New waste gasification technology for scrapped cars

A new technology hopes to enable almost 100 per cent of old vehicles to be recycled or turned into energy with the commissioning this month of the world's largest industrial waste gasification plant at Oldbury, West Midlands. Chinook Sciences' waste gasification process is like an industrial-scale pressure cooker that turns wood and other organic material into gas, stripping out clean metal ready to be recycled. The resulting synthetic gas can be used to power steam turbines to produce electricity.

No fair competition for recycling in Serbia

According to Oliver Scholz, CEO of Scholz Holding GmbH, the company's recycling center in Serbia does not operate with full capacity due to objective problems with unlawful and unfair competition operating in the grey market and within inadequate regulatory framework. Although there are possibilities for processing more than 30,000 tonnes per month, the company just processes around 10,500 tonnes of metal scrap. Scholz: "Right now we have no legal certainty for our business and no fair competition."

ELT Market Needs Breakthrough in Devulcanisation

The importance of driving market innovation and of pursuing end-of-waste status for products derived from end-of-life tyres (ELTs) was stressed by a succession of contributors to a "Leading Expert Talk on Tyres Recycling", hosted by the BIR global recycling organization during its recent World Convention in Paris.

Cees van Oostenrijk, Director of Dutch ELT management organization RecyBEM, argued that "innovation is needed" because demand for products derived from used tyres was growing "insufficiently fast". On the plus side, he added, tyre producers were taking their ELT responsibilities ever more seriously and were even approaching processors to ask how they might assist them better.

When speaking about innovation, van Oostenrijk highlighted in particular that the market needed "a breakthough in devulcanisation" – a topic which was addressed specifically by fellow guest speaker Wilma Dierkes, Associate Professor at University of Twente in the Netherlands. Whereas processes such as pyrolysis generated a number of streams including gas, polymer fragments, oil and residues, devulcanisation produced a replasticised material "with a very high performance", she explained. Work at her university had focused on the thermal devulcanisation of sulphurvulcanised styrene-butadiene rubber (SBR) and had already yielded some promising findings - for example, that oxidation stabilisers resulted in more efficient devulcanisation, especially at higher temperatures.

"It's not impossible"

As regards the continuing push for end-of-waste status within

the European used tyre sector, outgoing BIR Tyres & Rubber Committee Chairman Barend Ten Bruggencate of the Netherlands argued that the necessary qualifying criteria were already met by casings suitable for retreading and also by granulates, powder and chips obtained from the processing of the rubber fraction from tyres. These criteria are: that a market or demand already exists; that there is no overall adverse environmental / human health impact; and that the end product is fit for the specific use, and meets existing technical and legislative requirements.

But despite recognizing the "good relationship" and support for an "end-of-waste" regula-

tion among all tyre industry stakeholders, BIR Environmental & Technical Director Ross Bartley warned that the failure of a similar proposal for waste paper had "harmed the whole process" and bred within caution European Commission circles. But while Bartley suggested this negative experience with paper had made securing end-of-waste status "a lot harder" for other streams, he also underlined: "It's not impossible."

The "Leading Expert Talk on Tyres Recycling" also featured presentations from Jean-Philippe Faure, Manager of Research & Development at French ELT management company Aliapur, and from Catherine Clauzade, Chair of Reevalu and of the CEN/TC366 technical committee addressing materials from used tyres. The former pointed out that the share of ELTs destined for energy recovery in France had jumped from around 48 per cent in 2012 to almost 55 per cent last year whereas material recycling from ELTs had slid from over 33 per cent to little more than 28 per cent. And the latter gave firm examples of how standards and standardisation could play a vital role in proving industry's ability to "produce and reproduce a consistent quality product over time", thus helping to free up markets that had previously been "blocked".

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Scrap Tyre Derived Fuel Market Consumed 56 Per Cent of Generated Tyres

United States: According to the Rubber Manufacturers Association, in 2013 end-use markets consumed 95.9 per cent by weight of the scrap tyres generated in the country.

As the organization states, this is a remarkable growth from ten per cent of scrap tyres consumed by markets in 1990. The total volume of scrap tyres consumed in end use markets in the U.S. reached approximately 3,666 thousand tonnes of tyres. RMA estimates that about 3,824 thousand tonnes of tyres were and lower scrap tyre generation. TDF accounted for about 2.129,000 tonnes of scrap tyres in the U.S. in 2013, or about 56 per cent of the total scrap tyres generated. Due to increasing fuel prices and improvements in the quality and reliable delivery of TDF, this market is anticipated to experience strong demand in the immediate future. Past history has shown this market has room to grow. TDF is used by the pulp and paper industry and the cement industry as a supplemental fuel due to the high caloric requirement. Industries using tyres as fuel conform to federal, state and local environmental laws and employ emission control devices.

scrap tyres generated. Ground rubber applications include new rubber products, playground and other sports surfacing and rubber-modified asphalt. The civil engineering market

consumed 172,000 tonnes of tyres in 2013, about five per cent of the total tyres to market and consists of tyre shreds used in road and landfill construction, septic tank leach fields and other construction applications. Additional smaller markets exist which consume approximately four per cent of annually generated scrap tyres. These markets include tyres consumed in electric arc furnaces (steel manufacturing), professionally engineered tyre bales and products punched, pressed or stamped from scrap tyres. "Ongoing scrap tyre management efforts in the U.S. have been tremendously successful," said Dan Zielinski, RMA senior vice president, public affairs. "Tyre manufacturers have worked across the nation to help establish effective state scrap tyre management programs, often funded by user fees on tyre sales, to enforce regulations, clean up tyre piles and promote environmentally sound, costeffective markets for scrap tyres. The numbers tell the story: The effort is paying off in a cleaner environment."

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New Chairman for BIR Tyres & Rubber Committee

generated in the U.S. in 2013.

It should be noted that since 2011 the percentage of scrap tyres consumed by markets increased 12.9 per cent, while the volume of tyres utilized increased by about 418,000 tonnes. Key findings show a dramatic reduction in scrap tire stockpiles from one billion stockpiled tyres in 1990 to 75 million stockpiled tyres in 2013. Positive end-use market results in 2013 were primarily the result of higher rates of tyre derived fuel (TDF) use

The market for ground rubber applications consumed 975,000 tonnes of scrap tyres, or about 25 per cent of the volume of

After almost two decades, Barend Ten Bruggencate of VACO in the Netherlands stepped down at the Paris meeting.

BIR World President Björn Grufman hailed him as a "great servant" both to the global recycling organization and to tyre recycling. Successor as Tyres & Rubber Committee Chairman is Ruud Burlet of Rubber Resources in the Netherlands. Burlet began his tenure with a presentation on his own company. Tracing its roots back to 1956 and an initiative by Dutch tyre producer Vredestein to use recycled material in its compounds, Rubber Resources became totally independent 13 years ago and, in 2015, is scheduled to start up its third production line using New Technology Extrusion (NTE). Advantages of this technology include: scope for higher processing temperatures; quicker internal cooling leading to "better physical properties"; and flexibility in handling different polymer types. According to Burlet, the technology was also "scalable" in steps of 2,500 tonnes and could be transferred to tyre recycling plant locations for faster growth and valorisation of know-how. "This fills a gap in Europe," he told delegates.

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