of the meter output values against the analytical results of samples run in the lab taken during any recorded output meter value. Further, if you find good correlation between the two ensure that you regularly calibrate the meter and periodically recheck its output with a sample actually run in the lab.

Mixing

There is perhaps no better aid to sludge storage than good mixers. Underpowered mixers fail to provide a uniform solids concentration in the tank, allowing heavier solids to drop out of the mixture. If chem-





An overall view of a press. good contact between the solids and the reactant making the process inefficient and generally resulting in the waste of reactant either through poor contact or an excessive rate of addition. Do not underpower your mixer and ensure your impellers are of sufficient number and properly affixed. More than one has been found at the bottom of a mixing tank, having dropped off its shaft.

Characterization

With the contents isolated from additional sludge being added, sample the well-mixed sludge for the parameters needed to support further treatment. Often, total solids are performed and, sampled from a properly mixed tank, the results will be consistently accurate.

This is also a good time to sample the sludge and perform jar tests. These are tests where a specific volume of sludge - often a 1 litre sample - is mixed in a beaker with a stirrer. Conditioning aids can be added to treat it and determine the amount needed to do the entire tank's contents. It gives you control over the rate of chemical addition and aids in the efficiency of treating the tanks contents. Too often this valuable instrument - the jar tester - is left to gather dust instead of being used to determine the correct dosage rate for conditioning sludge to ensure success in its next treatment step.

Finally, more and more concerns are being expressed regarding the potential toxic effects of residues - especially is they have an opportunity to enter our food chain. Often already known for many chemical sludges, others, organic based and treated through biological treatment processes may have exotic organics that become concentrated in the sludge. Analyze your sludge periodically for those organic exotics which may in the future make the sludge unacceptable for your current disposal method (especially agricultural, composting).

Tank Volumes

Often forgotten is the useful practice of calibrating a tank for volume. Tanks come in all shapes and sizes and therefore it is often useful to calculate the volume of any particular section - such as the conical sludge collection section at the bottom of the clarifier - independently of the others and then summarize all the sections together. For a conventional circular tank with a flat bottom, it is a simple task and the column's volume per unit height

can be calculated rapidly. Keep these volumes in a summary close by and, if possible, mark the volumes for any particular height or section directly on the tank. This can be very useful

Settling, Decanting, Sight Valves

Reducing the volume of liquid sludge for transportation or for subsequent treatment is a worthwhile goal. When sludge is initially pumped into a holding tank there may be little value in mixing the contents until the tank is full and the sludge is to be conditioned. If there is time to allow the contents to settle, the sludge may separate into two layers - a clear layer of water on the surface (supernatant) and more concentrated sludge below. A sludge holding tank equipped with valved supernatant discharge lines on its side can be

partially drained of the supernatant by opening the valve for the discharge line immediately above the liquid sludge interface. Decant the supernatant to an appropriate wastewater treatment system location (i.e. the head of the plant). Visually check the supernatant quality regularly while decanting to ensure sludge solids are not being entrained in the stream. It should also be analysed for key contaminant characteristics to ensure the return site is not overloaded by any one contaminant (especially in a dissolved state).

SLUDGE VOLUME REDUCTION AND DISPOSAL

Once you have isolated your sludge phase from the wastewater treatment system proper, there are a number of options open for removing it from your site, such as:

- Liquid sludge haulage from your site to an appropriate, regulatory approved, disposal location on or off your production site. This may be done with internal support services.
- Liquid sludge haulage from your site by a waste management firm to its independently operated appropriate, regulatory approved disposal site some distance from your location. Periodically trace a load of your sludge to this end point to ensure your waste is going where you have been informed it is being hauled. This off site disposal facility may further treat your waste prior to actual disposal, such as landfill.
- Process your sludge to reduce its volume and transform it from a liquid phase to a solid phase so



that there is much less volume to transport and the sludge is in a cake phase. Typically this is accomplished by conditioning the sludge with a chemical agent - such as a polymer - to help the sludge particulate release its water phase. The conditioned sludge is then run across a centrifuge, a belt filter press or a pressure filter to remove the water and provide the cake. In general, the drier sludge comes from the pressure filter with less



dry material from the centrifuge and the belt filter press. Depending on the equipment used and the type of sludge dewatered, cake solids may range from 18 percent TS to 60 percent TS.

- A final phase of treatment, sludge drying, is an option selected as a means of minimizing cake volume and concentrating the captured contaminants. Once again transportation costs are reduced as virtually no superfluous water is transported. Further, the "contaminants" may be compounds of metal wastes. Dried and in a sufficiently high concentration, this dried material can be returned to a metal producer for reclamation. An alternative to drying the cake on site is to arrange for a reclamation firm that in turn dries and recovers the metals at its own site; firms like these transport sludge cake over long distances, to acquire what for them is a raw product.

SLUDGE CONDITIONING

When conditioning for a pressure filter run, condition the full contents of the sludge storage tank and run the treated sludge directly to the pressure filter. When using a centrifuge or a belt filter press, the sludge is typically conditioned as it arrives at the machine, just ahead of mechanical treatment.

In either case, the conditioning agent(s) will have been determined when the process was initially set up. Periodic reviews of the chemical agents used is recommended to ensure you are adding the most cost-effective

agent as possible. Frequently, polymers are used for this purpose. For a number of different polymers, their relative effectiveness can be compared using a jar tester. Indeed, the jar tester should be used regularly to check the dosage needed to condition any tank of liquid sludge. Dosage rates should be calculated regularly as kilograms of polymer per metric tonne dry solids (kg/MTDS). Values may range from less than 1 kg/MTDS to 10 to 20 kg/MTDS.

MANPOWER: ACCREDITED COURSE, CERTIFICATION, WASTEWATER COMMITMENT

In the three articles that preceded this, I discussed clarification, sludge collection and pumping. Now we have discussed in broad outline what can be done with sludge once it has been collected.

Too often these processes are left to chance. The only "operator" available to do the work is too often an individual whose primary responsibility remains the process line and is secondarily assigned to provide wastewater treatment supervision, maintenance and emergency repair.

Any system's greatest asset is an operator dedicated to the wastewater process. That asset is enhanced when the operator has completed accredited post secondary training (such as a technician or technologist Community College course accredited by the Canadian Technology Approvals Board (CTAB), whose sole responsibility is the waste management system and who is recognized as an integral part of the production process itself. ■

References: 1. Excerpted from "Water News: Bad, Good and Virtual Rational thinking about water may be key to ensuring a clean, plentiful supply" American Scientist, September-October 2008 Volume 96, Number 5, Page: 399. Author Vaclav Smil.



John Seldon is president of Temporary Operations & Maintenance Inc., Port Burwell, ON, and has 35 years experience in the industry.

Improve Quality - Reduce Costs

Added Value with Optimised Cleaning Processes

BY DORIS SCHULZ

It is the task of industrial parts cleaning, both during and after manufacturing, to fulfil the surface cleanliness specifications, which are required for further processing or the assembly of workpieces. Stricter requirements for component cleanliness, coupled with rising cost pressure, necessitate cleaning processes, which are matched to actual demands.

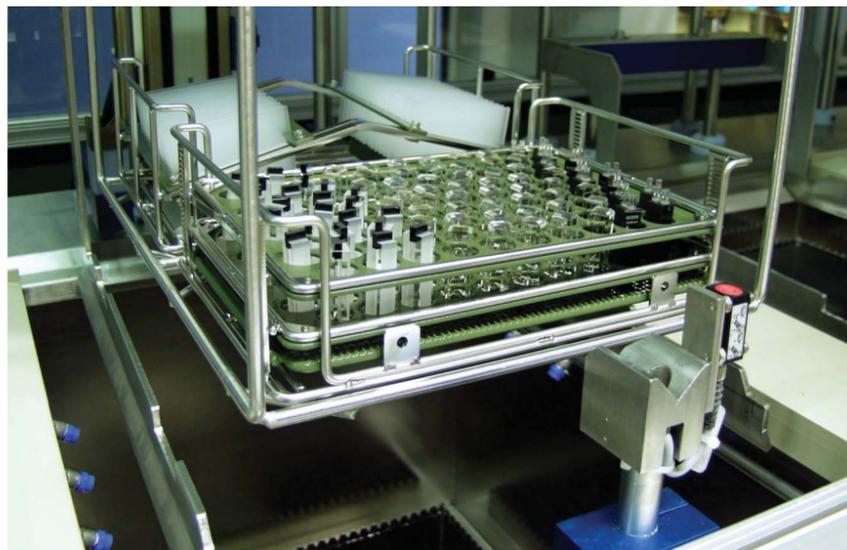
Quality awareness for parts cleaning is frequently not as well developed as is the case with other manufacturing steps such as CNC machining, forming, casting and coating. However, requirements-oriented cleaning makes a significant contribution to increasing product quality and economy. In many cases, inefficient scrap and costly rework can thus be avoided, as well as image impairing product failures and recalls. The industry offers various processes to this end, which are also used in combination to an ever greater extent.

MATCHING THE CLEANING PROCESS TO THE PARTS AND THE CONTAMINATION

With a cleaning process, which has been matched to the actual requirements, optimisation potential can frequently be exploited throughout the entire production sequence, and manufacturing can be made more efficient. Essential factors include part geometry, material, type and degree of contamination, cleaning agent, process (e.g. wet chemical processes such as spray, immersion and ultrasonic cleaning, or dry methods like CO₂ and plasma cleaning), treatment duration, number of process steps, throughput and cleanliness requirements. The process can be ideally adjusted to these parameters with the help of cleaning tests conducted in the laboratory, or the test facilities of the system manufacturer, using original contaminated parts. Depending upon the task at hand, it might also make good economical sense to combine various processes.

WET CHEMICAL CLEANING

The effectiveness of wet chemical cleaning is above all determined by the dissolving performance of the utilised cleaning agent. Common cleaning media include aqueous cleaners and solvents, of which the



Parts in the cleaning basket made of round wire are well rinsed on all sides by the cleaning medium. In addition to this, wire basket systems are distinguished by good draining characteristics which minimise cleaning agent and contamination carryover.

latter can be subdivided into halogenated hydrocarbons (HC), chlorinated hydrocarbons (CHC) and polar solvents. Aqueous media, available as alkaline, neutral and acidic cleaners, are used with preference where very large volumes of parts have to be cleaned, and/or where fine cleaning and micro-cleaning are required.

INTERACTION AMONGST CLEANING AGENTS AND PROCESS TECHNOLOGY

In order to be able to achieve the desired cleaning results within short periods of time, the effectiveness of the cleaning medium is enhanced by means of various physical processes which demonstrate effects of varying magnitude. In the case of spray cleaning, which is primarily used for large, flat-shaped workpieces, contamination is partially dissolved or emulsified by the cleaning agent (usually an aqueous cleaner), and partially washed away by the kinetic energy

of the spray jet. Additional motion of the goods to be washed and/or the spray nozzles assures uniform cleaning results.

Immersion cleaning processes are generally preferred for parts with complex geometries, for example with blind holes and undercuts. When the workpiece is immersed into the cleaning bath, contamination which adheres to its surfaces is dissolved by the chemical action of the cleaning agent. Rotating or swivelling the parts within the bath enhances the cleaning effect. Ultrasonic cleaning is also based upon immersion, and is capable of achieving high levels of cleanliness. The cleaning effect results from cavitation: The bath fluid is acoustically irradiated by means of an ultrasonic generator and a matching vibration system. Resulting vibration causes extremely small hollow spaces within the fluid, which then immediately collapse. Strong currents and turbulence develop which "blast" the

contamination away from the goods to be cleaned. In the case of pressurised flow cleaning, pumps draw fluid out of the cleaning bath, and subsequently inject it back into the bath at high pressure levels through nozzles located underneath the fill-level. This results in strong currents, thus causing turbulence at the edges of the components to be cleaned, which removes the contamination. When the fluid flows past blind holes and recesses, a suction effect is generated which "draws out" contamination.

EFFECTS OF THE CLEANING TANK

Just how clean and spotless the workpieces are upon removal from the wet chemical cleaning system depends not only on the utilised process, chemical and duration of treatment: The cleaning tank plays a role as well. The tank often provides the necessary potential for a results, time and cost-optimised washing process: The layout of the cleaning tank and the parts basket influences the effectiveness of the utilised system technology, treatment time, the cleaning temperature and the medium. As a prerequisite for quick, reliable removal of contamination, the parts in the basket must be readily accessible to the cleaning process. Only in this way are the workpieces uniformly exposed to the cleaning agent, so that the mechanical washing process can develop its full effectiveness and wash out film-like contamination and particulates as efficiently as possible. Accessibility is also absolutely indispensable for drying with compressed or hot air. Ideal parts accessibility can be achieved by means of baskets which don't have any large, contiguous surfaces. This is made possible through the consistent use of round wire. As opposed to closed containers or baskets made of perforated sheet metal, cleaning baskets made of round wire are also distinguished by significantly better draining characteristics. And this means that considerably less contamination and cleaning agent is carried over to downstream processes. This results in a longer service life for the cleaning bath, and thus improved cleaning system availability and efficiency. The utilised basket material also plays a



Wet chemical cleaning of individual parts can be used in order to assure that required levels of cleanliness are complied with for workpieces with complex geometries. It allows for targeted treatment of channels, drill-holes and undercuts.



Time and cost savings are made possible through the use of selective cleaning of defined functional surfaces by means of CO2 snow jet cleaning, for example prior to laser welding.

role. Alkaline cleaners may cause peeling of the surface finish in baskets made of zinc plated steel, which contaminates the bath and the parts to be cleaned.

CO2 CLEANING – A DRY ALTERNATIVE

CO2 snow jet cleaning makes use of liquid carbon dioxide as a cleaning medium, which is expanded as it passes through a nozzle and is accelerated with compressed air to ultrasonic speeds. Thanks to a combination of mechanical, thermal and chemical effects, the CO2 snow jet removes film-like contamination and particulates when it strikes the surface of almost any material – in a dry and residue-free fashion. This process can also be used to treat specific functional areas, for example sealing and bonding surfaces, without subjecting the entire component to the complex processing which is necessary in order to achieve the levels of cleanliness which are only required for the



In the case of wet chemical cleaning, efficient processes with top quality, reproducible results can be achieved by ideally matching the cleaning agent and the utilised process technology to the goods to be cleaned.

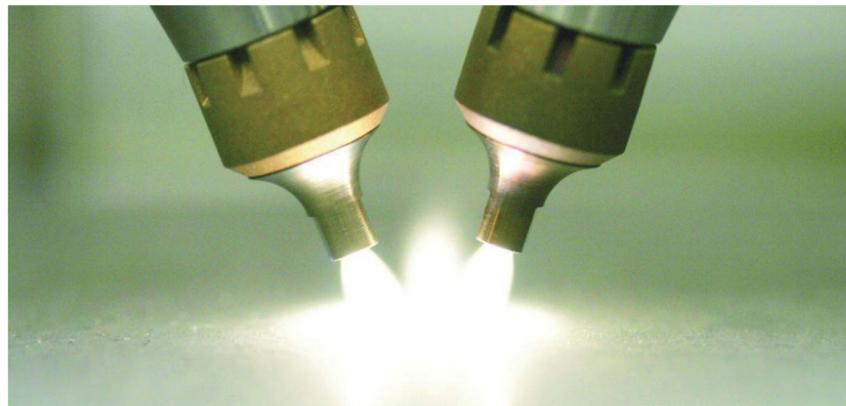
functional surfaces.

Due to increasing demands for component cleanliness, as well as workpiece miniaturisation to an ever greater extent, cleaning with supercritical carbon dioxide is becoming more and more significant. “Supercritical” because the carbon dioxide is used in an aggregation state in which its physical characteristics lie between the liquid and the gaseous state. While in this state, the CO2 demonstrates only minimal viscosity and surface tension. In this way, non-polar contamination such as oils and greases

can be removed from the finest cracks and pores. In order to be able to remove polar contamination as well (chips, salts), suitable system concepts are utilised by means of which cleaning with supercritical and liquid carbon dioxide is combined.

PLASMA – CLEANING WITH ADDITIONAL EFFECTS

Through the use of various reactive gases, plasma technology covers a broad spectrum of applications for cleaning individual parts and bulk goods of all types made of steel,



Plasma is suitable for fine cleaning and micro-cleaning of workpiece surfaces. Organic residues can be removed, and oxide layers on metal parts can be reduced as well. Further cleaning options include material removal by means of dry etching.

PARTS2CLEAN 2009

How can the cleaning task and the cleaning process be ideally matched to each other? By means of which processes can cleaning be made more economical? How does the parts cleaning basket affect part cleanliness? Answers to these and other questions covering all aspects of industrial parts cleaning are provided by parts2clean. The leading trade fair for cleaning within the production process will take place in Germany at the Stuttgart Exhibition Centre, adjacent to Stuttgart International Airport, from the 20th through the 22nd of October, 2009. www.parts2clean.com.

non-ferrous metals, plastics, glass and ceramics. These processes are most effective when thin layers of organic contamination need to be removed. And with this method, achievable cleanliness is independent of the structure and geometry of the workpiece surface. An additional effect offered by this process is optimised preparation for subsequent surface finishing processes, for example improved adhesion of glues and coatings. Beyond this, coating by means of plasma technology – plasma polymerisation – makes it possible to create so-called easy-to-clean surfaces, or surfaces which protect the component from contamination during use. Plasma cleaning is employed, for example, in the fields of metalworking and plastics processing, before coil coating, in electronics and microsystems technology, as well as for optics and analytical chemistry.

FOR PARTS CLEANING AS WELL, QUALITY HAS ITS PRICE

As is also the case for milling machines and coating systems, quality has its price where industrial parts cleaning equipment and systems are concerned as well. In a supposedly less expensive quotation, it's easy to overlook the fact that certain components are offered in differing qualities and types, for example zinc plated as opposed to stainless steel piping. And this usually has a negative effect on cleaning quality and/or the service life, and thus the overall economy, of the cleaning system. ■

Doris Schulz has worked as a freelance journalist for more than 15 years. Her specialty is the field of surface treatment, especially parts cleaning and coating technology. She can be reached at +49 711 854085 or via e-mail at ds@presstextschulz.de.

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INDUSTRIAL FINISHING: LIQUID PAINT COLOUR CHANGE

continued from front cover

where the color change process is done by the operator with visual indication of cleanliness. Most commonly the limiting factor in these circumstances is the amount of hardware that is available.

The function of a color change system is to change colors as quickly as possible while minimizing the amount of paint lost and flush media required. The heart of a "color change" system is the color valve manifold assembly. This manifold is a localized termination point for the various colors and is the interface between the fluid delivery system and the paint application equipment. The manifold will typically have one valve for each color, one valve for the flush media and air located at the top of the manifold. All of the valves will feed into a central port that exits at the bottom of the manifold. The color manifold assembly should be located as close as possible to the point of application. While there could be a separate article written about the supply of the coating materials to the manifold for the purpose of this discussion we will just state that the material needs to be delivered to the color change manifold at sufficient pressure to meet the flow demand out of the

robotic applications it is very common to locate the color stack in or on the forward arm of the robot, this results in a fluid line length to the applicator of about 3 feet. There are some applicators available that have color change manifolds integrated into them.

The color manifold should be located as close as possible to the point of application thus minimize the length of tubing from the outlet of the manifold to the applicator. Other considerations for locating the color manifold are access for periodic inspection and maintenance. Additionally if the color manifold is located in a robot arm, all of the color supply lines will be subject to wear from repeated movement.

Tradition style color manifolds, which are still popular are very robust and made from stainless steel. These manifolds are normally stationary mounted and used to provide manual, machine mounted or stationary applicators. Present day color manifolds are made from a combination of light weight resins and metals to reduce the overall size and weight thus allowing them to be easily mounted within the arm of a robot or machine. They



Chart 1: Volume of material supply tube based on "ID" and length

applicators and it must be relatively free of pressure fluctuation.

The location of the color valve manifold assembly will vary based on the type of application equipment. For manual applications, the color valve manifold may be mounted on the spray booth wall in a central location. Based on the product being coated and amount of mobility required by the operator, the fluid line will be 10 - 50 feet long. If you have automatic application equipment mounted on a reciprocator, the color stack may be mounted on the machine and the outlet of the stack may feed multiple applicators. Depending on the type of reciprocator and stroke length, the length of the fluid line will be 4 - 20 feet. If you have a single stationary applicator, the color change manifold can be mounted much closer and the length of the fluid line will be 1.5 - 3 feet. For

also use push style fittings for pneumatic and fluid connection eliminating the need for additional fittings and reducing installation time.

The fluid tubing used to connect the outlet of the color manifold to the applicator should be made of or lined with Teflon. This will allow for faster and more thorough color changes. The Teflon tubing is clear so it also allows for easy inspection. The inside diameter of the tubing should be as small as possible without restricting the total flow rate required out of the applicators. This will limit the area that needs to be cleaned during the color change sequence. Chart #1 shows the volume of material that is contained in each foot of various size tubes.

Close attention should be paid to any of the items located in the fluid stream between the color manifold and the paint application equipment. All components in the fluid

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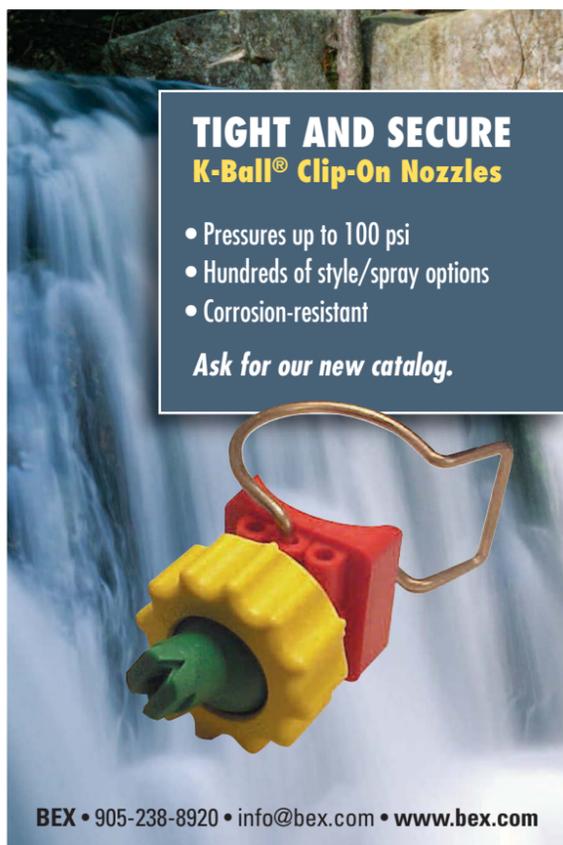
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stream should be constructed from Teflon or stainless steel to aid in flushing and prevent the development of any type of corrosion in these areas. Pipe style fittings with exposed internal threads should never be used. These types of fittings will make the system more difficult to flush out and will tend to trap and accumulate material that will later be released causing contamination in the paint finish.

It is also important to use high quality fittings that do not have “dead areas” in them from the manufacturing process where pockets can exist from over drilling.

There are many other items that may be in the fluid path between the color manifold and the applicator. The type and amount of hardware will vary based on the system design and will have an impact on the color change process. These items include:

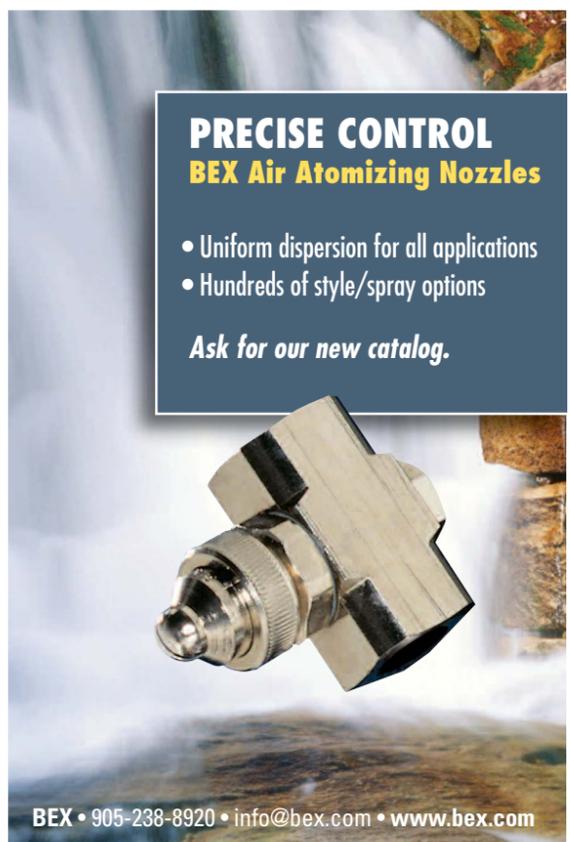
- Flow Meters
- Gear Pumps
- Fluid Regulators
- Dump Valve
- Solvent Flush

Flow Meters: are used to provide feedback on fluid delivery. A gear type meter is the most common; the fluid movement through the systems causes the gears to rotate. A sensor is used to

that are used to drive the fluid to the applicator. The gear pumps are normally driven with an electric servo motor that can quickly respond to fluid flow demands. The flow rate is based on the gear pump displacement per revolution and the speed of the servo motor.

Fluid Regulators: are used to control the volume of material through the system. The fluid regulator can be opened or closed based on demand using a remote pneumatic signal. Quite often a fluid regulator is used in conjunction with a flow meter and a flow controller. When used together you have a system that can measure and adjust the flow rate based on a set-point. This is a closed loop fluid delivery system that is capable of automatically adjusting itself. It can be thought of as having cruise control for your paint applicator.

Dump Valve: located downstream of the color manifold, a dump valve will typically be used to facilitate a faster color change. Instead of trying to clean the system out through a small orifice in the applicator (.042, .055, .070 for spray gun, .0625, .093, .0125 for rotary atomizer), a dump valve located close to the spray head can be



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used. The dump valve has a larger internal port and will therefore allow for faster cleaning. The outlet of the dump valve can be connected to a reclaim system

Inside Diameter of Tube	Volume Per Foot			Volume Per "X" Feet (ml / oz)			
		(ml)	(oz)	5ft	10ft	15ft	20ft
1/8	0.13	2.41	0.08	12 / 0.4	24 / 0.8	36 / 1.2	48 / 1.6
1/4	0.25	9.65	0.33	48 / 1.6	97 / 3.3	145 / 4.9	193 / 6.5
3/8	0.38	21.72	0.73	109 / 3.7	217 / 7.3	326 / 11.0	434 / 14.7
1/2	0.50	38.60	1.30	193 / 6.5	386 / 13.0	579 / 19.6	772 / 26.0

Chart 2: Colour Change Charts

detect the movement of the gear teeth, which as they pass generate pulses. These pulses are sent to a fluid monitoring system and based on a calibration value will display the actual flow rate. In its basic use, it can be thought of as having a speedometer on your flow rate.

Gear Pumps: are positive displacement devices

Solvent Flush Valve: A solvent flush valve located in the applicator is often used to clean the interior of the applicator without flushing the fluid supply line from the color manifold.

Many present date applicators have some of these components like dump and solvent flush valves integrated into them. There are also dual

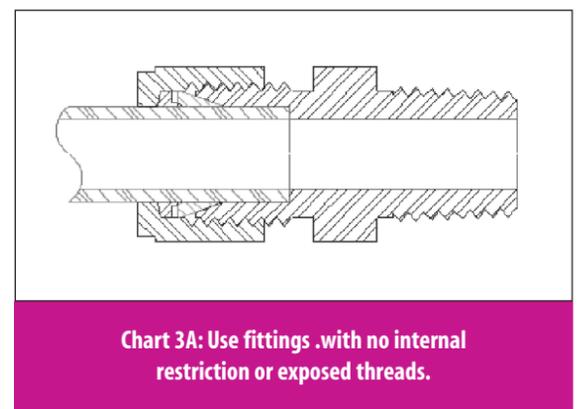


Chart 3A: Use fittings with no internal restriction or exposed threads.

purge applicators available that have twin fluid circuits built into the applicators. With a dual purge applicator, the next color to be sprayed is loaded up to the back of the applicator. When it is time for a color change, the applicator can be quickly flushed out and the next color loaded in 7 - 10 seconds. There are also dual purge color stacks available to support these applicators.

The color change sequence can be broken down into two sections, the flush sequence and the fill sequence;

Flush sequence: During the flush sequence, the system is cleaned out and prepared for the next color to be loaded. In some cases, prior to the system being flushed out, air or solvent may be introduced into the manifold to “push-out” and utilize some of the coating material that

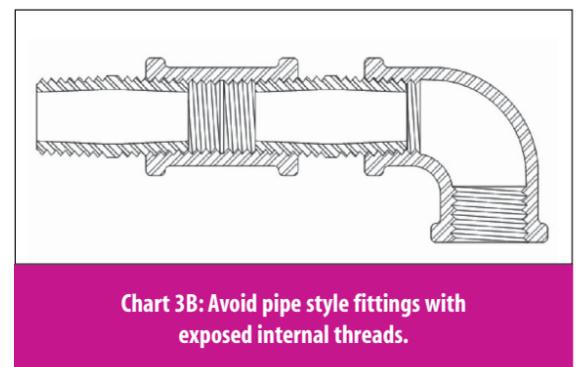


Chart 3B: Avoid pipe style fittings with exposed internal threads.

remains in the system between the color manifold and the applicator. Once this push out (if utilized) is completed, then the actual flushing of the system begins. If a fluid regulator is used, an override signal (fluid override) will be sent to the regulator to open it up and minimize restriction. The dump valve will also be opened and at this point the solvent and air valve at the color



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Chart 4: Some applicators have integrated fluid manifolds with dump and solvent flush valve.

stack will begin to cycle on and off. Normally a 2:1 ratio of air to solvent will be used to create a scrubbing action in the tube. The length of time will vary based on the length and size of the tube between the color manifold and the applicator. Once the system is cleaned up to the dump valve, the dump valve can be closed and the applicator trigger opened. This will then allow the applicator spray head to be cleaned. It normally only takes 1 - 5 seconds to clean the applicator spray head. Once the system is cleaned, it is good practice to use a final air purge to rid the system of any residual fluid, this will allow for a faster fill cycle.

Fill Sequence: At the beginning of the fill sequence, the fluid regulator override should remain on, the

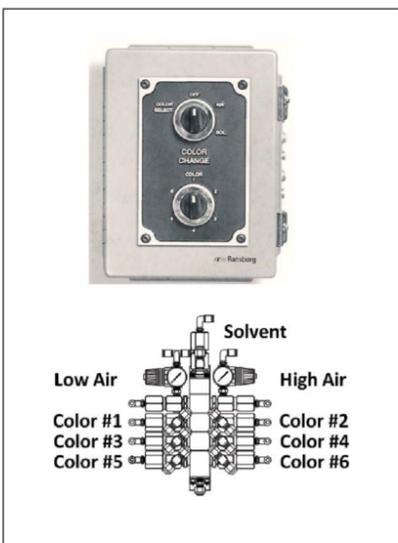


Chart 5: for manual applicators, a simple pneumatic interface panel can be used to allow the operator to control the colour change sequence.

dump valve should be opened and the new color valve should be opened. The length of this step will depend on the length of tube and the flow properties of the coating material. The dump valve should be closed just prior to the material reaching it. Once the dump valve is closed, the fluid trigger should be opened and the material purged out to the applicator.

It is important to note that throughout the entire color change process, you never want to have more than one valve on the color valve manifold opened at a time.

It is most efficient to control the color change sequence with a PLC,

this will allow for a more predictable result. For manual application a simple pneumatic interface can be used that will allow the operator to actuate the valves on the color manifold. Color change sequences for manual sprayers can also be automated with the use of a gun flush box. The operator inserts the manual gun into the flush box and closes the lid. Once the lid is closed, a signal is sent to the PLC and the color change can be cycled.

An automated color change process is a necessity for most high volume manufacturing facilities. With the controls technology available today and the advanced process capability of the paint applicators it is easily obtained. For those that do not have an automated color change process it is normally easily cost justified based on reduced paint usage, solvent usage

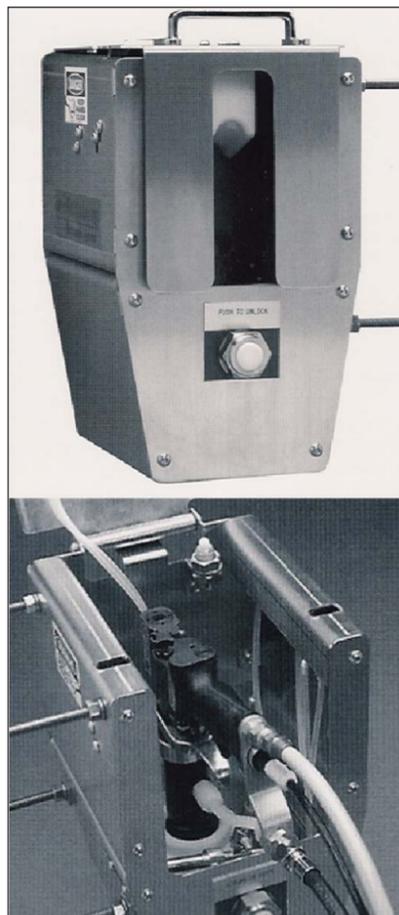


Chart 6: A gun flush box can be used with manual applicators to automate the colour change process.

for cleaning and waste disposal cost. Additionally, in many cases it can be justified based on increased production. By drastically decreasing the amount of time it takes to change colors, smaller gaps can be left in the conveyor system thus increasing the throughput.

In some cases with manual applications if the number of colors is limited it may be more economical to have a dedicated spray gun per color thus eliminating the need to flush out the system. The color change becomes a function of grabbing a different gun. This is common practice in automotive assembly plants in the manual spray zones. ■

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Plural component finishing technology High Performance, Fast Cure

Plural component finishing offers high performance, fast cure at low temperatures and more.

With energy costs and low volatile organic compounds (VOC) being key concerns for finishers, Plural Component Technology, often referred to as 2K (German 2-komponent), seems like the way to go according to those in the business. It offers an alternate technique for organic coatings compared to the standard “chemical reaction to cure or set the finish” or UV radiation. With 2K, two or more very reactive components are mixed shortly before or during the

coating application. The mixture usually doesn't need heat to cure therefore reducing curing costs. It can increase production throughput by 50 per cent, while lowering VOCs.

Reactive-cure coatings are usually applied using air spray, high-volume low-pressure (HVLP), air assisted airless or airless technology, depending on the type of finish required. With a high-performance coating, one pass may be all that is needed, which again reduces costs.

The easiest 2K technology requires manual measuring and hand mixing. The finisher must be consistent and accurate. The cure rate is affected by the blend and environmental conditions.

THE TECHNOLOGIES

Plural component coatings technology has multiple applications, from floors to aerospace. It is very beneficial for extremely large structures that are impossible to heat.

There are also a large variety of chemistries for 2K technology, such as epoxies for primers and polyurethanes for weather-resistant topcoats, even polyurea, acrylic urethane, methacrylate/peroxide and vinyl ester.

Epoxies result in chemically resistant finishes. Polyurethanes can be aromatic and driven by a moisture cure reaction. Polyureas perform well both chemically and physically with very fast cure times. Acrylic urethanes offer UV durability, high gloss and chemical resistance. Methacrylate 2K coatings use free radical cure chemistry accelerated by a peroxide initiator. Vinyl ester 2K coatings adhere well to steel and concrete.

The three main 2k technologies are Epoxy, Urethane and NISO.

Epoxies consist of an epoxy resin with tough corrosion protection that can be sprayed wet-on-wet with a urethane or non-isocyanate (NISO) topcoat. They tend to be

used as primers and have strong chemical resistance.

Urethanes can be used as a topcoat on metal, but most often are used over a primer for improved corrosion protection. They weather well and have resist chemicals.

NISO coatings are used as a topcoat or metal primer with comparable performance capabilities to urethane technology, yet they don't contain isocyanates. They provide durable weathering characteristics, solid chemical resistance and a high-quality finish. With a significantly longer pot life than urethanes, they minimize material waste. This coating tends to cost more than other reactive-cure options.

FAST CURE TIME

Cure time is faster than single-component materials and items don't have to be fully cured when removed from the drying area. When using a wet-on-wet application, it is possible to go straight from the primer coat to topcoat. Electronic proportioning can result in a cure time up to a half hour. The finish tends to be more durable.

EQUIPMENT AND MATERIAL

Equipment is available with efficient flushing technology and precise ratio monitoring. Manufacturers of plural component finishing equipment and materials have come up with designs to meet every challenge such as toxicity issues and clean-up.

There are non-amine products available that improve durability outdoors. The newest technology in electronic metering helps with proportioning issues and ease of material flow and monitoring. High cost with the more sophisticated equipment can be an issue with a complex automated plural component finishing line costing around \$500,000. This leaves room for offshore competition, but finishers should weigh this against the need for quality and local service. Even with the large investment ROI tends to be approximately 2 years, according to those in the industry.

The advantages of plural component finishing compared to conventional solventborne coatings are numerous and include low energy costs, shorter process time, high quality chemistries available and low volatile organic compound (VOC) content. ■

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Aqueous Paint Manufacturing Processes – The Importance of Plant Hygiene

BY SUSAN OSTROWSKI AND GARY HORACEK

The goal of a paint manufacturer is to ship a quality product to his customer. In the case of aqueous coatings, the product remains microbiologically active and must be preserved prior to use. Being water-based, these products are susceptible to microbial contamination and degradation. Anti-microbials are routinely incorporated to preserve product quality during storage and transportation so that the product meets customer expectations at time of use. However, only adding an appropriate anti-microbial to the finished product may not be sufficient to insure product quality. In addition to a robust preservation program, the product must first, and foremost, be manufactured under a tightly controlled process that includes adequate plant hygiene. Doing so minimizes the final cost of the product and insures a quality product is manufactured and delivered. The following article details areas on which to focus a plant hygiene program, and identifies some appropriate preservatives to accompany such a program. The powerful combination of plant hygiene and preservation will pay dividends to the manufacturing process of water-based coatings, including less returned product, reduced lost production, and more satisfied customers.

THE HYGIENE PROGRAM

A plant hygiene program locates processes, procedures, practices, equipment and raw materials that can contribute to microbial con-



Cleanliness is one of the most important features of a functioning plant hygiene program.

tamination. With this knowledge, problem areas can be addressed economically and before serious quality issues impact the final product. In general, many of the steps of the chemical manufacturing process are common across the industry. This allows a generalized discussion of how to implement a plant hygiene program. Attention to these common areas of concern will eliminate the vast majority of microbial-induced problems. It is understood that more detailed analyses may be required to solve more difficult and unusual problems. Individualized plant hygiene programs need to be developed for each particular manufacturing process.

In general, areas requiring examination are:

- Source water and source water handling systems

- Recycled water and recycled water handling systems
- Recycled raw material or recycled product
- Raw material storage and handling systems
- Mixing, milling and reaction vessels and their associated piping systems
- Product packaging systems
- Product transportation and delivery systems

A regular plant hygiene survey will help identify potential problem areas and provide guidance for remedial action. Guiding principles include:

1. Spot surveys of suspected “problem” areas are seldom sufficient to uncover all areas requiring attention. A more thorough survey of the entire system is more efficient.
2. Any survey is just a “snapshot in time” of the process being moni-

tored. Only with repeated surveys can a true picture of the system be assembled.

With a normal background established, future remedial action is more likely to be successful, in less time and at a lower cost.

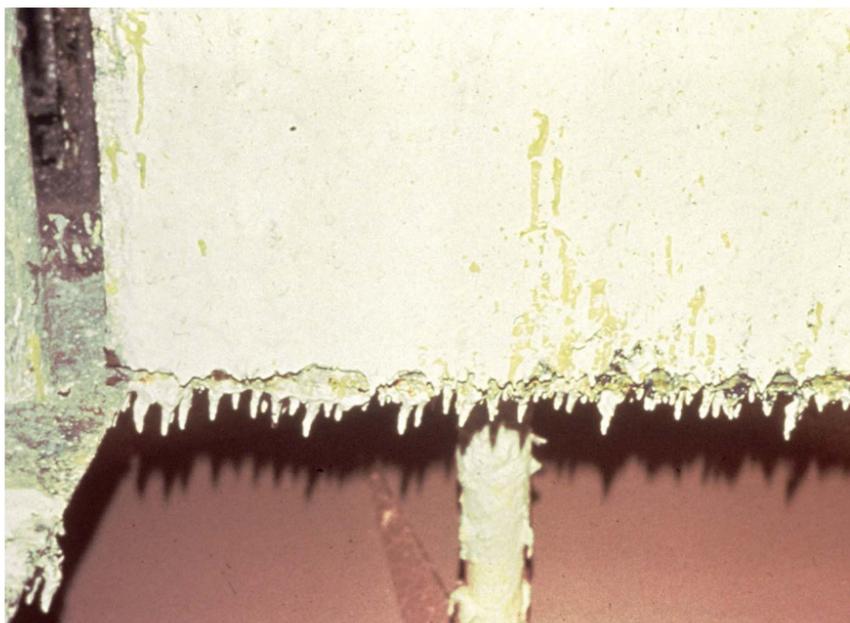
Begin the program by establishing a microbial assay component into the plant’s QA laboratory. This will allow microbial data to be collected on a regular basis so that “out of bounds” conditions can be quickly spotted and corrected. The testing methods and procedures applicable to this work are beyond the scope of this discussion, but they must be customized for each type of product manufactured and, to some extent, for each location sampled.

SURVEYING LOCATIONS/PROCESSES

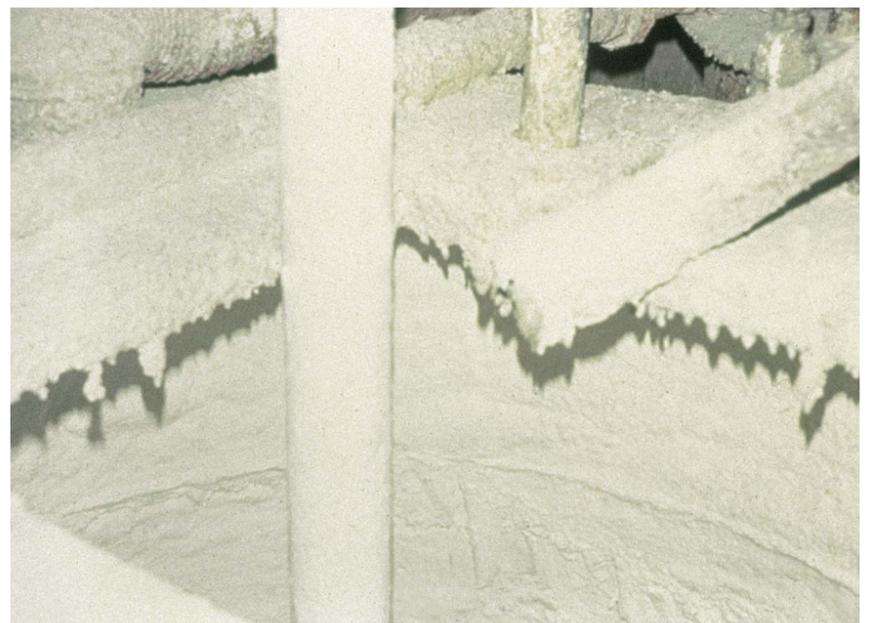
There can be identified a generalized list of plant locations and production processes that are common sources of biological contamination. From this list, a location and process specific hygiene plan can then be developed for each manufacturing plant.

1. Source water and source water handling systems

Source water is one of the most common areas for the introduction of microbial contamination into a manufacturing process. Most environmental water sources can carry a rich supply of microorganisms into the facility. A common misconception is that ‘city water’ is automatically microbiologically clean and always useable without



Semi-dried material left over from previous manufacturing batches provides an opportunity for the contamination of future batches.



Open top vessels complicate plant hygiene efforts.

treatment.

The water pH, temperature, microbial load, nutrient load, and hardness can all play a role in determining if the water requires treatment and determines the type of anti-microbial to be used. Fortunately, anti-microbial treatment is often most effective and least costly at this location.

2. Recycled water and recycled water handling systems

Recycled process water is often used in the manufacturing process. Doing so makes environmental and financial sense in many cases. However, the use of recycled water dramatically increases the potential microbial loading to the process. Organic loading from earlier uses, microbial contamination from within the plant, dirt and debris, and retention time all conspires to increase contamination. For monitoring purposes, collect information on the same parameters as for source water. This water should be considered a "highly likely" contamination source until proven otherwise during any problem remediation. Anti-microbial treatment of this water requires higher concentrations than does most source

water, but timely treatment is more economical than trying to preserve or recover the final product. Often engineering controls such as reducing dead legs, increasing circulation rates, or filtering can be helpful in reducing the impact of this water on the manufacturing process.

At this point in the process, a preservative especially designed for use in aqueous systems can provide protection.

3. Recycled raw material or recycled product

Some processes may use recycled spilled product or raw materials, washouts of product, raw material handling systems, packaging systems, railcars and more. These materials can be heavily contaminated. Contamination levels should be measured; pH and temperature should be taken. At this point in the process, preservatives are usually required. Loss of biological control should trigger immediate testing and remediation steps until control is regained.

4. Raw material storage and handling systems

It is very important to monitor raw material storage and handling systems in the plant. With a good



The number of transfer buckets must be kept at a minimum in the plant. Keep them clean (prepare a cleaning schedule) and protected from contamination.

understanding of the history, ascertain the current microbial condition of the material. Standard analysis methods, including target results, should be established for each raw material. A routine monitoring plan should be in place to measure the biological stability of all raw materials over time. Once the appropriate background information is gathered, weekly routine biological monitoring may be sufficient.

5. Mixing, milling and reaction vessels and their associated piping systems

As the raw materials, recycled materials and water come together in the processing required to produce a product, a quality plant hygiene program begins to pay off. The plant hygiene for this part of the process centers on using only treated ingredients and protecting those ingredients from contamination during processing. In a typical batch process, every batch should be tested for microbial contamination until sufficient background data has been gathered to allow a more relaxed testing schedule.

Following processing, there should be complete removal of each batch from the system, including elimination of 'heels' of product in tanks and low points in piping. As with other areas in the plant, look for and eliminate dead end zones with low/no circulation. Keep vessels, drums, bags, etc covered and protected from foreign materials including dust, dirt and water. A routine plant survey of the equipment should be used to assess the thoroughness of the cleaning process. Experience will dictate the time recommended between shut-downs and cleaning.

6. Product packaging systems

Once the product is manufactured, it is packaged for delivery to the customer. Traditionally this is the point where a preservative has been added. However, without adequate plant hygiene, it may not be

possible to economically eliminate or control microbial contamination present in the product at this stage, let alone prevent any subsequent contamination during packaging, shipment and storage. With proper plant hygiene, the addition of biocide at this point should be for "insurance" reasons.

7. Product transportation and delivery systems

At this point, plant hygiene has done all it can do to allow the manufacture of a microbiologically clean product. The biocide added during packaging should be adequate to see the product through to its use by the customer.

As with the packaging systems, it is necessary to ascertain that biological contamination is not entering the product at these locations and that adequate preservative is still present. Random samples should be taken until sufficient data is collected assure confidence.

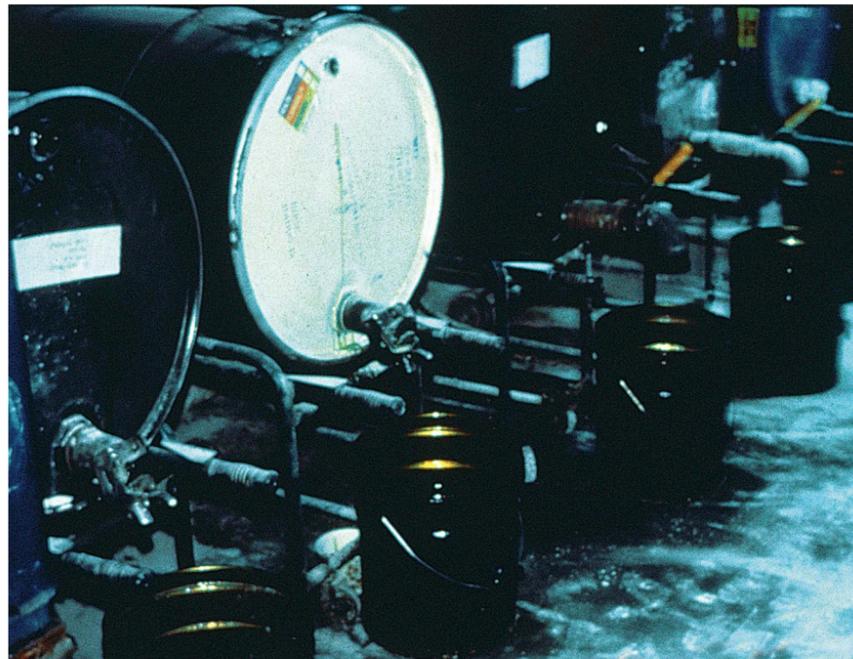
PRESERVATIVE SELECTION

The level of preservatives required to protect any particular system depends on a variety of factors, including level of microbiological contamination, components of the system, the presence of oxidizing/reducing agents, temperature and pH. Use levels should be verified by field trials.

In summary, principles for a successful plant hygiene program are:

- Start clean, stay clean
- Use quality raw material and equipment
- Use effective biocides at appropriate concentrations
- Protect product from outside influences
- Establish routine cleaning programs
- Monitor effectiveness

Susan Ostrowski is Director of Biocides Product Marketing and Gary Horacek is Director of Microbiology for Troy Corp.



Drip buckets should not be used as chemical additive transfer buckets. Keep the area clean and dry.



Open bags and partially used bags should be protected from contamination. Litter has to go!

Polytetrafluoroethylene and Waxes

The Life of the Product

A look at micronized PTFE

Several years ago, a technical paper on Micronised PTFE in coatings was presented at the Eurocoat Inkmakers Forum during the 2nd European Congress on Printing Inks, held in Nuremberg, Germany. It was written by By Joon Choo of Shamrock Technologies Inc. and reported several discoveries. Meanwhile the resin component of the ink and coating formulation is critical for the life of the product, but additives such as waxes have increasingly aided in extending the usefulness coating.

WITH WAX ADDITIVES

Polytetrafluoroethylene (PTFE) has been in used a long time, by itself or in combination with waxes such as polyethylene (PE), polypropylene (PP), amides and other natural waxes as an anti-rub and slip additive in printing inks and coatings. The additive is used in a fine powder form, between 3-12 microns in mean particle size. Waxes work in different ways and are specific to each application. PTFE, however, stands out in its uniqueness.

PTFE UNIQUE

PTFE was first discovered by Dr. Roy Plunkett of DuPont in 1938. It has a low dynamic coefficient of friction (0.04) and can be used in multiple areas where a reduction of surface friction is needed. It has a very low critical surface tension (18.6 mN/m), and is used to increase water repellency in some applications. The polymer has a higher melting point (325°C to 345°C) when compared to conventional polymers and is used under extreme temperature environments. Due to the strong C-F bond and the shielding effect of the fluorine atoms surrounding the carbon backbone, PTFE is virtually inert to most industrial solvents. In all applications, however, the PTFE has to be physically located on the surface of the coating, either as a continuous film or as discrete particles in sufficient abundance. PTFE exists as a very high molecular weight material, in the range of several millions.

EMULSION OR SUSPENSION

In polymerization, the emulsion approach tends to yield much smaller particle size PTFE, but the process chemistry results in a highly agglomerated form that is very hard to break apart. Suspension creates granular forms of the polymer.

Degradation and Micronisation

To make fine powder particles, the high initial molecular weight needs to be drastically lowered. Different routes for degradation are employed to facilitate its subsequent micronisation. These methods include the complex processes of irradiation and thermal degradation. Each process differs from the other in the kinetics and mechanism of degradation. After degradation, the lower molecular weight polymers are then subjected to a variety of size reduction machines with different micronisation techniques. This results in PTFE particles of difference sizes and shapes, which include rough edged, flat particles, equant particles and fibrous particles, each with different physical properties. It was discovered that highly fibrous PTFE does not transfer well in high speed offset presses, and the preferred morphology tended toward the smooth, spherical shape.

Shamrock Technologies patented its original under beam handling system and subsequent improvements to ensure uniformity in the electron beam degradation process. Uniformity is required in order to finally obtain a product with as tight a particle size distribution as possible. Also, because the anti-rub property of the polymer depends on the molecular weight, the tighter polydispersity meant a more controlled product. Yet, within this highly controlled process, there is still a spread of each measurable parameter.

Post-degradation micronisation offers a range of fine powders ranging from 7.5 microns mean particle size to as low as 3 microns mean value. Each product's mean value, however, does have with it a distribution in particle size similar to the melting point and the molecular

Some Wax/PTFE Product Offerings

Shamrock Technologies, based in Newark, NJ, has been developing additives and micronized PTFE and wax-based products for more than 60 years.

Joining Shamrock's Advanced Dispersions for Aqueous Systems, Hydrocer 132, is a 40 per cent active macro polyethylene/natural wax dispersion that provides the best properties of both a hard wax and a controlled particle size dispersion. This product gives both slip and rub performance while maintaining gloss and clarity. It has proven success in high end OPV's requiring excellent wet rub and gloss retention properties. Another recent product is MicroFLON 1215, a process-controlled micronized PTFE powder. MicroFLON 1215 improves rub, abrasion and slip in thin film applications, including heat-set ink and can-coating applications.

Michelman, Cincinnati, OH offers Michem Guard 349 and Michem Guard 350, two of the company's wax dispersions ideal for imparting a matting effect to most aqueous coatings and varnishes. They also enhance other properties such as abrasion resistance and water repellency, scratch, mar, abrasion and slip resistance. Characterized by large particle size, Michem Guard 349 is a nonionic polyethylene, while Michem Guard 350 is a nonionic Fischer-Tropsch wax dispersion. Both are solvent-free and are designed to highlight the positive properties of large particle sized wax and minimize unnecessary interaction from dispersing agents. The company's VaporCoat Series of coatings are recyclable, water-based moisture barrier coatings designed for a wide range of substrates including specialty lightweight papers, folding carton, boxboard grades and linerboard used in corrugated packaging. The coatings can be used for moisture retention when used on the interior surface, or to prevent moisture penetration into the container when used on the exterior.

At Micro Powders, Inc., Tarrytown, NY, PROPYLFLUO 824 is a unique combination of high melt point polymeric polypropylene and PTFE that has been micronized to a 2.0-3.0 NPIRI grind gauge reading. It can be easily dispersed into printing inks, paints or coatings with high speed dispersion equipment. PROPYLFLUO 824 has been formulated to impart the gloss reduction and blocking resistance usually associated with polypropylene, along with the lubricity (slip) provided by PTFE. Optimum properties are usually achieved by adding 0.5-4.0 per cent by weight. The amount required will vary depending on the type of application and the end use requirements.

It is recommended for flexo, gravure, sheet fed (quick set), ultra violet (UV) printing inks; coil coatings, industrial paints or finishes and all types of overprint varnishes (OPV's). Due to the high melting point and solubility resistance of PROPYLFLUO 824, it is especially effective in providing gloss control while imparting mar resistance and lubricity in lacquers and coatings.

weight distributions as discussed above. Shamrock, based in Newark, NJ, developed the technology to make flowable nanosized PTFE powders, with particles having approximate mean values of 2 microns, 1 micron and 300 nanometers, thereby enabling its use in very thin film applications, fine screen inks as well as in ink jet and digital inks. As particle size is reduced, the number of particles per given weight increases.

Therefore, at the same dosage weight, one would expect better rub performance with the smaller sized PTFE, given that all other parameters remain the same, and that of course the cured ink film is in the same order of magnitude in size as the powder itself. There appears to be a crossover point in the size/performance relationship - the nanosized PTFE did not appear to perform as well. This could be due to most of particles being

underneath the surface of the film so not contributing to the anti-rub. However, the nanosized PTFE can be used in very thin film applications, such as clear overprint varnishes for metal cans or other substrates. Also, it is small enough to pass through the jet nozzle heads without fear of clogging. It could be used in digital inks, toners and powder coatings. The PTFE is fine enough to be carried in the powdered resin once it is homogeneous-

ly mixed into the system. As the PTFE has a lower surface energy, the resin tends to draw away from the PTFE particle, giving an uneven surface, creating matting for toner inks. In combination with the unique properties of PTFE, the ultrafine-sized powders offer new application opportunities. Nanosized PTFE is available in both powder and in pre-dispersed forms. ■

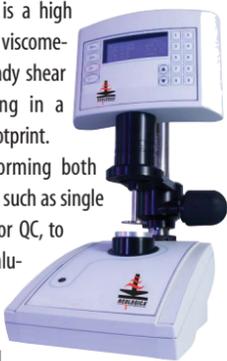
NEW PRODUCTS AND TECHNOLOGIES

Rotational Viscometer

The Merlin Viscometer is a high performance rotational viscometer capable of both steady shear and yield stress testing in a rugged, compact size footprint.

Designed for performing both routine rheological tests such as single point viscosity checks for QC, to complex rheological evaluation for R&D. The Merlin Viscometer is ideal for investigating the mixing, stirring, and process flow characteristics of fluid systems.

The unit comes standard with built-in Peltier Temperature Control for all measuring systems. Cone and plate, parallel plate and concentric cylinder meas-



uring systems are included.

The measuring systems employ novel "quick capture" mounting technology. The gapping mechanism is highly accurate and user adjustable.

The Merlin has an Angular Velocity range from 0.01 to 200 rad/s, a Torque Range from 0.005 to 20 mNm and a Temperature Range from 5° to 85° C.

www.atsrheosystems.com

Celanese Introduces EcoVAE

At ChinaCoat 2008 in Guangzhou, Celanese Emulsion Polymers introduced EcoVAE™ emulsions for low odour, low VOC interior decorative paints to the Asian region. This new line of products was created to meet both the regulatory requirements for lower VOC limits and growing consumer demand worldwide for more environmentally friendly, low odour products. Emulsions designed for the interior decorative paint

segment include: EcoVAE™ 1603, a universal binder for matt to satin paints; EcoVAE™ 1608 to formulate freeze/thaw stable coatings; and EcoVAE™ 1630 for semi-gloss coatings. All EcoVAE™ emulsions are synthesized to be APEO-free and offer specific advances for interior paints in wet scrub resistance.

EcoVAE™ emulsion polymers first debuted in the North American region at the American Coatings Show (ACS) earlier this year.

www.EcoVAE.com

Thermoplastic Bag Filters

Warco glass-free Polypropylene (PP) and

Polyvinylidene Fluoride (PVDF) bag filter vessels are constructed from solid fusion welded thermoplastics. Glass-reinforced molded PP filter housings can be attacked and permeated by corrosive chemicals (e.g., caustics, chlorides, fluorides, bromides, etc.) from etching and wicking of the glass fibers. PVC and CPVC housings are susceptible to inconsistent glue welding. Warco filter vessels are constructed of robust pure PP

or PVDF for maximum chemical and temperature resistance. Lengths include 15", 30", 40" and 60", single or multiplex. Accept standard felt bags, absolute rated pleated elements, pre-charged oil absorption bags and granular carbon bags.



Mag-Drive Pumps

Warrender sealless mag-drive pumps are constructed from glass-free Polypropylene (PP) or Polyvinylidene Fluoride (PVDF). Glass-reinforced thermoplastic molded pump components can be attacked and permeated by corrosive chemicals (e.g., caustics, chlorides, fluorides, bromides, etc.) due to etching and wicking of glass fibers. Robust, high density extruded thermoplastics provide 3 to 4X the thickness of molded counterparts for maximum chemical resistance, even with thermal cycling. Industry exclusive integral casing flanges ensure positive sealing and zero emissions. Pump designs are available in End Suction Centrifugal, Regenerative Turbine, Self-Priming, Rotary Vane and Vertical Sump.

www.warrender.com

Spray Polyurethane



Chemline Incorporated announced the immediate availability of its spray-applied coatings specifically engineered for the corrosion protection of galvanized steel poles and structures: Chemthane 2261. The 100 per cent solids, (Zero VOC) fast cure coating is applied in a single coat, multi-pass technique directly to a prepared substrate. No primer is required.

<http://www.chemline.net>

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