REPORT: BIR MUNICH

Sturm und Drang

DREAMSTIME/ALEXANDER GARAEV

A FRETFUL MOOD PERVADED BIR'S FALL MEETING IN MUNICH, WHERE RECYCLERS WORRIED ABOUT MARKET CONDITIONS, POTENTIAL TRADE RESTRICTIONS IN EUROPE, AND OTHER THREATS AT A TIME OF GLOBAL ECONOMIC INSTABILITY. **BY KENT KISER AND JOE PICKARD**

The German phrase *sturm und drang*—storm and stress—perfectly captures the mood at the fall meeting of the Bureau of International Recycling (Brussels), held in Munich in late October. The meeting's location placed it squarely in that fall's eurozone storm, when the fate of the euro—and the financial stability of several European Union member countries—hung in the balance. With the U.S. economy far from robust and even China showing signs of weakness, it's not surprising that the meeting's market reports were filled with references to uncertainty, fears, unknowns, and the ominous condition of the global economy. "The market's outlook is unclear, and the only thing we know is that we don't know anything," one speaker said about the stainless steel market, but he could have been speaking for other commodities as well. Another speaker noted that the world's population would surpass 7 billion the week of the BIR meeting, raising the specter of global resource shortages but also pointing to the need, and opportunity, for stepped-up resource conservation through recycling. Even with the market storms and stresses swirling in October, speakers found reasons for optimism, though they cautioned that brighter days might come later rather than sooner.

MALONE RECEIVES BIR PAPER AWARD

The BIR Paper Division honored **Jim Malone** of D.S. Smith Recycling (Caerphilly, Wales) with its Papyrus Prize, recognizing him for his 25 years in the paper recycling business, his passion for recycling, and his role in helping his company recover 2 million mt of paper annually. In accepting the award, Malone noted the many changes he has seen in his career, most notably the growth of the global recovered paper market, especially in China, India, Indonesia, Thailand, Brazil, Russia, and Central and Eastern Europe. As the global population continues to swell, "the world's resources will continue to be stretched," he said. "Recycling has never been more important." He encouraged scrap professionals to "keep recycling high on the political and environmental agenda." Though the industry has many challenges ahead, including the volatility of global commodity markets, it "must work through these times and not be disheartened. We must all work together to find the best way to promote high-quality recycling." He expressed his pleasure at seeing the next generation entering the industry. "They will be the recycling champions of tomorrow, and their energy and enthusiasm will continue to drive the recycling industry forward," he said. After two decades in the business, Malone said he still enjoys it and continues to learn, adding that he hopes to have "many more years in this exciting industry."

Jim Malone (second from left) receives the Papyrus Prize from Paper Division President Ranjit Baxi (far left), BIR President Bjorn Grufman (far right), and Paper Division vice presidents (center to back) Ekrem Demircioglu, Jaroslav Dobes, and Reinhold Schmidt.

STAINLESS, NICKEL LOOK TO ASIA

The global economic turbulence certainly was on the mind of Stainless Steel & Special Alloys Committee Chairman **Michael Wright** of ELG Haniel Metals (Sheffield, England), who said market conditions made predictions difficult and forced recyclers to keep tabs on "so many different situations." The uncertainty meant there were no long-term orders, reducing the market to short-term movements in supply and demand—"really a hand-to-mouth situation," as he called it. Overall, recyclers "remain nervous about the uncertainty of the economy and its effect on stainless demand." As of late October, global stainless steel production was on track to reach 32 million mt in 2011, a year-on-year gain of 3.8 percent, but it was unlikely to meet the previous projection of 35 million mt. "China is really the driving force" in stainless steel production growth, he said, noting that its output is expected to have grown 13 percent from 2010 to 2011.

Michael Wright

Europe's stainless industry is mired in overcapacity, prompting Wright to point to "a need for some downsizing somewhere." In France and Germany, a slowdown in the manufacturing sector has decreased domestic demand for and availability of stainless scrap. In response, scrap exports to Asia were on the upswing and expected to continue upward in the fourth quarter, when recyclers anticipated a lot of Chinese buying, he said. The German stainless scrap market faced additional uncertainty tied to the spinoff of the stainless divisions of both ArcelorMittal (Luxembourg) and ThyssenKrupp Nirosta Präzisionsband (Schalksmühle, Germany).

Lower scrap demand also characterized the U.S. market, with the three main U.S. flat-rolled stainless mills expressing limited need for scrap, said **Barry Hunter** of Hunter Alloys (Boonton, N.J.). Many scrap suppliers were holding material with the hope that mills would step up their purchases in the fourth quarter, he said. Scrap supplies were down due to the weak manufacturing sector and poor fundamentals in construction, especially housing, which also affected mill production and the generation of home scrap, he said. The impending winter also promises to reduce supplies of obsolete scrap flowing into scrapyards. Taken together, these supply factors could yield "a fairly significant reduction in U.S. stainless scrap availability toward the end of [2011] and continuing into the first quarter," he said.

Barry Hunter

Though U.S. and European stainless mills are struggling with lower production, decreasing sales, and difficult financial conditions, Hunter reiterated that China's stainless production continues to expand. In fact, China "now represents about 39 percent of world stainless production and 41 percent of total austenitic production, or more than the United States, the European Union, and Japan combined," he said. China has expanded its production primarily with the use of nickel pig iron, but U.S. exports of stainless scrap to that country were on the rise in late 2011 to help feed

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A BASEL CONVENTION "MIRACLE"

Though "waste generation should be prevented or at least minimized," waste is inevitable and, as such, it "should be treated as a valuable resource rather than a costly burden." That was the overall political message that emerged from the Basel Convention's Conference of the Parties at its October meeting in Cartagena, Colombia, reported **Katharina Kummer Peiry** of the Secretariat of the Basel Convention (Geneva) at the BIR International Environment Council meeting. There now exists "an official, high-level political recognition of the fact that certain waste streams can be a valuable resource, and there is encouragement [for] recycling and recovery of the precious elements of such waste, provided it's done in a socially and environmentally sustainable manner," she said.

There's also recognition that recycling and recovery, in turn, can contribute to protecting the environment and human health as well as improving livelihoods by creating green jobs and green business opportunities, she added.

Thanks to this "true paradigm shift," the Basel Convention is "no longer regarded as an instrument controlling and prohibiting waste transactions but also as promoting waste prevention, minimization, and recovery if carried out in an environmentally sound manner," Kummer Peiry said. "That is a very significant change in the attitude of governments."

The COP meeting—dubbed "the miracle of Cartagena" for its breakthrough decisions—also saw the adoption of three new technical guidelines covering the management of used tires, the management of mercury waste, and the processing of hazardous waste in cement kilns. The group continues to review waste electronic and electrical equipment, with the goal of establishing "practical guidelines" on the management of that material, Kummer Peiry said.

The IEC meeting also featured a presentation on radioactive sources in the scrap stream by **Alvaro Rodriguez de Sanabria**, a radioactivity expert for the Federación Española de la Recuperación y el Reciclaje (Madrid). In addition to reviewing the Spanish Protocol on radiological surveillance of scrap metal, he updated attendees on the efforts of the International Atomic Energy Agency (Vienna) to establish a "Code of Conduct for Scrap and Semis Trading." That nonbinding document seeks to protect people, property, and the environment from radiation that inadvertently appears in scrap and semifinished products while harmonizing the different approaches among countries regarding the safe handling of radioactive scrap, he said.

this overseas growth. Hunter echoed Wright by observing that in the current market, "everything is short term, and nothing is clear."

Phil Rosenberg of Keywell (Chicago) provided a snapshot of the titanium and nickel-alloy markets, which **Danny Fischer** of OneSteel Recycling (St. Louis) presented in Rosenberg's absence. Demand for nickel-based alloys was steady, but recyclers were trading secondary alloys on a spot basis only, Rosenberg reported. Demand for high-speed steel was strong, but even with scrap in short supply, prices decreased due to a drop in the value of the alloying agents, he said. Secondary titanium demand had declined in response to weakness in the ferrous and stainless markets, though primary titanium demand was, "relatively speaking, a bright spot." Long-term forecasts for titanium demand remain strong based on anticipated production of Boeing's Dreamliner planes, Rosenberg said.

Danny Fischer

Looking at the global nickel market, a significant change in the past decade has been Asia's emergence as the dominant force in nickel ore production, primary production, and primary consumption, said **Sven Tollin** of the International Nickel Study Group (Lisbon, Portugal). In the ore sector, Asia has become the largest producer thanks mostly to stepped-up production of nickel laterite ore in Indonesia and the Philippines, Tollin said. Asia's market share of nickel ore production has grown from 16 percent in 2002 to a projected 31 percent in 2012. In that same period, Oceania and North and South America have seen their respective market shares decline, with Oceania slipping from 25 percent to 18 percent and North and South America declining from 32 percent to 25 percent, he reported.

Sven Tollin

The same scenario is playing out in primary nickel production and consumption, with Asia claiming the leading position in each, mainly due to China's production of nickel pig iron. In nickel production, Asia's market share has risen from 19 percent in 2002 to a projected 37 percent in 2012, Tollin said. All other regions—North and South America, Africa, Oceania, and Europe—have seen their market shares fall, with Europe's portion of nickel production projected to slip the most, from 37 percent to 30 percent.

In terms of nickel consumption, Asia's share will grow from 42 percent in 2002 to an estimated 67 percent in 2012. Again, Europe's market share will suffer the largest dip in that period, sliding from 41 percent to 22 percent, according to Tollin.

Looking at the overall market,

nickel posted a supply deficit of about 40,000 mt in 2010, but it was on track to have a surplus of 24,000 mt in 2011 and a "high surplus" of 75,000 mt in 2012 based on projected new supply projects coming online, Tollin said. The size of the 2011 oversupply would depend "on how much nickel pig iron China will produce for the rest of [the] year," he said.

World primary nickel production was set to grow almost 11 percent from 2010 to 2011, to about 1.6 million mt, and another 9 percent in 2012, to 1.7 million mt, with Asia expected to produce 626,300 mt—or 36 percent—of the 2012 total and Europe producing 530,000 mt, or 30 percent, Tollin said.

World primary nickel use was trending to reach 1.6 million mt in 2011, up 6.3 percent from 2010, and approximately 1.7 million mt in 2012, up almost 6 percent from the previous year. Asia is projected to use 1.1 million mt, or 66 percent of the total, followed by Europe at 372,000 mt, or 22 percent. China's rising stainless steel production will ensure that it remains "the most important market for primary nickel," Tollin said.

The massive increase in China's production of nickel pig iron has brought a seismic shift in the nickel market. Beginning in 2009, China ramped up its output to the point where, in 2010, its nickel pig iron production surpassed its production of other nickel products. It has pursued nickel pig iron aggressively to feed its burgeoning stainless steel production, and its use of this raw material has decreased its interest in stainless steel scrap, Tollin said. China's imports of stainless scrap saw an "enormous decline," from 380,000 mt in 2009 to about 85,000 mt in 2010. That year, China's nickel pig iron production exceeded the tonnage of its stainless scrap imports for the first time, he said. In other words, "nickel pig iron has basically taken

the market share away from imported stainless steel scrap."

Nickel pig iron is China's preferred raw material during periods of high nickel prices, Tollin explained, but mills will stop producing it when nickel prices are $15,000 to $20,000 a mt "because they would be producing at a loss." There are both pros and cons to using nickel pig iron, he said. It's competitively priced compared with primary nickel and imported stainless steel scrap, and it can be delivered quickly to the user: "Nickel pig iron can be produced one day and supplied to the user the following day," Tollin said. On the downside, the raw material is regarded as a "high-cost resource," with smaller nickel pig iron producers unable to deliver the product for less than $20,000 a mt. The product also has "substantial amounts of deleterious elements," Tollin said.

Imported stainless scrap and ferronickel have their own pros and cons, Tollin observed. The materials are environmentally friendly and can offer "very attractive" prices from time to time, but the long delivery time to the user is their main drawback.

Assessing the future of nickel pig iron in China, Tollin said new production technology will come on stream, and he envisions some producers integrating backward into mining, forward into stainless steel production, or both. Obstacles could include "major environmental issues," especially

Nickel pig iron is regarded as a "high-cost resource," with smaller Chinese producers unable to deliver the product for less than $20,000 a mt, Sven Tollin noted.

from producing nickel pig iron in blast furnaces, and the availability of ore, which could get tight based on export restrictions in some Asian supplying countries.

TRADE RESTRICTIONS, ECONOMIC CLOUDS PLAGUE FERROUS

The ferrous meeting pointed to its share of storm clouds on the horizon, with Ferrous Division President **Christian Rubach** of TSR Recycling (Bottrop, Germany) noting more than 1,700 reported instances of export control measures affecting minerals and metals in 2009, based on data from the Organization for Economic Cooperation and Development (Paris). There are increasing calls within the EU for tighter scrap export trade restrictions and monitoring, Rubach said, but he warned that such measures, if passed, would depress European recycling rates and weigh on scrap prices, especially given the EU's existing 20 million to 30 million mt ferrous scrap surplus.


Christian Rubach

In the U.S. market, ferrous scrap collections decreased in October and were expected to decline further in November and December, said **Blake Kelley** of Sims Metal Management Global Trade Corp. (New York), adding that economic concerns in the United States and worldwide had resulted in cooler export demand in recent months. He highlighted the scrap industry's ability to "quickly adapt to changing market conditions," as evidenced by the surge in scrap exports from the United States in August. Kelley reported that Chinese scrap buyers remained cautious in late October despite that country's continued rapid economic growth and its growing raw steel production, which was at "near record rates" late last year. Elsewhere in Asia, the weaker currencies in South Korea and Taiwan were having a dampening effect on scrap market conditions, Kelley said.


Blake Kelley

Though Indian steel production was expected to increase 5 to 6 percent in 2011, the country's ferrous scrap imports likely would be down 15 percent, to roughly 4 million mt, compared with 2010 levels, said **Zain Nathani** of the Nathani Group of Cos. (Mumbai). The devaluation of the Indian rupee against the dollar had prevented Indian scrap buyers from benefiting from recent declines in international ferrous scrap prices, but he predicted that Indian buyers would "aggressively" return to the market as long as prices were steady.


Zain Nathani

In Japan, leading minimill Tokyo Steel recently had reduced its scrap buying prices, **Hisatoshi Kojo** of the

TIRE RECYCLING PROSPECTS BRIGHT

The 27 countries of the European Union recovered approximately 2.5 million mt of end-of-life tires in 2009, achieving an average recycling rate of 95 percent, reported Tires Committee Chairman **Barend Ten Bruggencate** of the Netherlands. Though 5.5 million mt of EU scrap tires still ends up in stockpiles and illegal dumps, that volume has been in "continuous decline" since the mid-1990s, while the use of recovered tires for material recycling and energy recovery has grown substantially, he said. Opportunities for greater tire recycling are promising because rubber consumption is expected to double in the coming 30 years, outpacing the world's limited virgin rubber resources, he said.


Barend Ten Bruggencate

Metz Corp. (Tokyo) reported. Despite the dramatic drop in scrap prices across Japan, he said scrap tags would rebound, barring a Greek default, as scrap flows to export yards begin to slow.

Reporting on Russia and Ukraine, **Andrey Moiseenko** of Ukrmet (Kiev) indicated that monthly scrap consumption is increasing in both countries compared with last year. In contrast with Ukraine, recent fluctuations in the Russian ruble added significantly to steel production costs there, Moiseenko said. He asserted that Ukraine is becoming a dynamic market and will become a major importer of ferrous scrap.


Andrey Moiseenko

As for Europe, economic worries continue to weigh on market sentiment, as concerns about another recession keep buyers on the sidelines, said **Tom Bird** of Van Dalen Recycling (Sheffield, England). He noted that market prices were down in both Spain and Italy, and foreign exchange rates are having a big impact on local demand. Though markets remain fragile, scrap processors are better prepared with their inventories compared with 2008, and material remains scarce, he said.

Guest speaker **Karl-Ulrich Köhler** of Tata Steel Europe (IJmuiden, Netherlands) highlighted the need to balance sustainability with the expected doubling of world steel consumption by 2050. He emphasized steel's comparatively lower energy intensity, greater affordability, and high end-of-life recycling rates compared with other materials. Köhler also stressed the need for industry to improve the sustainability of steel with more efficient production processes and new


Karl-Ulrich Köhler

technologies to reduce energy consumption and greenhouse gas emissions while facilitating the steel recycling loop.

Adding an economist's view to the ferrous discussion, guest speaker **Stefan Schilbe** of HSBC Trinkaus & Burkhardt (Düsseldorf, Germany) provided an overview of the global economy, addressing the question of whether the world is on the brink of another recession. While noting the ongoing weakness in peripheral countries in the eurozone and the need to stabilize government budgets across Europe, he stressed that China's industrial production is expected to continue growing solidly. As a result, Schilbe said he does not foresee another global recession and is "quite optimistic" on commodities in the future.

PONDERING PAPER PRICES AND QUALITY

The global demand for papermaking fiber was about 375 million mt in 2010, with recovered fiber roughly 200 million mt—or 53 percent—of that total, said guest speaker **Wilhelm Demharter** of UPM (Augsburg, Germany) at the Paper Division meeting. About half of all recovered fiber goes into the production of containerboard, while cartonboard and newsprint each consume 13 percent of the secondary fiber supply, he said. Even though recovered fiber demand and collection have grown considerably in recent decades, approximately 120 million mt of scrap paper still ends up being landfilled or incinerated around the world, Demharter said, and he encouraged recyclers to focus on recovering even more.

Wilhelm Demharter

Describing market conditions in October, Paper Division President **Ranjit Baxi** of J&H Sales International (London) blamed the sudden drop in scrap paper prices on several factors, including weak consumer demand, recessionary fears, and the ongoing eurozone crisis. Those factors "are all working together to create a loss of confidence in the market," he said, adding that currency volatility is "having a big effect on recyclers everywhere." Recyclers can't stimulate demand simply by decreasing their prices, Baxi noted.

Ranjit Baxi

Though European secondary fiber used to be China's second choice after U.S. scrap paper, Japan is moving into the second position, Ranjit Baxi said.

Baxi pointed to China as one cause of the market's weakness, noting that its third-quarter GDP growth was the slowest in two years. He expected exports of scrap paper to China in the third quarter to be weaker than the first two quarters, following a pattern seen in 2010. In the first two quarters of 2011, China's imports of scrap paper totaled about 13.3 million mt, up 6.6 percent compared with that period in 2010. The largest proportion (6.3 million mt) came from the Americas, followed by Europe (4 million mt) and Asia (2.4 million mt). Despite the third-quarter weakness, Baxi predicted that China's scrap paper imports for all of 2011 would be "slightly better" than its 2010 imports of 22.2 million mt.

Though European secondary fiber used to be China's second choice after U.S. scrap paper, Japan is moving into the second position, Baxi said. "European quality now is on par with Asian material—this is not good news" for Europeans recyclers, he said. As domestic volumes in Asian markets increase, European exporters will be the first ones affected, he pointed out.

Adding further perspective on the Japanese paper recycling market, **Nobutaka Okubo** of the Japan Recovered Paper Association (Tokyo) reported that Japan recovered 21.7 million mt of scrap paper in 2010, achieving a recovery rate of 78.3 percent. Of that tonnage, 46.5 percent (10.1 million mt) was OCC; 26.7 percent (5.8 million mt) was OMG; and 22.4 percent (4.9 million mt) was ONP. Japan produced 27 million mt of paperboard in 2010, up slightly from 2009 but down from its 2008 production of just over 30 million mt, Okubo said. The nation's paper and paperboard consumption followed a similar pattern and reflected similar numbers as its production.

Nobutaka Okubo

On the export side, Japan shipped 4.4 million mt of scrap paper in 2010, roughly 20 percent of its recovered paper volume, Okubo said. China was the primary destination, receiving 3.5 million mt, or 80 percent, with Thailand a distant second, receiving approximately 440,000 mt. About 51 percent of Japan's recovered fiber exports were OCC; another 34 percent were ONP and OMG.

Delivering quality fiber is one key to success for all paper recyclers going forward, said guest speaker **Herman van der Meij** of Viridor Resource Management (West Malling, England). "You have to monitor what you get in, you have to monitor how you produce it, and you need to be sure that the quality meets standards dictated or set by the customers," he said. He described Viridor's quality assurance procedures at the collection and

Herman van der Meij

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processing stages, which include having quality assurance staff on the processing lines, analyzing every output grade, and putting quality assurance tags on every bale. "We invest a lot of money in machinery to achieve quality," he said. "We have to make quality, and with that quality we can sell to the right markets."

VOLATILITY THE "NEW NORMAL" FOR NONFERROUS

Nonferrous industry participants have become accustomed to sharp daily price movements that, in some cases, have exceeded annual price swings from years past, said BIR Nonferrous Division Chair **Robert Stein** of Alter Trading Corp. (St. Louis) in his introduction to the nonferrous meeting. "The volatility in our markets has become the new normal." After conceding that high prices can be beneficial for the scrap industry, Stein bemoaned the "curse" of metals theft that can accompany them. He named other challenges the industry faces, which include attempts to inhibit international trade and an uncertain economic outlook, but he reminded the BIR audience that the industry has survived worse difficulties in the past.


Robert Stein

Offering an overview of the world nonferrous scrap markets, **Bianca Vicintin Abud** of Tecal Aluminio da Amazonia (Manaus, Brazil) said market participants are increasingly nervous about the debt crisis in Europe, slow growth in the United States, and credit tightening in China. The recent drop in nonferrous prices is reducing collection rates in Europe and the United States, while higher exchange-rate volatility is affecting Latin American markets such as Mexico and Brazil, she said. In Asia, shipments of scrap with high copper content were facing delayed customs clearance at ports in Nanhai, China, due to new Chinese customs rules regarding mixed shipments being "strictly enforced," Abud said. In general, market participants remain cautious, but one positive she noted is there have been few signs of the contract defaults and other problems experienced in 2008.

Guest speaker **John Woehlke** of Evermore Recycling (Nashville, Tenn.) addressed the recycling of used aluminum beverage containers, or UBCs, highlighting the rapid growth in demand for such containers in the developing world. From 2010 to 2015, demand for aluminum and steel cans is expected to grow 10 percent in South America, 8 percent in Asia, 4 percent in the Middle East and North Africa, and 2 percent in Europe, he said. Though UBC recycling rates around the world reportedly are doing well, the rate is lagging in North America despite a high can-to-can recycling ratio, Woehlke said.


John Woehlke

Michael Jansen of J.P. Morgan Securities (London), another guest speaker, presented his outlook on precious metals, indicating that gold price volatility is expected to remain "elevated in the near term." Gold has outperformed other precious metals, Jansen said, and economic instability in Europe and the United States continues to fuel gold price volatility. With the central banks now buying gold, Jansen said he expects that, five years from now, analysts will consider them today's key market drivers.


Michael Jansen

A third nonferrous guest speaker, **David Wilson** of Société Générale (London), highlighted various challenges to the global copper and aluminum markets, including the

increasing threat of substitution for copper. Though underlying base metal demand "remains reasonable," investor sentiment began to shift in September, he said. Wilson expects the global copper market to show a surplus in 2012, while global aluminum consumption could grow 7.6 percent a year between 2010 and 2015.


David Wilson

A FOCUS ON WEEE PLASTICS

Despite the market worries that defined most of the BIR fall meeting, Plastics Committee Chairman **Surendra Borad** of Gemini Corp. (Antwerp, Belgium) gave attendees some news to applaud. The global recycling industry is roughly a $500 billion-a-year business, with the United States generating $90 billion; China, about $150 billion; and Europe and other nations filling out the remainder. He also estimated the industry is growing faster than global GDP and employs 16 million to 20 million people worldwide. "Obviously we are in a very promising industry, and we must all feel happy about it despite the doom and gloom around the business at this time," Borad said.


Surendra Borad

He then provided brief market reports on India, the United States, and Europe. India's demand for imported plastic scrap was "absolutely dormant" in late October, he said, in part because only a few Indian recyclers are licensed to import scrap plastics and most of those licenses were set to expire in October. India "does not encourage the import of scrap," Borad said, a situation which he called "rather unfortunate." Its domestic plastic recycling business is doing "very well," however, with a recycling rate of 47 percent and

plastic consumption growing at 16 percent a year, a rate that surpasses even China.

In the United States, prices were under pressure in October, with some grades, such as mixed rigid plastics, available in "big quantities." Borad expected secondary prices to decline in the short term. Virgin resin prices also were decreasing, he said.

Turning to Europe, Borad bemoaned the efforts of some European companies to restrict plastic scrap exports, calling it a "very sad story." Europe generates more than 24 million mt of plastic scrap a year, a total that grows about 2 percent annually, he reported. Of that total, only 3 million mt is recycled within the EU, 8 million mt is used for energy recovery, 10 million mt is landfilled, and 3 million mt is exported. Europe does not have the capacity to process or consume additional scrap plastic, so it should not restrict or prevent exports, Borad asserted. "I strongly believe that such restrictions artificially reduce domestic prices and make collection of scrap less attractive," he said. "This is certainly not the objective of our society that is looking forward to zero waste by 2050."

Much of the Plastics Committee meeting focused on scrap plastics from end-of-life electronic products, which European recyclers must handle in accordance with the EU's Waste Electrical and Electronic Equipment directive. The WEEE market has "huge potential," Borad said, but the material brings with it environmental and technical challenges. Addressing the environmental side of the issue, **Tilman Baehr** of the Ministry of Urban Development and Environment (Hamburg, Germany) reviewed the various EU regulations, including WEEE, that govern exports of plastic scrap from electronic devices. Such scrap is "definitely a waste" under the EU Waste Directive and Basel Convention, he said, but export regulations differ whether it's destined for disposal or recovery. Plastic destined for recovery must be categorized as either hazardous waste (for example, if it contains brominated flame retardants) or nonhazardous waste. The

Tilman Baehr

designation determines what notification and information requirements recyclers must follow. The EU "very soon" will introduce a new version of the WEEE directive, he added.

Recyclers that ship the nonhazardous portion of WEEE plastics do not have to follow any notification and consent requirements, but they must include a consignment information form and have a contract with the importing party, Baehr said. The laws require the shipper to take back the material if something goes wrong, he noted. In sum, he said, "the better you sort the waste at the place of origin, the less requirements you have to fulfill afterwards and the more opportunities you have to ship it abroad."

Sticking to the topic of WEEE plastics, **Rainer Köhnlechner** of Hamos (Penzberg, Germany) described how his company recovers high-quality plastic streams from mixed electronics plastics. He noted that about 28 percent of the consumer electronics material stream (not including TVs) is plastics—up to 60 different types of polymers—with the remainder being metals, wood, elastomers, and other impurities. The main challenges of recycling such plastics are recovering those without bromides and achieving a high purity level, he said.

Rainer Köhnlechner

"I strongly believe that [export] restrictions artificially reduce domestic prices and make collection of scrap less attractive," Surendra Borad said. "This is certainly not the objective of our society that is looking toward zero waste by 2050."

Hamos uses a combination of wet and dry sorting technologies to recover WEEE plastics. The wet portion begins with running the mixed plastics through a "special salt" solution, which floats off "good" plastics—those that don't contain bromides—such as PE, PP, PS, and ABS, Köhnlechner explained. (The special salt keeps the solution from interfering with the electrostatic separation

stage later in the process.) The "good" plastics then proceed to a water separation stage in which PS and ABS sink while PE and PP float off. The wet stage can process up to 2.5 tons of mixed plastics an hour, he said.

After the sink/float process, the company granulates the plastics to a less-than-10-mm particle size. This process automatically dries the plastics but leaves moisture in any wood that remains in the mixture. Wood—from speaker cabinets and other electronic components—presents many problems because wet wood has the same density as plastic, Köhnlechner said. The plastic/wood mix then passes through an electrostatic separation system, which charges and ejects the conductive wet wood and recovers the nonconductive plastic.

Hamos also must extract elastomers from the mix because they are "killer impurities," Köhnlechner said. Its elastomer separation system removes 70 to 95 percent of the unwanted material, operating at a rate of 1,760 to 2,200 pounds an hour and yielding a mostly rubber-free plastics and a highly concentrated rubber stream.

The company also uses another type of electrostatic separation, what it calls "tribo electric charging," to separate the PS and ABS from the other "good" plastics, he said. Roughly 50 percent of the plastics in WEEE are those two polymers. The system gives ABS a positive charge and PS a negative charge, then it sorts the polymers based on their different polarity. The sorted streams have a purity level of greater than 98.5 percent with no flame retardants at a production rate of 3,300 pounds an hour, Köhnlechner said. That purity level is "such a good quality that most people using recycled plastic can use it," he said.

Kent Kiser is publisher of Scrap. *Joe Pickard is chief economist and director of commodities for ISRI.*

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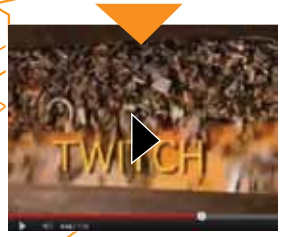

- 90% of red metals report is high density fraction
- Light fraction meets ISRI definition of Twitch
- High throughput 6 to 8 tph/machine
- Processes <1" and 1x2" fractions without adjustments
- No media base required for separation

PROOF IN TESTING!

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