

Of Mutual Interest

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Solutions for Our Service Center Marketing Partners from Outokumpu

OUTOKUMPU

Ethanol Conference Powers Demand for Stainless

If there had been any doubt that the ethanol industry is hot right now, it was dispelled at the 2007 Fuel Ethanol Workshop (FEW) held in June. The workshop, held in St. Louis, attracted 6,000 visitors — three times the



VeraSun Energy in Charles City, Iowa features two ethanol storage tanks and four corn storage tanks.

number in attendance at the same conference only two years ago. More than 550 exhibitors were on hand, including one stainless steel producer: Outokumpu. “Most of the

people attending were designers, fabricators, operators, or service/maintenance companies — they’re the kind of contacts we’re looking for to promote the use of stainless steel,” noted Dr. Ralph Davison, of TMR Stainless, Inc., a consultant to Outokumpu.

In terms of number of participants, this year’s FEW was as large as the annual conference of NACE International, the major conference for corrosion engineers and one that Outokumpu has supported for many years. “The FEW audience is a different group of people than those who attend NACE, so it

opened up a brand new audience for us,” Davison added. The questions handled at Outokumpu’s FEW booth were primarily related to the advantages and disadvantages of materials used for ethanol plant and storage tank construction and for the operation of ethanol production processes. “The conference attendees were interested in materials that provide innovative ways to improve efficiencies and reduce energy and maintenance expenditures,” Davison said. “So it was a perfect opportunity to introduce a lot of the designers and fabricators to LDX 2101®, which is a very good product for this market.” With corrosion resistance comparable to that of 316L, with twice the strength of 304, and with stress corrosion resistance far superior to that of 304 and 316, LDX 2101 reduces total costs. It allows for thinner sheet and plate in construction and is less costly in terms of alloy content because it requires only a low nickel content (1.5%) and no molybdenum.

Corn: One of Several Alternatives

The U.S. ethanol industry currently produces about 6 billion gallons a year, which is primarily used as an additive to the 150 billion gallons of gasoline used annually. A U.S. Senate bill would boost the Renewable Fuels Standard to

Contents

- Demand for LNG Growing 2
- Pulp and Paper Breakthroughs 3
- Desalination Project in Oman 3
- LDX 2101® Used in Wine Storage 4
- Meet Brent Crabtree 4

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Outokumpu is an international stainless steel company. Our vision is to be the undisputed number one in stainless, with success based on operational excellence. Customers in a wide range of industries use our stainless steel and services worldwide. We are dedicated to helping our customers gain competitive advantage.

Continued on page 2

Ethanol Conference continued from page 1

36 billion gallons of ethanol by 2022. According to a report of the Renewable Fuels Association, 2006 production exceeded the previous year's production by a record one billion gallons. 2006 was also a banner year for ethanol plant construction, with 15 new biorefineries coming online and more than 70 biorefineries under construction.

Ultimately, how much ethanol will come from corn is still a question mark. Corn is an energy-intensive crop to grow and the ethanol push in the U.S. has increased corn prices throughout the developing world. Brazil's ethanol program has used sugar cane for ethanol production since the early 1980s, resulting in Brazil becoming an energy self-sufficient nation. There is some concern that developing countries will alter their agriculture production to create more "fuel" crops (like corn for ethanol) at the expense of food crops.

A number of corn alternatives are now being investigated — most of which would necessitate technological advances in order to become cost and energy efficient, such as various forms of waste biomass which create "cellulosic" ethanol. "For example, the pulp and paper industry is exploring the use of remnant bark and other residues as a viable fuel," Davison indicated. "Making ethanol (whether from corn or wood) is a common processing application — rendering, refining and separating. There are many ways to make alcohol," Davison asserted. "But stainless steel is the right material for ethanol production, whichever way you're going to go."

The 2008 FEW conference will be held June 16-19 in Nashville, Tennessee. ■

LNG Sector also a Boon to Stainless

Ethanol and other renewable sources of energy aren't the only growing areas of the power industry with stainless steel needs. According to the U.S. Department of Energy, the demand for Liquefied Natural Gas (LNG) will grow by 25 percent in the U.S. over the next decade. Despite its non-renewable nature, environmentalists have noted that natural gas is the cleanest-burning fossil fuel (a fact which may be spurring this anticipated growth). More than 40 new import terminals for LNG have either been approved or proposed for North America, and international energy

companies are investing more than \$30 billion in the development of new facilities for producing and transporting natural gas.

Creating usable LNG involves cooling normal natural gas to 260 degrees below zero Fahrenheit, transporting it in superinsulated ships, and then re-gasifying it at its destination. As a result, LNG presents a boon for stainless steel producers. "At those very low cryogenic temperatures, a storage and transportation material is needed that is very ductile



Demand for natural gas is expected to grow 25% in the US over the next decade.

and won't crack or fracture," said Elisabeth Torsner, Outokumpu Vice President Market Development/Technical Coordinator. Capitalizing on this boon, Outokumpu's Wildwood, Florida pipe facility has already provided thousands of tons of large diameter welded stainless pipe to the LNG industry. ■

A Breakthrough in Pulp Bleaching with LDX 2101®

The world's first industrial-scale pressure vessel built entirely out of LDX 2101® plate has been completed — a hydrogen peroxide reactor for the Swedish company, Smurfit Kappa Kraftliner Piteå. The packaging company is Europe's largest producer of kraftliner — a paper-board made from new fiber pulp used



This pressure vessel for Smurfit Kappa Kraftliner Piteå is made entirely out of LDX 2101®.

to manufacture high-quality corrugated containerboard. LDX 2101 was selected for its high strength, which allowed designers to use thinner gauges compared to traditional grades. Additionally, the low nickel content of LDX 2101 brought considerable cost savings when compared with the cost of similar-performing grades with

higher nickel content. Outokumpu's proprietary lean duplex also provides much higher

resistance to alkaline stress corrosion cracking, which helps pulp and paper producers, like Smurfit Kappa Kraftliner Piteå, meet higher

environmental standards through the use of non-chlorine bleaching processes.

“The ‘green’ credentials of stainless are many,” noted Dr. Ralph Davison, of TMR Stainless, Inc., a consultant to Outokumpu. “Outokumpu was awarded a project in a paper mill where the alternative to stainless was a steel tank that they painted every five years. This meant a lot of paint chips entered the environ-

ment every few years,” he recalled. “When the company compared the cost of — and environmental impact of — repainting to the cost of stainless, which will never have to be painted, stainless won in the first five years of the life-cycle cost.”

Outokumpu promoted the use of LDX 2101 in this breakthrough application as an exhibitor at the pulp & paper industry tradeshow, PulPaper2007, held in Helsinki, Finland in June. The show, which featured only one stainless steel exhibitor, brought together 12,000 industry representatives and 700 exhibitors from around the world. ■

Desalination Project Underway in Oman

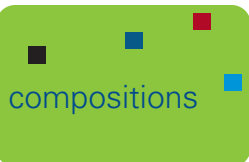
In the November 2006 issue of *Of Mutual Interest*, we announced one

of our largest orders of stainless grade SAF 2507®, for the Mukhainza Steamflood desalination



This is the first completed evaporator for the Oman facility using SAF 2507®.

project in Oman. The first falling film evaporator for that project has now been completed. The evaporator is 4.9 meters in diameter at the base, 35 meters long, and weighs 135 metric tons. The evaporator shell was constructed using Outokumpu 2205 Code Plus Two® plate and SAF 2507 plate from New Castle, Indiana while the internal heat exchangers consist of SAF 2507 tube sheets (2.5" thick plate) and SAF 2507 tubes fabricated from strip produced at Outokumpu's Nyby, Sweden mill. The Oman project will ultimately use approximately 1,300 tons of SAF 2507 plates and tubes and 500 tons of 2205 Code Plus Two plate — all from Outokumpu. ■



Duplex Stainless Makes a Case for Wine

Now, in addition to materials ranging from liquefied natural gas to paper pulp, something new is being stored in tanks built with LDX 2101® — wine. The wine-tank park of Garcia Carrión in southern Spain will soon be home to storage tanks built with Outokumpu's LDX 2101 and 2304 duplex stainless steels. In total, the park will house 53 tanks for wine and 12 tanks for unfermented grape juice.

to market together

Soaring nickel prices necessitated the change from the 304 and 316L previously used for wine tank storage. The low nickel content of LDX 2101 and 2304 duplex, 1.5% and 4.8% respectively, brings major cost savings while providing equal or better corrosion resistance. Additional savings come from the high strength of the duplex grades, which allow for thinner gauges, so the tank fabricator can use thinner coil either hot or cold instead of thicker hot rolled material. "316L was originally used because the sulfides (added to wine to prevent its conversion to vinegar) would cause pitting corrosion at tank tops," explained

Outokumpu's Vice President Market Development/ Technical Coordinator, Elisabeth Torsner. LDX 2101 and 2304 will now be used to build the roof and upper-most level of all new tanks. In addition to 520 tons of duplex, Outokumpu is supplying all austenitic stainless steel for the project, as well. ■



Wine is now being stored in tanks built with LDX 2101®.

Brent Crabtree: Warehouse Manager, New Castle

In 1994, after completing a six-year tour of duty with the U.S. Air Force, Brent Crabtree returned home to New Castle, Indiana and began working at one of the town's major employers: the Outokumpu plate facility. As a production worker, Brent operated about every machine and performed about every job in the mill, from annealing to plasma cutting, shot blasting, inspecting, flattening and pickling. "If we did it here, then I have worked that job at one time or another," he noted.

The knowledge he gained on the job and in his military career would serve him well when, in 1999, he was promoted to the position of warehouse manager. "The U.S Air Force did a great job of encouraging leadership and teaching you how to trust yourself, which is probably the biggest key to managing people," Brent noted.

getting to know our people

Brent manages three supervisory staff members and 12 production employees in the warehouse, as well as supervising crane work. He initiated an efficient process of separating and warehousing different sizes of plate that saves a full day of warehouse operations every week. He also oversaw the warehouse modifications when the 120" wide plate line was brought into New Castle.

But the main focus of Brent's job is to work closely with production management and schedulers to make sure customers' needs are met, which currently means shipping out some 230 tons of plate each day. "Having performed so many jobs in the mill, I know exactly what it's going to take to get a shipment out to our customer," he assured. ■



Brent Crabtree