

The Eldan Recycling ScrapBook



No 5



Dear friends,

The recycling industry is a highly competitive market – especially during recent years. Many companies have changed ownership and some have even ceased to exist. When choosing a manufacturer of recycling equipment, it is very important to choose a company which you can trust will be there in the future as well. Eldan Recycling has served its global customers for almost 60 years. By having own in-house production facility, we are one of few suppliers of recycling equipment, who have total control over the entire production chain from purchasing of e.g. iron, through manufacturing and assembling the equipment to installing of the equipment at the customer. We are hands on involved in all the vital phases of manufacturing, like manual and automatic welding, electrical installation, programming and fitting into the cabinets and machine assembly and testing before shipping. We are proud to have our own in-house production facility, which enable us to ensure the quality of every step of the project. We know how to sell, manufacture and service the machines.

During the past few years, the manufacturers of recycling equipment have experienced a turbulent time. This has however passed Eldan untouched, and we are happy to say that we have tightened our position on the market. Personally, I believe that one of the main reasons why Eldan is stronger than ever is that we have own control of the production, and therefore we also have 100% control of the machines and the lines that we build.

When you buy a machine from Eldan, you can be sure that it has also been manufactured by Eldan.


Toni Reftman
Managing Director

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Efficient waste handling solutions from Eldan

By extending the current product range to also include vacuum systems, waste collection systems and bin cleaning systems, Eldan Recycling is able to assist its customer with waste logistics and other complementing services.



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Equipment installation – where ever you are

Seven days a week, challenging conditions and thousands of kilometres from home. Working as installation technician demands strong character and high competence. Our nine men strong personnel travel all over the world installing recycling equipment to our customers.



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Pioneers within recycling of mining tyres

Ok Tedi Mining Limited is setting an example to the rest of the mining industry. Mining industry uses large tyres on mining trucks, conveyor belting and drums and these have always presented a problem with disposal. OTML decided that this material could be treated as a recyclable resource rather than a waste product.



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Wide range recycling focus

While the rest of the industry aim to be the largest and most complete recycler within one recycling area, Złomex, wants to become a wide range recycler with the possibility to accept different materials when offered to them.



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A new generation of Eldan Raspers

For decades Eldan Recycling has been in the frontline of technical development within recycling equipment. Now we have done it again – a new generation of Eldan Rasper has come to light. We are very proud to present our Multi Purpose Rasper 200 HD (Heavy Duty) with increased capacity and reduced maintenance requirements.

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"We will always choose Eldan"

The story of RECYKL started as a reflection after watching a television program about tyre recycler ABC Recykling in Poland. Twelve years later RECYKL is the largest tyre recycler in Poland, and has recently acquired its source of inspiration.



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Municipality entering cable recycling

A Danish municipality with a population of approx. 50 000, entering cable recycling in order to make an environmental effort, at the same time making money. Meet FFV Energi & Miljø!

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Why choose when you can have it all?

Remat Bucuresti Sud S.A. see great potential in the recycling industry of Romania. Today only 20-30% of the waste and garbage non metallic material with recycling potential is recycled. "You can imagine how big business opportunities are here" says General Manager, Cristian Drăghici.



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Lead and polyethylene materials from car batteries.

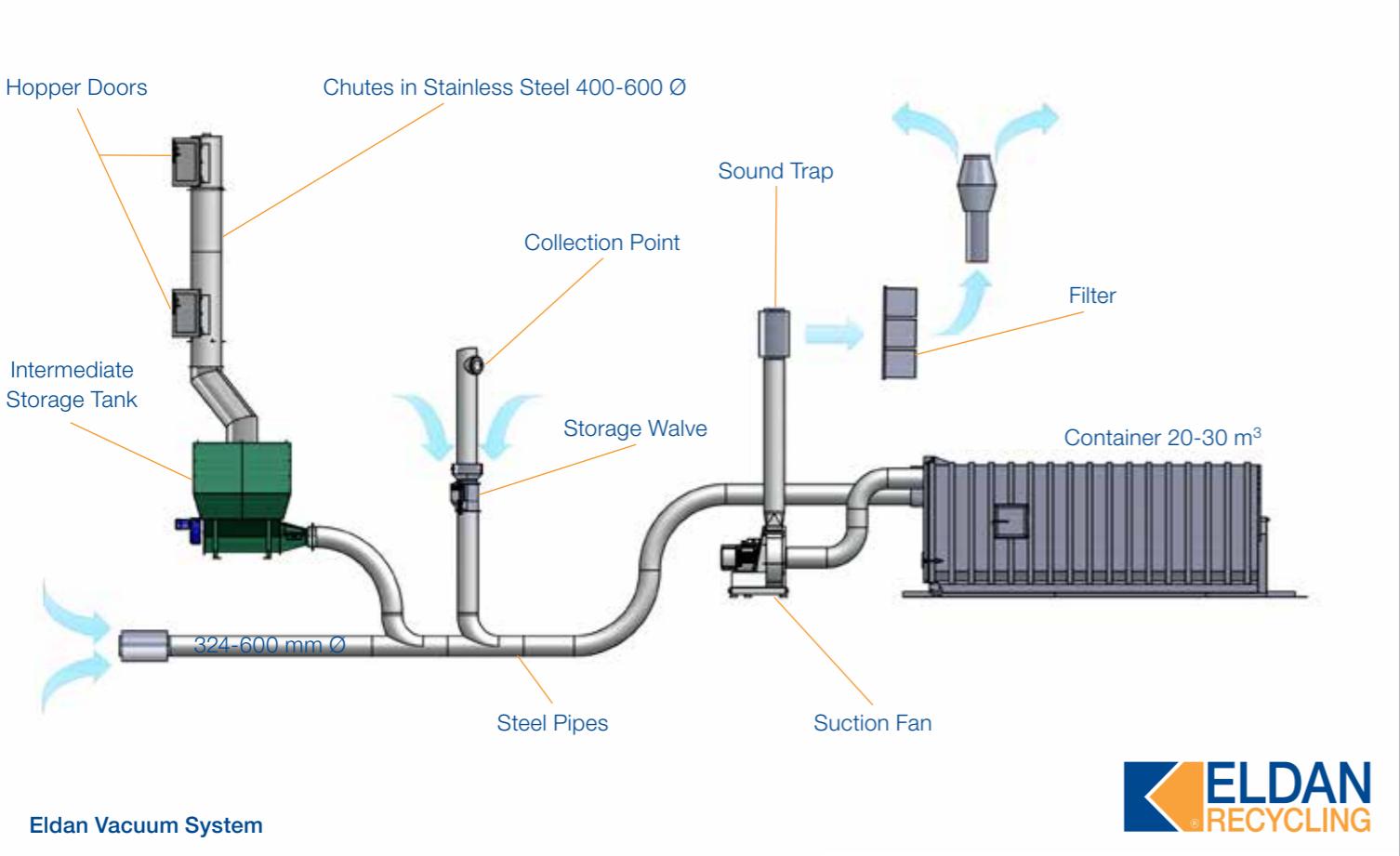
In attempts to clear up the disposal area, liberating more space for the disposal of metal slag, MPI Recycling (part of Slovenian lead acid flooded batteries producer, TAB Group) has found a new potential market for separator waste – it could be burned in Austrian incineration plants, producing energy.



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Get in touch with one of our representatives

Wherever you are located – rest assured that Eldan has an office or a representative close by.



NEWS:

Efficient waste handling solutions from Eldan

Eldan Recycling offer its customers complete recycling solution, now also including material transport! From January 1st 2014 Eldan Recycling offer a wide range of additional waste handling solutions like vacuum systems, waste collection systems and bin cleaning systems.

Entering waste handling systems

Eldan Recycling is one of the leading experts within equipment for recycling. By extending the current product range to also include vacuum systems, waste collection systems and bin cleaning systems, the company is able to assist its customer with waste logistics and other complementing services.

"It all started as an idea of offering these services as a complement to our traditional equipment. The new products have been very well received, and we have already sent out several quotes e.g. for collection of electronic waste. Our customers appreciate that we once again are one step ahead compared to our competitors by offering these kinds of services" says Dr. Toni Reftman, Managing Director of Eldan Recycling.

Effective waste solutions

The waste handling systems give the customers a sustainable waste management solution, which is easier to manage. Like the traditional Eldan product range, the systems are turn-key solutions, where Eldan handles everything from projecting to mounting.

"We focus on the conditions at the customer, and find a solution which suite their requirements and settings. In many cases they want to install a waste handling system into an existing building, and then the existing floor plan is the main obstacle which we have to work with" comments Mats Hallström, Product Manager for Waste Handling Systems at Eldan Recycling. "Like the rest of the Eldan solutions, the Waste Handling Systems offer large flexibility, and are tailored to suite the customer."

The Eldan Waste Handling Solutions, which are sold separately, and not only with Eldan equipment, include Vacuum Systems, Waste Collection Systems and Bin Cleaning Systems.

Eldan Vacuum System

In the Eldan Vacuum System the waste is collected automatically. The waste is vacuum transported through a pipe system to the collection container at a more convenient

location in e.g. a garage or external building. Vital parts of the system include slot gaps and shafts, pipe system, storage valve, control system and power as well as containers.

At the moment, 7 shafts and storage valves are being installed at the largest building project in Norway: Østfolds Nye Sykehus, Sarpsborg, to be finished in 2015. The vacuum system has also for instance been installed at the new Statoil head office in Bergen, Norway, for three fractions, and at Tallgläntan Nursinghome, Falkenberg, Sweden.

Eldan Waste Collection Systems

The Eldan Waste Collection Systems include Conventional Waste Systems, Underground Lifting Systems as well as Hospital Systems.

Conventional Waste System include solutions for waste collection depending on the customer requirements. One common problem is to transport waste from an upper level into a basement waste room, where it is separated into different bins depending on the content – e.g. paper, plastic and household waste. The type of waste is selected on a panel at the throw-on, and is it separated in the basement by e.g. a Bin



C h a n g i n g C a r o l e s or a Swinging End-Fitting. Several hundreds of these systems have already been installed in Sweden and Norway. Resident Environmental Cabinets for refuse sorting is another popular product, where the waste room is underground, and the throw-in is at ground level.

The *Underground Lifting System* opens for the possibility to store the waste container "invisibly" underground, yet making it possible to merely remove the contained once it is full. The container is lowered or raised when needed.

The *Hospital System* include waste collection solutions which are common within the care industry – e.g. bins and carts, slot gaps and shafts, linen truck changing carousel and pulling systems for bins and carts. This system has for example been installed at Kolding Hospital and Gentofte Hospital in Denmark and Ullevoll Hospital in Norway. During the past 20 years it has been, and still is, being installed in different phases at one of the largest hospitals in Scandinavia.



Bin Cleaning Systems

The Bin Cleaning Systems include mobile and stationary solutions for cleaning of waste bins with warm water pressure washer. The bins are cleaned with fresh water and the dirty water is taken care of in a separate tank. The systems are environmentally friendly, yet efficient in order to keep costs down.

Sister companies merging

In order to offer best possible expertise within this new product area, Eldan merged with Swedish sister company Eleiko. The companies were both part of the same segment with in the Lifco Group: Environmental technology.

"Eleiko has more than 55 years of experience from delivering and commissioning of waste handling systems. We are one of the leading suppliers in Norway and Sweden, and have delivered hundreds of systems. Combining the Eleiko experience and knowledge within this field with the Eldan international network and production facility, the sky is the limit for what can be accomplished" says Hallström.





Company:
Eco-Recycling

Recycling area:
Tyre (incl. mining tyres & steel
cleaning)

Title:
**"More than a business
relationship"**

In 2007 Eldan Recycling got in contact with two Serbian entrepreneurs who wanted to start the country's first tyre recycling plant. Seven years later, the company, Eco-Recycling Ltd employ over 90 people, and have a very positive outlook on the future.

Investing into the future of Serbia

Environmental awareness is increasing steadily through global governmental summits and regional legislations. Discussions on the environment and a sustainable future often focus on how to get rid of the large piles of "problems" which has been collected during the years. Large business opportunities are however waiting for those who are ready to take the chance.

Eco-Recycling, with head office in Novi Sad, Serbia, is one of the companies that realized the business potential early on. In the beginning of 2000 they started to make plans to open the first tyre recycling plant in the region. The process was tough in many ways, since they needed license for storage, treatment

"We met several times in Serbia and discussed their needs in regards to production capacity, output-material etc. Since the company had recently been established we had a lot to go through helping them to build an efficient tyre recycling facility. We also arranged visits and field tests at our reference tyre recycling plants in Germany and at our test facilities in Denmark," said Jan Kjær, Product Manager at Eldan Recycling.

The field test in Germany went well and in 2007 Eco-Recycling decided to choose Eldan Recycling as supplier of a complete turn-key tyre recycling plant (type E3000T).

"We chose Eldan since they provided the best quality price ratio, and we were sure that the equipment could complete our tasks. We could of invested in cheaper and more expensive equipment, but who would be willing to pay a higher price for a maybe 1% better end product? Choosing Eldan is a decision we have never regretted" says Nenad Ratkovic, Sales and Purchase Manager at Eco-Recycling.

Qualified support for the production facility

While acquiring the tyre recycling equipment Eco Recycling started to plan and erect the building which would house the equipment.

"Eldan Recycling provided us with invaluable support during this building project. They surely have the experience and know exactly how to plan for efficient logistics inside as well as outside the plant. We really got qualified help during the whole project," says Ratkovic.

and transportation of harmless waste from the Ministry of Environment and Mining and Spatial Planning of the Republic of Serbia. However, the dream of a fully equipped production facility, and well-proven recycling machines however kept them going. The journey towards a profitable tyre recycling plant had just begun.

Through internet research and speaking to people within the industry, Eco-Recycling found several potential suppliers of recycling equipment.

In 2008 the new building as well as the new complete turn-key tyre recycling plant was in place and Eco-Recycling could press the start button.

Initial investment

The Eldan tyre recycling plant (type E3000T) installed at Eco-Recycling handles all the recycling stages; pre-chopping/rasping, primary and final granulation, as well as separation. The system includes e.g. a Super Chopper (SC1412T), a Heavy Rasper (HR122T), two Fine Granulators (FG952), two Classifiers (PC10T/PC15V), an Aspirator (UP1500) and three magnets (two Overband Magnets and one Drum Magnet). It would be able to process car and truck tyres at up to 3 ton/production hour producing 1-4 mm granulate (99,9% free from liberated steel and textile).

The pre-chopping line basically consists of a powerful, low speed Super Chopper specially designed for processing tyre waste. By pre-chopping the tyres, the material is easier to process in the rest of the plant, thus achieving a greater processing capacity and higher quality output material. During this stage the tyres is reduced in size and most of the ferrous material is removed by a vibrating discharge conveyor. Next stage of the recycling process includes a Rasper and an Overband magnet that effectively removes the liberated steel from the rubber granulate.

During the primary and final granulation the rubber waste undergo further size reduction. First, the Fine Granulator liberate up to 50 % of the textile contained in the tyres and then the Classifier remove it. Second, another Fine Granulator and Classifier liberate and remove additional the textile from the rubber granulate. Third step, and final granulation, is completed by an Aspirator designed for final cleaning and classification of the rubber into three sizes of output rubber granulates with a purity of 99,9 % free of liberated steel and textile. This purity is obtained thanks to the central Jet Air Filter System provided by Eldan.

"We where very satisfied with the equipment, and how easy it was to run and maintain. We actually operated the factory without electric power for almost a year after the equipment had been installed" comments Ratkovic. "We used a electric power generator."

Second investment - new profitable business: steel cleaning

In 2010, after three years of successful production, Eco-Recycling decided to upgrade their tyre recycling plant by adding an Eldan Steel Cleaning System. Within tyre recycling

the main objective is to purify rubber granulate. There is, however, a notable amount of steel wire in tyres which can be a profitable business. Eco-Recycling wanted to take advantage of this opportunity.

"We noticed a demand for further steel cleaning with our long-term customer, who is also one of part-owners of our company, Scholz Srbija" says Ratkovic.

Eldan offers two different systems – an in-line solution and a "stand-alone" solution. The steel cleaning system installed at Eco-Recycling was integrated into the tyre recycling plant and dedicated to take care of the liberated steel. The Eldan Steel Cleaning System consists of the main machines; a Multi Purpose Rasper (MPR160), Special Magnet Systems, a Steel Cleaner (RFS3000), a Special Textile Cleaning unit and an Air Filter System. Minimal operator control is needed.



"The output material has a purity of approximately 98 - 99 % clean steel wire, which makes it an attractive product for the steel market," says Kjær.

Flexibility to upgrade

The Eldan systems and machines are modular designed to be easily integrated to each other. Installation of additional equipment is easily done by the skilled installation team. Sometimes the factory's layout has to be changed, a job which also can be handled by our installation team.

"It is very common that our customers start with a single machine or a smaller plant, and then upgrade to achieve higher capacity or granulate purity. During the years we have seen many customers grow step by step and achieve fantastic results," says Kjær.

Third investment - solution for processing of huge mining tyres

In 2012 Eco-Recycling decided to try to recycle mining tyres. "We found out that there were around 30.000 ton dumper tyres available in Serbia, only 250km away from us. This was an opportunity too good to pass up on" says Ratkovic.

Mining tyres can have a diameter of up to 3-4 meters and weight as much as 4-6 ton per tyre. Due to the size of mining tyres and the logistic challenges involved, Eldan has developed a specialized solution for processing tough and voluminous tyres. First the tyres are handled and pre-cut by a heavy duty demolition shear into pieces which fit the infeed of the Eldan Super Chopper (2109T). This Super Chopper has a capacity of up to 20 ton/production hour. The following steps in the recycling process are the same as for a standard tyre recycling system.

"This was actually the first Super Chopper SC2109T that has been installed in this part of Europe. They where looking to increase the plant capacity, at the same time being able to process at higher capacity. The Super Chopper SC2109T solved that issue by a long way" says Bjørn Laursen, Product Manager for tyre recycling at Eldan.

"We are very satisfied with all aspects regarding for example the easy handling and maintenance. The Eldan equipment run by our dedicated staff, along with the combined

Eco-Recycling and Eldan Recycling experience result in a great output product. All of our customers are very satisfied with quality of rubber granulates" says Ratkovic.

A tyre recycling success!

Since the first investment in 2007 Eco-Recycling has expanded their plant with Eldan equipment three times, thereby increasing the capacity for processing of scrap tyres, and added the possibility to also process mining tyres and cleaning the output steel. The facility has one production line for production of rubber granulate out of 46.000 tons of input scrap tyres per year and one production line for cleaning steel wire up to a purity of 98-99 %. Eco-Recycling offers five



different sizes of rubber granulate ranging from 0,0-0,5 mm to 2,0-5,0 mm (i.e. from approx.. 4 to 200 MESH).

The rubber granulate can be used for example as supplement to asphalt in road construction, accessories to road industry (parking and signalling pillars, curbs, rail crossings, road barriers). It can also be used in surfaces for sport courts, playgrounds, paving walkways, gardens and areas around the swimming pools. Other fields of application are the construction industry and household, for example protective flooring, solid tyres for trollies and trash cans.

Today the total area of the facility measures about 54.500 square meters with special open boxes for storage and handling of used tyres at 3600 square meters.

"Eldan is the number one within the recycling world. There are only few on the global market which have a reputation close to the one Eldan has. After almost seven years of great relationship with Eldan, Eldan is still always the answer when somebody asks for recommendation in recycling world. They offer top quality at a reasonable price, and customize the plant according to customers needs" says Ratkovic. "It is more than a business relationship – we are key partners for long term successful business."

Benefits of choosing original spare-parts

Eco-Recycling chose to sign a spare part agreement with Eldan. To ensure high quality in every step of the recycling

process, Eldan always recommends original spare- and wear parts. Different service packages are available in order to guarantee the customer spare parts when needed. The frequency of purchase is based on historical data compiled by Eldan, and "booked" spare parts are not charged to the customer until they are going to use it.

"We chose to have a spare parts agreement with Eldan in order to ensure a continuous supply of what we need in the shortest possible time. Downtime is very, very expensive!" says Ratkovic.

At the Eldan After Sales Department, four people are dedicated to serve all our customers worldwide seven days a week, all year around. This service is highly appreciated by many customers due to time differences. Today more than 80 % of the Eldan customers acquire original spare-and wear parts directly from Eldan.

"There has been a large increase in interest for our after sales services, and the volumes during the last years has increased due to delivery performance improvements, better pricing and the fact that we have installed more machines. We have spare- and wear part solutions for all our customers" says Kjær.

A bright future

Eco-Recycling acquires their tyres from within Serbia, on their own or via other collecting companies. Part-owner company, Scholz Srbija, is their biggest supplier (around 2/3 total quantity), with collecting points in 38 cities in the country. In 2012 they collected around 25.000 tones of end-of-life tyres of total collected 36.000 tones. Eco-Recycling is however looking to import tyres from neighbour countries. Out of the customers of rubber granulate, about 80% is sold to other countries.

Currently, Eco Recycling employ over 90 people, but in regard to their ambitious expanding plans, the number of employees will certainly increase. They have already a new recycling project in full progress.



"We are looking forward to a bright future for our company by optimizing our recycling equipment with good support from Eldan Recycling. The Multi Purpose Rasper (MPR160) belonging to the complete tyre plant will be replaced by a MPR200. This upgraded machine will increase capacity with up to 25 % due to its bigger size. The existing MPR160 will be installed in the Steel Cleaning System" says Ratkovic. "Also we see high market potential within tyre recycling. Beside rubber granulate for end-products like insulating material or sport surfaces, a big potential is usage as an additive to asphalt for road construction. There is always demand for rubber as TDF, and new solutions like pyrolysis."





Eco Recycling personnel from left to right:

Head of maintenance: Luka Rodić - **Deputy production manager:** Darko Pranić - **Shift supervisor:** Boban Kresoja

Production Manager: Dragan Savić - **General manager:** Radomir Popović



Company: Eco-Recycling
Employees: More than 90 people
Location: Novi Sad, Serbia

The company was founded by two successful business men; Vlatko Drča and Boško Palkovljević.

Eco-Recycling is a scrap dealer within the tyre, mining tyre and steel industry. Selling rubber granulate in five different dimensions and high quality steel granulate.

Operate in compliance with all ecological standards of the European Union and Austria Quality Standards ISO 9001:2008 and ISO 14001:2004.



Eldan entering Venezuela

Eldan has delivered a tyre shredding machine to the biggest retread manufacturer in Venezuela. The company, which has hundreds of employees, receives used tyres every day - mostly truck tyres and other large tyres that are retreaded to prolong the lifespan of the tyres. A part of the tyres is unfit for use and the retread manufacturer wishes to process these tyres in the Eldan Super Chopper as first step to recover the rubber, steel and textile, making it an environmental and profitable alternative to landfill.

Managing Director, Dr. Toni Reftman states "This is a very interesting order for Eldan as Venezuela has been a very difficult market to penetrate. We did, however, succeed to make contact with this company that has chosen to get its bearing internationally when investing in production equipment."

The customer paid special attention to features such as durability, high productivity performance, low energy consumption and little downtime for service and maintenance.



"Our extensive experience with delivery of equipment to the recycling industry was also an important factor," says Dr. Reftman.

Oyster prepared for the present and future Indian market

Eldan has delivered and commissioned a 3 ton/production hour Steel Cleaning System to Oyster Industries Pvt. Ltd, in the state of Gujarat, India.

The fast growing amount of steel radial tyres in India requires equipment meeting the demand for industrial processing. "We are pleased and excited to bring this new and innovative system for cleaning of the scrap steel wire originating from the tyre recycling industry into our country" says Ravi Narayan, Director for Projects and Plants at Ferrostaal India Private Limited, the agent for Eldan Recycling A/S in India. "Eldan guarantees a homogenous and consistent quality output, which will be the first of its kind in India within the metal scrap industry".

Eldan offer steel cleaning equipment both as "inline" systems for integration with existing tyre recycling systems or as "stand alone" systems working independently with capacities ranging from 1-4 tonnes per hour and steel purity is guaranteed up to 98-99% free of rubber and textile. The Eldan Steel Cleaning Systems are designed for automated processing and 24/7 operation.

Oyster Industries Pvt Ltd is processing contaminated steel cord from the market, turning it into a high value material for the steel smelting and iron foundry industry. "With this new line and processing system we are prepared to service both the present and the future Indian market" says comments Ankit Mittal and Mr. Anil Rathi, the Director of Oyster Industries PVT LTD.,



The picture shows from left to right Mr Anil Rathi, Mr. Henning Nørgaard, Territory Manager at Eldan Recycling A/S, Mr. Ankit Mittal and Mr. Ravi Narayan gathering during the Tyre Expo India, Chennai 9-11th July 2013.



Carsten Nielsen

Profession: Installation technician
Title: Equipment installation - wherever you are

Seven days a week, challenging conditions and thousands of kilometres from home. Working as installation technician demands strong character and high competence. Our nine men strong personnel travel all over the world installing recycling equipment to our customers.

Considering that Eldan Recycling installs closely to one hundred new recycling machines and complete plants every year, our installation team has a heavy work schedule. Carsten Nielsen that has been in this team as Installation and Service Manager for many years knows the importance of recruiting right staff. This kind of work definitely does not suit everyone due to very challenging conditions.

"The guys often travel alone on these installation assignments and they are responsible of the work coordination on site including time planning and leading the local workforce. Cultural discrepancies can be a challenge as well as different languages. In addition to strong technical and leadership skills, you need to be self-driven, courageous and equipped with a large portion of social competence," explains Nielsen.

"Examples of such projects are our customers in Papua New Guinea and in Pakistan."

In Papua New Guinea, the recycling plant was installed in the Western Province, which is an isolated and lightly populated area. The customer is located on Mount Fublian, which is set in a high rainfall area characterised by vertical cliffs and dense tropical rainforest. Rain falls on average 339 days of the year, totalling around 10,000mm per year, making the area one of the wettest on earth. Logistics was a challenge, transporting the equipment by boat at sea and river and by truck on dirt roads. The Danish personnel flew 27 hours (excluding transfer time) via Dubai, Singapore, Brisbane and Cairns in order to get there.

In Pakistan it is well known that it is a developing country with large countryside areas and a tense political climate. This situation makes the planning of the recycling plant installation even more important. "For this exceptional project we had two installation technicians on site. They worked and lived far from the nearest city, Karachi, and they stayed in Pakistan several weeks, often working more than ten hours each day, seven days a week. They need to be two to keep up spirit," says Nielsen.

Normally an installation project starts directly after a customer's purchase of a single machine or a complete plant. Our project leaders Michael Hansen and Thomas Thomsen are responsible for larger plants. Nielsen takes care of single

machines. He is also responsible for the online support, guarantees and service. Speaking both English and German is beneficial, as well as having a mobile near at hand.

"We know that every minute counts when it comes to reducing downtime, therefore we do our best to help," says Nielsen.

Always installing our own equipment

Eldan usually sends a container equipped with tools to the production facility as a quality assurance. If sky lifts, cranes or other equipment is required at site, the customer is informed by Nielsen. The installation technician from Eldan acts as Supervisor on site leading the work with local installers.

Carsten Jensen emphasizes the value of installing our own equipment: "As well as the Eldan recycling machines are manufactured in our own production facility in Denmark, they are installed under our supervision. It is a question about quality."

Of the same reason, all of our installation technicians have undergone internal training on our recycling machines. It takes about four years to be fully trained. Thereafter, they keep themselves updated on technical improvements. This training is very important due to technical advanced equipment and the fact that the recycling plants arrive in modules. A technical layout is provided, but sometimes it does not exactly correspond to for example the building. In this situation, a profound technical and logistic understanding is needed. Next phase is the production start-up where the customer's personnel get all necessary training to run the production successfully.

"Our installation technicians make a fantastic job ensuring that our customers feel secure about managing the recycling machines on their own. They are definitely part of the explanation to our many returning customers.



Nothing is stronger than its weakest link. We aim to be strong along the whole production chain," ends Nielsen.



"Nothing is stronger than its weakest link. We aim to be strong along the whole production chain."



Carsten Nielsen,
Installation and Service Manager at Eldan Recycling



Steen Jensen with guard at the top of a cement plant in Pakistan

Life as an installation technician: 9 out of 10 fall off

Steen Jensen is one of our experienced installation technicians having worked at production facilities in over 30 countries around the world. During his 25 years within this work he has seen many men give up. This has never been an option for Jensen: "The combination of technical challenge and opportunity to meet different cultures is thrilling."

How would you describe your job?

"You have to like your own company and you have to be self-driven. When we arrive to a production facility to build up a new recycling plant, we are most often alone from Eldan. We are Supervisors that are responsible for the total installation and training of the customer's personnel. As the customer trust you, your technical knowledge about the recycling plant as well as your leadership skills must be 100 % reliable."

What makes you like this job?

"When you work with people from different countries, you get to know the culture in a much better way than travelling as tourist. All those cultural meetings enrich my life even though the work can be rather challenging. Another part is the focus on solving problems. The installation project must succeed, and you are the one who is in charge of every phase of the project."

Do you remember when you solved an exceptional situation?

"Two years ago we were about to install a complete tyre recycling plant in India and everything went according to plan until our container equipped with all our tools where dropped down in the Hamburg harbour. I had to build this plant only with tools local installers could provide us with and I had to lead the working team via translator. In a situation like this, there is only one focus: Solve the problem, and that we did."

What are the challenges?

"There are many, but of course building a new recycling plant is a challenge. A plant consists of many different machine modules that must fit together and run smoothly after closing the installation project. We cooperate with local installers who sometimes never have installed a recycling plant before. There is a great challenge in communicating and leading the work. For example different cultures have different sense of time which can make time planning difficult, but over time you learn how to read people and establish relationships."

How do live during an installation project?

"That depends of location of the production facility. In some countries we stay at hotels close to the facility, but in few other countries we have to live on site. That can be rather simple with only a bed and a wardrobe. You have to be physical strong; that is why 9 of 10 fall off."

What will be your next project?

"Probably Pakistan or India again, but first I will have two or three weeks off at home. I hope to continue working as installation technician for many years to come."

Steel cleaning system to France

Eldan has delivered a Steel Cleaning System to the French company RBSI. Since 2013, RBSI has been able to clean the steel wire coming from their existing Tyre Granulation Line. The steel copes with the steelworks quality requirements. The Eldan Steel Cleaning System is designed to process up to 2.4 tonnes steel wire per hour with a minimum required purity of 96% (free of rubber and textile).

RBSI benefits greatly by the Steel Cleaning System as the company is able to clean the wire from the current production as well as wire from previous production. Today, the company turns a former waste product into a profitable business. As an additional advantage the area previously dedicated to the old stock of wire will soon be available again.

The Steel Cleaning System is the result of a close cooperation between Eldan and RBSI both before and after the contract was signed. "The customer wanted to install the line in the existing buildings. It was quite a challenge to fit the complete system into 144 sqm" explains Michael S. Andersen, Project Manager in charge.

For RBSI, the result is a win-win situation. They can sell the steel wire with a profit and at the same time achieve a higher rubber yield.



"We are very happy that RBSI chose Eldan despite the fact that they operate a Granulation Line from a competitor," says Christian Duffau, Sales Manager at Eldan France.

Leading Chinese cable recycler acquire Eldan equipment

It is vital for Tianjin Xinneng Renewable Resources Co Ltd to have a good relationship with the companies they do business with. The President Mr. Zhang and the Vice President Mr. Wang often travel the world to visit their suppliers of both scrap products and processing equipment. In the end of 2013 they travelled from Tianjin, China, to visit Eldan Recyclings head office and production facility in Faaborg, Denmark.

The reason for the visit was to inspect their new cable recycling line prior to shipment. The line is capable of processing up to 3 ton scrap cable per production hour, turning it into valuable copper or aluminium granulate as well as plastics from the insulation. When processing scrap cables into copper granulates, the purity is very important and the Eldan equipment ensures up to 99.5% metal purity. The Eldan equipment will be used to support Tianjin Xinneng Renewable Resources Co Ltd's Spanish and Italian copper smelting equipment at the facility in China.

"We are very proud that Mr. Zhang and Mr. Wang found time to visit our factory in Denmark. It is very important to us that everything works smoothly when the processing equipment



arrives at its destination. Therefore - in deals like this - we always send one of our Project Managers to the customer site to clarify all details concerning the installation etc. before production of the equipment is actually started-up. This is done to ensure a successful installation and commissioning on site", says Henning Nørgaard, Territory Manager at Eldan Recycling.



Company: OK Tedi Mining Limited
Recycling Area: Mining tyre recycling
Title: Pioneers within recycling of mining tyres

Ok Tedi Mining Limited (OTML), which operate a gold-copper mine in the Western Province of Papua New Guinea, is setting an example to the rest of the mining industry. The mining industry uses large tyres on mining trucks, conveyor belting and drums and these have always presented a problem with disposal. They are usually disposed of in land-fills, but OTML decided that this material could be treated as a recyclable resource rather than a waste product.

Huge tyres – a large scale problem

In the middle of Papua New Guinea, close to the town of Tabubil, the gold-copper mine company Ok Tedi Mining Limited (OTML) is setting an example for the mining industry globally. OTML has approximately 40,000 cubic meters of waste tyres that have accumulated over the last 30 years of mining as well as a considerable quantity of conveyor belts, drums and other material which accumulates at the mining site. Recycling of waste car and truck tyres is a successful business – what if it would be possible to recycle these old mine truck tyres and conveyor belts into a reusable commodity?

In order to find a solution, OTML got in contact with Eldan Recycling. South Pacific Manager for Eldan Recycling, Jim Hole, went to Papua New Guinea to meet with them in the middle of 2011. OTML wanted to process and dispose of the stockpiles of mining tyres and conveyor belts in a socially responsible, as well as environmentally safe and sustainable manner.

"The most important thing for OTML was good citizenship and to clean up the countryside after 40 years of mining. They wanted to get the entire area as close as possible to its original state, including getting rid of scrap steel and old tyres and conveyors. The fact that there is large money to be made is merely a pleasant bonus," says Hole.

"Eldan is one of the leading manufacturers within tyre recycling equipment, we have hundreds of reference plants within this recycling area world wide. This was however the first time that we had been asked to process a material as tough as this," says Bjørn Laursen, Product Manager for tyre recycling at Eldan. "We knew that there was a global problem with large mining tyres piling up since no one had presented a solution to the problem. Basically all mining companies dispose of their used tyres in the same way as OTML has done since 1984 – in landfills, or by using them as safety precautions for roads. Recycling of these tyres is a huge business opportunity waiting to be dug up."

Eldan had developed a complete solution to the problem,

which had been partly delivered to a European company: "The results from processing of mining tyres at this customer were very positive. We had however not yet found a suitable customer for testing the complete solution until OTML got in touch with us. Naturally this project had highest priority," continues Laursen.

Processing trials in Denmark

OTML was intrigued by the solution presented to them by Eldan, and in the end of 2011 OTML staff and Hole went to Europe to see the Eldan tyre recycling equipment in production at two reference plants, and to be present at the test run for the mining tyre recycling system in Denmark. A container load of the most difficult and oldest tyres had been sent beforehand.

"The trials to produce a high quality rubber crumb from the large mining tyres were very successful. The solution we had developed proved to be very efficient handling the kind of tough earth and ore moving truck tyres used at the Ok Tedi mine. These tyres have a diameter of up to 2.5 meters with a width of up to 1 meter, weighing as much as 3 ton," says Larsen.

After the successful tests, and efficient negotiations OTML acquired an Eldan Tyre Recycling Plant (type E4000T spec). in the beginning of 2012. This plant including one Tyre Feeder (TF600), one Super Chopper (SC 2109T HD), one Multi Purpose Rasper (MPR200T), two Fine Granulators (FG1504), one Tumble Back Feeder, three Overband Magnets (DM1850/ DM1450), one Drum Magnet, two Classifiers (PC10T/PC15), one Aspirator (UP1750) and a Separation table (C26). OTML also acquired a Complete Jet Air System and a Service Contact.

The mining tyres are first handled and pre-cut by a heavy duty demolition shear into pieces which fit the in-feed of the Eldan Super Chopper HD, which is especially designed to process voluminous and tough waste. In the Super Chopper, the big pieces of mining tyre are processed into tyre shreds, and free steel wire is liberated and removed from the shreds by a powerful Overband Magnet. The tyre shreds are then further processed in the standard Eldan granulation and separation plant. Depending on the customer specific requirements a high quality rubber granulate and clean steel wire can be produced.

The plant has a production capacity of approximately 3 ton rubber granulate/ production hour (corresponding to processing approximately 1-2 mining tyres/production hour). The plant produces a 1-3 mm rubber granulate also separating

and removing the steel reinforcement wires from the tyres and conveyors for recycling. The rubber granulate is 99.9% free of liberated steel and textile.

"The plant was successfully handed over to OTML in May 2013 and has been very interesting and developing for Eldan from a technical point of view as well as from a project management point of view," says Michael Sønderby Andersen, Project Manager at Eldan Recycling. "Our gained experience and increased knowledge from our supply to the OTML plant will be very useful for Eldan in upcoming projects within the mining industry."

"The trials to produce a high quality rubber crumb from the large mining tyres were very successful."

Transporting a 23 ton MPR to an extremely remote location

Once the equipment set-up for the facility had been decided, the main issue was transportation. The location of the plant in the middle of Papua New Guinea is extremely remote and isolated situated at about 2500 m altitude about 15 km from the Indonesian border. The equipment was shipped by boat to Port Moresby, and then further shipped by barge several hundreds of kilometres up river. Finally the 21 containers where transported on 160 km of dirt road.

Adding a very high rainfall in the region – on average 339 days and 10,000 mm per annum at Mt Fubilan (location of the Ok Tedi mine) and Tabubil, where its township is located - logistics has always been a major challenge. Most of the equipment



required by OTML for its mining operations as well as food supplies is ferried from barges up the Fly River, an 800 km river length between the town of Kiunga and its estuary. From Kiunga, mine supplies are transported in truck convoys to the mining township of Tabubil, a 137 km distance.

The logistics presented some logistical issues, but the plant

was delivered early in 2013. As far as the Danish personnel was concerned they flew 27 hours (excluding transfer time) via Dubai, Singapore, Brisbane and Cairns in order to get there. "It has been a pleasure working together with OTML in all aspects in the project phases," says Andersen.

Since OTML had no previous experience from the recycling industry, the contract for supply of equipment also included installation, commissioning and training of personnel at OTML. Also, a regular contract for maintenance was also instituted between OTML and Eldan.

"After past environmental misfortunes the plant is a reverse for better. OTML has chosen to address this environmental issue head-on with innovation and with a broader program of environmental initiatives which we believe will ensure a safe, sustainable environment for the people of Western Province and Papua New Guinea for years to come," says Nigel Parker, OTML Managing Director & Chief Executive Officer, during the opening of the plant.

Reusing a mountain of waste tyres

Today, production is running smoothly, producing rubber granulate to demand. "Today we process about 3 ton/production hour and production is running as expected with few maintenance. We have only one customer at the moment and will be finishing off their request. Unless we get in another request, we will focus on the environmental issues as a clean-up process to reduce environmental impact, meaning running the plant at our own phase," says Hendrick Min, Superintendent Industrial Waste and Disposals, Ok Tedi Mining Limited.

The rubber granulate product has multiple uses including it



being used in the bitumen component of road surfaces to make them more flexible and longer lasting, to create surfaced

playing fields in children's playgrounds, as underlays for carpets and tiles, as building blocks, various industrial uses and as an compound in explosives.

The steel content of the tyre is approximately 20%. By reducing the steel in size in the Eldan Tyre Recycling Plant, compared to merely stripping it from the tyre, it is easier to containerise. The steel is, together with other residual steel, being shipped to Port Moresby in containers and is a high quality steel by-product.

"We would definitely recommend Eldan. In fact we already have industry and company representatives visiting our plant and we recommend them to use Eldan. Eldan are competitive and they can customise the plant set ups and even operation to customer requirement," comments Min. "If they can install a completely new plant in the terrains of PNG only accessible via planes, they are there for you."

Environmental thinking

Parker is proud to have brought the company's environment footprint to a new level. "The use of recycling mine tyres in this way is a world first, and the eyes of the mining world are fixed firmly on what we have achieved and the progress we will make over the coming months," Parker said when the plant was commissioned in early 2013. "This plant will recycle used mining tyres, conveyor belts and other hard mining waste materials into sustainable environmentally friendly products".

Parker also acknowledged the expertise of Eldan and its specialists together with personnel from OTML for their contributions and hard work from start to finish of the plant construction.

The recycling facility at OTML is used by Eldan as a reference plant, and OTML is looking to share its knowledge and experience on this project to other mines in PNG and elsewhere.

"The future of processing mining tyres in Australia and other countries is enormous. It is estimated that there is 1-2 million ton of mining tyres in dumps in Australia up to date. That number is increasing by up to 100,000 tonnes per year. This will have to be cleaned up eventually as all mine sites have in their agreement to restore the area to original condition" says Hole. "The only obstacle is the end use of the finished crumb. I know that there is an Australian company, which has developed an explosive where rubber powder is an ingredient. Research and development for end use of rubber granulate and rubber powder is awaited."



Company:

OK Tedi Mining Limited

Founded: 1984, construction of mine commenced in 1980

Employees – within recycling: 6 plus 2 vacancies

Employees – total: 2 194 (including apprentice/GDS/PADs) and contractors: 3 149

Location: Tabubil, Papua New Guinea



The Ok Tedi mine is an open-cut operation in which about 78,000 tonnes of ore and 80,000 tonnes of overburden (waste rock) are mined each day from a pit covering about 2.6 square kilometres. The mine and mill operate 24 hours per day, 365 days per year.

Ok Tedi sells approximately 400,000 tonnes of copper concentrate each year to long standing customers in Japan, Korea, India, Germany and the Philippines. The concentrate typically contains 25% copper, 20 grams per tonnes gold and 65 grams per tonne silver from which the revenue is derived. The amount of revenue is determined by prevailing metal prices that can vary significantly.



Złomex representatives from left to right:

Przemysław Matulka, President - Jacek Oleszek, Vice President - Marek Ruśniak, Technical Manager.

Company:

Zakład Przerobu Złomu
"Złomex" S.A.

Recycling area:

Tyre and WEEE recycling
Wide range recycling focus

For many recyclers the aim is to become the top name within one recycling area. For Zakład Przerobu Złomu "Złomex" S.A. the aim is to become the top of mind wide range scrap recycler - globally.

Experienced recycler – novice within tyre recycling

Zakład Przerobu Złomu "Złomex" S.A. is an experienced recycler located in Poland. Up until 1992 they were a part of the neighbouring steel work, Huta im. T. Sendzimira in Kraków (presently ArcelorMittal Poland S.A.), but was then acquired by investors. Today, main business is still purchasing and processing of mainly steel scrap, but also some nonferrous scrap.

Through this steel scrap business Złomex got introduced to the tyre recycling industry. "I remember that we were visiting a tyre recycling company in Poland, where there was a large pile of steel wire in their yard, deriving from their tyre processing. No one wanted anything to do with it! I remember thinking they are in the tyre recycling industry, and do not use that large

share of the tyre to anything good? We are in the steel scrap business, and it's our duty to find a industry scale solution for it," says Jacek Oleszek, Vice President of Zakład Przerobu Złomu "Złomex" S.A..

Złomex decided to look into the matter, and after a thorough market research, Złomex ended up in deciding between two large suppliers of recycling equipment present with representatives in Poland. "We chose Eldan since doing serious business with them was very easy. We had an open dialogue with Eldan through their Polish representative, Tomasz Kajzer [at Rub-Met] about what we wanted to achieve, and what at which conditions," says Oleszek. "There were three main differences between the two potential suppliers, which made us decide to go with Eldan. First, Eldan was open to discussions regarding the plant set-up, when the other potential supplier merely offered a package solution and was not receptive to modifications or changes. Second, we were invited to visit several reference plants through Eldan, while the competitor did not find any for us to visit. Third, Kajzer and Eldan was, and still is, always available for us. It does not matter if the matter requires a visit or merely getting additional information to us. In an investment as important as this, trusting your supplier is vital."

Focus on the unwanted fraction

In 2010 Złomex acquired an Eldan Tyre Recycling Plant (C-plant) including a Super Chopper (SC2118T) and a Multi

Purpose Rasper (MPR200T). They would be able to turn the end-of-life tyres into rubber chips and tyre wire. They wanted to sell the rubber chips to cement plants in the region, to be used in incineration.

"Złomex was my first customer in Poland who was active within other recycling branches before entering tyre recycling," says Tomasz Kajzer, at Rub-Met, Eldan Recycling's representative in Poland. "During our initial meetings I actually asked them why they wanted to enter tyre recycling, since it at that time seemed like a far fetched idea for a steel scrap processor. Their answer was that they wanted to acquire more steel scrap – i.e. get hold of the steel wire from the tyres. In the past the tyre wire coming from the tyre recyclers was rather a problem than a business opportunity due to high content of impurities [rubber and textiles] trapped in the "raw" tyre wire."

Expanding production – in many directions

After two years of TDF chips and tyre wire production Złomex decided to expand their recycling activities to include additional rubber fractions. They wanted to be able to offer three rubber products; TDF chips, rubber granulate and rubber powder, and therefore be more flexible to what the market demands. After discussions with Kajzer, Złomex realized that much of the equipment included in the prospective tyre recycling plant, would also be used in recycling of WEEE (waste electrical and electronic equipment) and cable. What if it was possible to recycle tyre, cable and WEEE with just minor modifications?

Finally they decided to acquire a tyre plant (E1500T) and a powder production plant (Cracker Mill – CM 900) which would allow them to also process cables and WEEE in campaigns, and to also produce rubber granulate and rubber powder. In order to get the combi-plant they added equipment to their existing production – e.g. Silo (V2), Fine Granulator (FG1504), Classifier (PC15), Drum Magnet, Aspirator (UP1500), Silo (SMV), Separation Table (C26), Cracker Mill (CM900) and an Eddy Current Separator for WEEE recycling purpose. The plant was also completed with automatic bagging system for all granulated and powdered products as well as a central automatic filter system.

Aiming to be a wide range recycler

Today the WEEE and cable recycling facility consists of the following equipment where of the italic marked also are used when processing waste tyres (i.e. in the E1500T); *Super Chopper (SC2118)*, *Multi Purpose Rasper (MPR200)*, magnetic separation, *Eddy Current Separation*, *Buffer silo (12m³)*, *conveyor belt*, *V2 silo*, *Fine Granulator (FG1504)*, *Pneumatic Material Transport*, *Separation Table (C26)*, *SMV silo*, *Drum magnet*, *Pneumatic Material Transport and Bagging Station* (for organic fraction).



The new plant combining processing of tyres with the possibility to process WEEE and cables is intended to operate in campaigns, which is a large advantage for the company in good times and bad. "When there is a change in the market, and one leg of Złomex gets weaker, we have the possibility to stand on the other legs. Also, when we see a new possibility in the market, or get an opportunity to handle a certain material, we can meet that opportunity. We are more flexible this way!" says Oleszek. "This kind of thinking was behind the final layout of the plant. We might have reduced the capacity of the tyre granulation plant, but instead we used that remaining money to increase diversity in the input material. TDF chips when the market is there, rubber powder when that opportunity arises etc."

Unique, diversified and aiming high

At the moment Złomex processes approx. 10,000 tons of tyres annually. Out of rubber output material, almost 100% is presently sold to Poland. In the future Złomex want to increase their sales through export, like it's the case with steel scrap





products, sold to Germany, India and other markets. The new investment creates better possibilities in that respect thanks to diversification of the final products.

Złomex want to be known as the wide range recycling company who take care of different waste and scrap products. They are already the company to turn to in Poland if looking for rubber powder. The Eldan plant is the first, and also the only, powder production system in Poland processing end-of-life tyres.

"We have high expectations on the future of rubber powder production in particular for use as modified bitumen in asphalt. We naturally hope that research will find additional ways of us-

ing it, since the material has so many benefits. Used in asphalt, the rubber powder will improve e.g. quality, stability and durability," says Oleszek. "Our customers are very happy about the final product and purity."

Poland is the 6th largest economy in the European Union, and one of the fastest growing economies in the world. With increased awareness of environmental impact, as well as governmental legislation encouraging an environmental focus of production, the future look bright in the region. Private as well as governmental investments for a sustainable future are predicted to increase.



"Since we get many visits from potential Eldan customer, we often get asked the question: *why do you continue to choose Eldan?* The reasons are the same as when we desired to make the first investment in Eldan equipment – the flexible and modular solutions, the existing references world wide and the fact that Eldan personnel and representatives are always just one phone call away," says Przemysław Matulka, President of Złomex. "In addition – now we have also experienced the equipment ourselves, and have actively chosen to stand by its quality as a reference."

"When you mention Eldan to someone within the industry they say that the brand is equal to superior quality machines and service. Eldan is the number one brand to go to in Poland due to a good reputation and good references In Poland and the rest of Europe to back it up," says Oleszek. "Even competitors make respectful comment about Eldan. Eldan is a very strong brand!"



Company:
Location:
Founded:
Employees:

Zakład Przerobu Złomu "Złomex" S.A.
Kraków (steel processing and recycling) and Warsaw (waste collection), Poland
1992
110 (of which 6 full-time within tyre recycling)

About company: Złomex purchase and process steel scrap, and some nonferrous scrap. Since 2011 they are also active within tyre recycling (with possibilities to also recycle cable and WEEE). The aim is to become a wide range recycling company who take care of different waste and scrap products.

A new generation of Eldan Raspers

For decades Eldan Recycling has been in the frontline of technical development within recycling equipment. Now we have done it again – a new generation of Eldan Rasper has come to light. We are very proud to present our Multi Purpose Rasper 200 HD (Heavy Duty) that increases capacity and reduces maintenance requirements.

The Multi Purpose Rasper, MPR200 HD (Heavy Duty) is the newest generation of Eldan Raspers. The design is based on the time-tested, field-proven features that, for decades, have made the Eldan Rasper the most popular secondary processor in the world. Engineers at Eldan Recycling have integrated many new features to the ever-popular HR Rasper design. Jan Kjær, Product Manager for fridge, cable and MSW (Municipal Solid Waste) recycling, tells us about this new exiting machine.

What has been the driving force behind the new design?

"As always our starting-point has been well-proven technology in combination with customer requirements for higher efficiency and easier to maintenance. The Multi-Purpose Rasper 200 HD has everything that our customers value; it is based on many year of experience and it is field-tested. We think it will be well received by the market.

Tell us about the upgraded functionalities.

"The new HD model has a rotor diameter that has been increased by 40 % diameter. It has also a 40 % increased screen area, turn ably screens, replaceable wear plates and the cassettes are hardened all the way through."

What will be the main benefits for our customers?

"First and foremost, our customers will recognize a remarkable increase in capacity due to the larger rotor diameter. They will also experience increased on-line availability, reduced maintenance requirements and higher efficiency drive motors. More benefits are increased inertia, hard-surfaced rotor, easier screen access, simplified drive system and improved main bearing protection. Another new feature enables the rotor to be turned electrically for greater ease of blade change and adjustment."

When will we see the MPR 200T HD on the market?

"We have already introduced this machine to the market, and it has been very well received. This year we will bring the MPR200 HD housing, accompanied by a 3D animation showing its new functionalities, to the IFAT exhibition in Munich, Germany. This show is usually well attended so we are looking forward to meeting a lot of interesting companies. Our main focus will be our recycling machines for WEEE recycling which is a growing business around the world."

What do you think about the future of MPR 200 HD?

"Our estimation is that there will be high demand for this upgraded machine in regard to customer requirements for higher efficiency. "

NEW Multi Purpose Rasper MPR200HD



NEW WEAR RESISTANT ROTOR DESIGN

Rotor is hard-surfaced welded. Can run 5 times longer before any maintenance is required.

INCREASED ROTOR DIAMETER (40%)

NEW TRANSMISSION

2x132 kW electrical motors, belt driven, each side being individually adjusted. Double inertia in the belt/flywheels. Using the same components in each drive side maintenance costs are reduced.

INCREASED CAPACITY

Increased power (264kW and double inertia in the 2 belt/flywheels. RPM is increased to 144 rpm: enabling a remarkable increase in capacity.

QUICKER MAINTENANCE

NEW DESIGNED WEAR PLATES ON ROTOR

Wear plates are easily exchanged. New design keeps material from building up inside the rotor housing. Extended lifetime for the wear segments. Can be exchanged without removing the rotor.

LARGER HOUSING

NEW BEARING/PROTECTION 100%

New designed protection cover protect the bearing 100% from steel, dirt, etc. getting into it.



Company: Grupa RECYKL S.A.
Recycling area: Tyre recycling
Title: "We will always choose Eldan"

Grupa RECYKL S.A. live and breath end-of-life tyres – they collect, recover and recycle them. It all began in 2004 when they placed the order for first tyre recycling plant from Eldan Recycling in order to produce TDF chips. Today, they are the largest tyre recycler in Poland currently with three locations for recycling plants (Śrem, Krosno Odrzańskie and Chełm), continuously growing and planning ahead together with Eldan.

The largest polish tyre recycler

The story of what today is the largest tyre recycler in Poland started as a reflection after seeing a television program on tyre recycling in Poland. There was a reportage about two Eldan Mobile Super Choppers and one complete tyre recycling plant (E4000T) delivered to ABC Recykling in Krosno Odrzańskie. "At that time, we were active within transportation of end-of-life tyres. We immediately saw the business potential and thought this might be interesting! We transport these tyres– what if it was possible to turn them into TDF chips for incineration?" says Maciej Jasiewicz President of RECYKL.

The idea of starting a TDF chip production plant in 2004, has

since developed and expanded into the largest tyre recycler in Poland; Grupa RECYKL S.A.. The group takes care of all the steps of the end-of-life tyre recycling process in order to let their customers focus on their main business.

"One can say that we make end-of-life tyres disappear. We collect them through more than 200 containers sectioned mostly in south and west of Poland. We recover them. And we recycle them. Our product offer ranges from TDF, through rubber granulate to clean steel. In addition, we take care of all necessary certifications involved in getting rid of tyres," says Jasiewicz. "We process all kinds of tyres from car to OTR tyres, all deriving from Poland."

It all started with a positive review

10 years has passed since RECYKL signed the contract to purchase their first Eldan equipment. At that time they wanted to take advantage of predicted large business opportunity within production of TDF chips for incineration in a local heating plant. The company was in final negotiations with a German manufacturer of recycling equipment when they came in contact with Polish Eldan representative, Tomasz Kajzer at Rub-Met. Kajzer presented the modular Eldan tyre recycling solution to RECYKL, and invited them to visit reference plants in Europe.

"We were about to sign the contract with the other equipment manufacturer, when we met Tomasz. The concept he presented got us intrigued to find out more. We had the opportunity

to visit a few reference plants across Europe, and to actually talk to the people running it. Being able to ask questions to experienced Eldan personnel, and also having the opportunity to meet people within the recycling industry working with the equipment daily was invaluable," says Jasiewicz. "As rookies entering the tyre recycling industry, we appreciated that Tomasz took the time to understand our special conditions, and that Eldan tailored a solution, which was suitable for us. We felt that we were in proper hands with Eldan. One cannot turn down a tailored solution, supported by references from the leading processors across Europe."

In 2004 and 2005 they acquired an Eldan Super Chopper (SC1412T), an Eldan Tumble Back Feeder and an Eldan Pre-Granulation Plant, including a Heavy Pre-Granulator (HPG165T). This equipment processed car and truck tyres at approx. 3 ton/production hour, producing TDF chips.

"I remember meeting RECYKL for the first time in 2004. I had recently become Sales Director at Eldan, and this was actually my first signed sales contract," says Dr. Toni Reftman, Managing Director at Eldan Recycling. "The cooperation between our agent in the region, Tomasz Kajzer, the experienced team at Eldan and a potential customer with great curiosity for this new industry made this long-term relationship possible."

Successful TDF production

The TDF chip production was very successful and in 2006 RECYKL added an Eldan Tyre Recycling Plant (type B-TR200) to their production. The plant includes e.g. an Eldan Tumble Back Feeder, a Tyre Rasper (TR200) and an Overband Magnet (DM1850). With this plant they would be able to process more tyre shreds. Producing 25 mm TDF chips (95-98% free of liberated steel), they would be able to process tyre shreds at 3.5 ton/production hour. The input tyre shreds should be 150-300 mm.

"RECYKL and Eldan have a very good relationship, which is built on mutual cooperation and trust in the equipment. The modular design of the tyre recycling systems fit RECYKL perfectly. When the market demands that they expand, they basically just add the new equipment" says Kajzer. "One can almost say that RECYKL grown based on Eldan's further equipment."

Listening to the customer

In 2008 RECYKL added to the plant by acquiring an Eldan Tyre Recycling Plant (B-MPR200T special) consisting of e.g. a Tumble Back Feeder, a Multi Purpose Rasper (MPR200 spec) and an Overband Magnet DM1850.

"One of the reasons why we chose Eldan was that they actually listened, and still listen, to which direction we want to go next, and conditions which we have for it. A few years ago everyone in the industry considered the steel deriving from tyre recycling an unwanted product. Today it is a highly valuable product, which if cleaned with the Eldan equipment is very attractive for steel smelters across Europe," says Jasiewicz. "We are proud to say that we have been a part of important product development at Eldan. After a visit to one of the Eldan reference plants in 2008, I had a discussion with Tomasz, which led to us requesting that our recently ordered Multi Purpose Rasper should have a hard welded rotor. That is standard on that machine today. Eldan listens to its customers, since we are the ones who work with the equipment everyday."



Downtime is expensive

Minimizing downtime is of utter importance to RECYKL. Along with equipment orders they are thorough with also ordering necessary spare and wear parts (like knives and screens) and a service contract.

"We know that we only earn money when the equipment is in production. Therefore it is vital for us to keep downtime at a minimum by serving the equipment according to schedule and by always using original spare and wear parts. Ordering

new equipment, we always sign a service contract. It is not because we think it will break down, but in order to have the continuous support with the equipment, continuously optimizing it," says Jasiewicz. "We have a very strong relationship with one of the service technicians, Jens Mikkelsen, who visit us 4 times a year, following the condition of the plant, making improvements when possible".

Ambitious plans for expanding

In 2009 the recycling plant was expanded by adding an Eldan Super Chopper (SC2118T), an Eldan Tyre Recycling Plant (B-MPR200T special) and an Eldan Granulation Plant for TDF chips. The Eldan Super Chopper and Tyre Recycling Plant would increase the capacity of the complete line. The Eldan Granulation Plant for TDF chips will reduce the up to 30 mm TDF chips (from the MPR200T) into 1-3 mm granules at approx. 1.5 ton/production hour. The Granulation Plant consists of e.g. Feeding silo (V4), a Fine Granulator (FG1504), a Pneumatic Material Transport (PMT), a Classifier (PC10T) and an Overband Magnet (DM1450).



"Making the first investment, the price of the Eldan plant seemed high, but after being in production and taking care of the equipment in the right way, the price is low compared to what you get. If dividing the initial investment per processed ton, the cost is very low. The equipment at ABC Recykling [company acquired by RECYKL in December 2013] is still running smoothly even though it was acquired and set into

production in 2001. It is hard to find a better reference and proof of quality!" says Jasiewicz.

In 2010, Roman Stachowiak, majority owner of RECYKL and presently President of Grupa Recykl S.A. and Jasiewicz decided that it was time to take the company to the next level. RECYKL was bought out from former owner Polcopper Sp. z o.o., and plans for expansion and upgrade were set to play. The company, including the recycling facility, was moved from Przysieka Polska to Śrem. This allowed them the expansion of the company, at the same time providing better economic conditions for the operation since the new location is in a special industry zone. Śrem is a strategically great location, and RECYKL is located in an industrial zone with economic benefits. The city is located on the River Warta, 42 km south of Poznań, with a town population of about 30.000. The area is a fast expanding economy and many companies with private and foreign capital has seat here.

One of the objectives with move and expansion was to increase the granulate production from 1,300 ton in 2010 to 10,000 ton in 2012, and TDF chips production from 6,500 ton

in 2010 to 15,000 ton in following years. For RECYKL, the TDF chips are an important product, since they are used as alternative fuel in furnaces of Chełm cement factories. In 2010 they also introduced new collection points for end of life tyres.

"We appreciate, and highly value, the fact that we buy our equipment from one company, who we can contact in all matters. When we have a question, it is never redirected to another company or subcontractor. Sales, service, product development – we are always in contact with the same people, who are also responsible for quality of the machines," says Jasiewicz. "We are also impressed by the competence, experience and know-how that the people at Rub-Met and Eldan

possess. They are always one step ahead in predicting what will happen in the market next. When developing our production, we basically extend it according to the modular Eldan system. If Eldan has the solution to what we are looking for, we will always choose Eldan."



Cleaning steel and rubber granulate production

RECYKL noticed an increased demand from the industry for cleaning up the previously unwanted by-fraction, steel. In 2011 RECYKL acquired an Eldan Steel Cleaning System and an upgrade of the existing tyre recycling line. The steel cleaning system will turn 0-12 mm steel (with a rubber and textile content of 15-20%) into 97-98% pure steel at up to 3-ton/production hour.

The upgrade of the existing granulation and separation system consists of e.g. four Classifiers (PC15T, PC1750T and PC1000), an Overband Magnet (DM2200), two Fine Granulators (FG1504), a Drum Magnet, an Aspirator (FP1750) and a Separation Table (C26) accompanied by an additional cleaning system for the undersize rubber fractions, involving e.g. Aspirator (ASP1250). With the upgrade they will be able to process car and truck tyre at up to 4 ton input/production hour producing 1-4 mm main fraction and up to 2,5 ton input/production hour producing 0,5-2 mm main fraction.

"The decision making process might seem very fast at RECYKL. They see a problem or an opportunity, they find the

solution which is proven efficient and they acquire it. It is however never hasty, but strategically well planned in advance," says Kajzer. "Because of RECYKL always being one step ahead, they only tyre recycling derived steel cleaner in Poland on a professional industry level."

The cleaned steel is very popular with steel smelters, since it has a high purity. The rubber granulate is most commonly used material for building sports and recreational objects, playgrounds. In connection to the UEFA European Championship in Poland and Ukraine in 2012, the government introduced a 2 year national program for building artificial sport fields.

"We appreciate, and highly value, the fact that we buy our equipment from one company, who we can contact in all matters."



created in a large majority of Polish municipalities. Part from the traditional benefits from using recycled rubber in these applications, like flexibility, low abrasion and endurance, health and environmental concerns are important to RECYKL. They are thorough to point out that they sell rubber granulate without admixtures which does not contain any toxic or cancerogenic elements, nor give an unpleasant smell.

In 2012 RECYKL added an additional Eldan Steel Cleaning System in order to be able to meet the market demand. It will turn the scrap steel (up to 50 mm steel wire with approx. 30% rubber and textile) into 98-99% pure steel wire (with a density of 0.7-0.8) at up to 3 ton/production hour.

"We would not make black figures if we only depended on rubber granulate. We need steel cleaning as well" says Stachowiak.

Expansion through merger and investments

In December of 2013, RECYKL merged with tyre recycling competitor ABC Recykling. ABC Recykling was one of the first Eldan tyre recycling customers in Poland acquiring their equipment in 2001, and also the reason why RECYKL entered the industry in 2004.



technical manager Janusz Sancewicz at ABC Recykling, has already started to plan for the optimal use of the facilities and the equipment. The aim is to reduce costs and to increase capacity, and sales."

Bright future - together with Eldan

In Poland there are no direct financial initiatives for taking care of waste tyres. The financial opportunity is found in what the waste tyre can be used for – i.e. recycling and resell of tyre chips, rubber granulate and cleaned steel. Membership of Poland in EU and gradual implementation of EU law brings a number of environmental obligations for both companies and authorities. In order to meet the requirements specified by wide range of environmental regulations, one needs to cooperate with companies that guarantee proper waste handling. Polish legislations state that at least 15% of the waste tyres need to be recycled. In reality almost 30% are recycled, and the rest are mainly sent directly to incineration. When disposing of tyres, the company needs to receive a certificate which is a proof of what happened to the tyre. Since there are more costs involved with recycling of tyres, than sending the whole tyre to incineration, that certificate is more expensive. Annually, about 70,000 ton TDF chips and whole tyres are used as alternative fuel in cement factories in Poland.

"The future of tyre recycling in Poland is, like in the rest of Europe, in the hands of the end user of the output fractions like granulate, chips, cleaned steel. During the past three years, we have noticed that the interest for using recycled rubber granulate in moulded products have increased. The use of rubber granulate in artificial sport fields is season based, while the use in moulded products is not, which the latter is better for us as a recycler. Also, there is great potential in using tyre derived products like powder as bitumen in asphalt," says Jasiewicz. "The industry needs to find new areas to use the various products deriving from tyre recycling. In 2014 RECYKL will produce 20,000 ton crumb rubber from both tyre granulation and separation facilities, 11,500 ton cleaned wire and 15,000 ton TDF chips. At the moment we acquire tyres mainly from Poland, but also some from Germany. Majority of the sales of the output material is to Poland, but we also sell some material to Germany, Russia and Belarus. We also hope that the legal limit for the share of used tyres which is required to be recycled is increased."

"We are proud to be a part of what RECYKL has accomplished in Poland. They run a model recycling facility, and maintain it very well even though they have a high production capacity" says Bjørn Laursen, product manager for tyre recycling at Eldan.



RECYKL have development strategies stretching many years in the future including e.g. which products to supply to their customers. "The secret behind the RECYKL success is gradual growth through continuous successful investments. They have big plans, but invest when the time is right, and the market is ready for it. It has been a true pleasure to follow their success story!" says Kajzer. "I have high expectations on their plans for the future, and the projects we are currently working on."

"We are very satisfied with the Eldan equipment, and the reference list in Poland speaks for itself. There are seven tyre granulation and separation plants in Poland, and four of them use Eldan equipment. Naturally, we wish that Eldan would be our best kept secret, but unfortunately good references generate good references, and their success is not by accident. In the future, if Eldan has the solution for what we are looking for, we will always choose Eldan," ends Jasiewicz.





Company: Grupa RECYKL S.A.
Location: Śrem, Krosno Odrzańskie, Poland
Founded: 2004
Employees: 133

About company: Grupa RECYKL S.A. specializes in waste management of end of life tyres. Together, the group companies take care of the entire process from collection of tyres to sales of the end products like TDF chips, rubber granulate and clean steel. The group consist of

- RECYKL Organizacja Odzysku S.A. - process worn tyres through recycling and recovery
- Reco-Trans Sp. z o.o. - provide transportation services (over 80% concerns worn tyres)
- Rekoplast Sp. z o.o.

RECYKL's product range cover rubber chips used for burning in cement industry (average diameter 20 to 50 mm), rubber granulate with fibres and steel cords (minor chips and swarfs), clean rubber granulate without admixtures (diameter 1 to 6 mm), rubber powder free from admixtures (diameter 0.01 to 1.00 mm) and steel wire (with admixtures 2%, 7% or 20%).

On January 11th, 2011 Recykl debuted on NewConnect at the Warsaw Stock Exchange within environmental protection sector. At the day of debut shares were traded at 21.41 PLN, 50.8% higher than initial E-series share price of 14.20 PLN.

In December 2013, the company acquired former competitor within tyre recycling, ABC Recykling.



Company: ABC Recykling S.A. (Since 2013 a part of Grupa RECYKL S.A.)
Recycling area: Tyre recycling
Title: **Eldan: quality that lasts**

Entering new a new field

In the end of the last millennium, Eldan Recycling got an inquiry from Pump Storage Power Plants S.A. (PSPP) for a tyre recycling plant to be installed in Poland. Due to overemployment at one of their power plants, the company wanted to find new occupation for the additional staff. This environmental project resulted in a company called ABC Recykling.

The first official meeting between PSPP and Eldan took place in 1999, and the discussion concerned the technical details of Eldan's tyre recycling technology. At this time, the tyre recycling industry had not yet been "born" in Poland, and there was not back-up from legislation. In order to make the investment more economically safe, PSPP wanted to be able to process cable scrap in the plant as well, from time to time.

Additional adversities with being the pioneer within this new

field were that ABC Recykling had to pay for the scrap tyres, and arrange collection and transport. There was no gate fee for receiving the tyres, nor subsidies from the state. Since the tyre recycling industry was non-existing in Poland at this time, so was the market for rubber granulate.

Since the scrap tyres often were located in large piles at scrap yards, it would be an advantage if it was possible downsize the tyres at site in order to ease transport.

Entering recycling

After Eldan won a public tender in 2000, ABC Recykling acquired two Eldan Mobile Super Choppers (SC1412T) and one Eldan tyre granulation plant (D4000T plant), in 2001. The equipment was mainly intended for processing tyres, but it was also prepared for cable recycling in campaigns. The Mobile Super Choppers are each able to process car tyres at 10-12 ton/production hour, and truck tyres at 6-8 ton/production hour. The tyre granulation plant had a capacity of 4 ton/production hour producing 1-4 mm rubber granulate.

Mobility, and flexibility

Processing scrap tyres through the Eldan Mobile Super Choppers offer a different kind of Eldan flexibility. If necessary,



We have invited many customers from eastern and western parts of Europe to see the site," says Bjørn Laursen, Product Manager for tyre recycling at Eldan Recycling.

"The merger between RECYKL [Grupa RECYKL S.A.] and ABC Recykling bring the past and present tyre recycling market in Poland together. RECYKL is the largest tyre recycler in Poland at the moment, with established channels for tyre collection and logistics. ABC Recykling offer mobility and vital experience. This combination will take the tyre recycling industry in Poland to the next level," says Tomasz Kajzer, Eldan's representative in Poland.

it is possible to have the machines at the recycling facility – like a regular Super Chopper. It is also possible to put one or two of them at a site where there is a large mountain of tyres, and let it work there for a period of time. By using mobile Super Choppers instead of stationary ones, and processing the tyres into shreds at location, ABC Recykling was able to decrease the number of trucks they used for transport by up to 50%. The Super Choppers at ABC Recykling has during the past 13 years processed approx. 150.000 thousands of tons of tyres across western parts of Poland.

The Mobile Super Chopper is basically like a regular stationary Super Chopper, with two important features – it is placed on a truck trailer, which makes it easy to move, and it is hydraulically driven. According to customer requirements, it was mounted on a standard Polish semi-trailer, in order not to be forced to apply for any special permits for driving on public roads. Since it is hydraulically driven, the Super Chopper only need electricity from a diesel motor placed close by on the trailer, and can therefore be placed anywhere, without access to electricity.

ABC Recykling - a strong name within tyre recycling

"We have had a great cooperation with ABC Recykling and the former technical manager Janusz Sancewicz. They were the first large scale tyre recycler in Poland, and the good reputation we have in that market now is due to having a strong reference at ABC Recykling.



Company: ABC Recykling S.A. (Now a part of Grupa RECYKL S.A.)
Location: Śrem, Krosno Odrzańskie, Poland
Founded: 2001

About company: ABC Recykling S.A. was acquired by Grupa RECYKL S.A. in December of 2013. The company was founded in 2001, and was then a part of Pump Storage Power Plants S.A. (PSPP), which was majority owned by the Polish government.



Company:

FFV Energi & Miljø A/S/ Faaborg-Midtfyn

Cable recycling

Recycling Area:

Municipality entering cable recycling

Title:

Would it be possible to make an additional environmental effort in the municipality at the same time improving the economy in the municipality? This was the aim when the FFV Energi & Miljø A/S in Faaborg-Midtfyn in Denmark started looking for cable recycling equipment.

equipment, they decided to choose a local option: Eldan Recycling.

The first machine of the recycling system, a Micro Module, was installed in the beginning of 2012 and has been running at full one shift production since. In November the same year, the second machine, a Rasper R400-3, was delivered and successfully built together with the Micro Module by Eldan Recycling's installation team. The Eldan equipment is of modular design making it easy to add on to production if needed, also enabling a number of different production combinations and options.

"The modular approach is one of our business trademarks. It gives our customers possibility to gradually grow their production and business if needed. Just like in the case of the municipality of Faaborg-Midtfyn. By adding the Rasper R400-3 to the Micro Module, we doubled the capacity from approx. 200-250 kg/production hour to approx. 450 kg/production hour. The Rasper also made it possible to process larger cables" says Flemming Hansen, Product Manager at Eldan. "We are very proud to have the municipality of Faaborg-Midtfyn as one of our new customers. Partly due to the fact that they are situated in the same geographic area as Eldan Recycling. Working with a municipality is pretty much like working with any company. In the case of FFV, they were very updated on the recycling process, and our equipment which made them very easy and pleasant to work with."

FFV Energi & Miljø A/S is responsible for utilities like electricity, water and heat supply in the municipality of Faaborg-Midtfyn in Denmark. FFV is also responsible for city restorations in the municipality, meaning collecting much waste like cables. If possible the waste was sold to recycling companies for further processing, and recycling. In 2011 they got to thinking: would it be possible to make an additional environmental effort by recycling these cables themselves, at the same time earning some extra money?

Flexible production from a local manufacturer

After a thorough global research of available cable recycling



Making an environmental effort – with profit

Like many other business they have become increasingly aware of the importance of thinking of the environmental impact the company has on society.

"Investing in this cable recycling plant is a way to benefit from our internal competence within waste management since we see a profitable business within the recycling industry. Eldan Recycling is well experienced and also a local organization that we know for many years" says Jes Knudsen, CFO at

Company:

FFV Energi & Miljø A/S/ Faaborg-Midtfyn

Location:

Faaborg, Denmark

Founded:

As limited company in 2000, as a municipal company over 100 years ago



About company: FFV Energi & Miljø A/S is responsible for utilities like electricity, water and heat supply in the municipalities Faaborg, Ringe, Broby, Ryslunge and Årslev in Denmark.

**Company:**

Recycling area:

Remat Bucuresti Sud S.A.

WEEE, Cable, Aluminium Profiles, Tyres

Title:

Why choose when you can have it all?

For REMATHOLDING only the best is good enough. They put great pride in investments made in their facilities, and being on the cutting edge regarding technology. Why limit yourself to recycling of one material, when you can get three in one?

A true, successful scrap dealer

Remat Bucuresti Sud S.A. is part of REMATHOLDING CO. SRL.. REMATHOLDING is active within all steps of the recycling process – from collection through to recycling and finally for resale. They collect and recycle e.g. ferrous and non-ferrous waste, scrap metal, WEEE/electronic waste, cables, batteries and accumulators waste and hazardous waste. They are the main car recycling company in Romania, buying and dismantling cars and re-selling the car parts.

The company was founded in 2003 with main business activity was recycling of metallic and non-metallic scrap. Today, REMATHOLDING has two offices and over 20 collection points reaching all across the South and East parts of Romania.

"By producing secondary raw materials from different types of waste we are able to significantly reduce pollution and we are able to positively influence the energy and raw material economy. From the very beginning of REMATHOLDING, we decided to intervene in order to slow down the process of degrading the environment" says Cristian Drăghici, General Manager at Remat Bucharest Sud S.A.

Expertise, price and quality

REMATHOLDING put great pride in their equipment technology, and investing in the best equipment. In 2007 they started to look for a solution for recycling of cables.

"We started to look for equipment for cables recycling, including automotive cables. After studies, analysis and discussions we realized that we wanted to be able to cover a wider range of waste, and therefore needed equipment which could handle that. We needed a plant which was flexible for processing the entire range of WEEE and copper and aluminium cables/ profiles" says Drăghici.

"As with all other important investments and projects, we compared several possible suppliers and manufacturers of recycling equipment. We were in contact with several large international brands and one of them was Eldan Recycling. We visited Eldan customers in Hungary and Spain, who provided us with useful information, and tips on what to think about when choosing recycling equipment. After taking into account

Eldan's expertise within the area and adding to that the fact that they were offered the best price for the quality offered, we chose to acquire equipment from Eldan" comments Drăghici.

Why choose when you can recycle it all?

In 2009 Remat acquired an Eldan Combi-plant for WEEE and cable recycling. With this line it would also be possible to process aluminium profiles and cables resulting from ELV and demolition.

Recycling WEEE scrap will produce fractions like ferrous, stainless steel, aluminium, refining material (e.g. copper, brass, zinc, lead and precious metals), an organic fraction (e.g. plastic, rubber, wood, and textile). Capacities range between 3-4 ton/production hour depending on type of WEEE input material.

Processing dry cables is possible with a capacity up to 2 ton/production hour producing a metal fraction with a purity of at least 99.5%. The capacity depends on e.g. type of cables, screen size, method of feeding.

During aluminium processing capacities up to 3 ton/production hour are possible – also depending on type of profiles and shapes, screen size, method of feeding etc.

The Eldan Combi-plant include e.g. one Super Chopper (SC1412), one Ring-Shredder (S1000), one Electromagnet,



one Eddy Current Separator, one Tumble Back Feeder, one Multi Purpose Rasper (MPR120), one Overband Magnet (Permanent), one Silo (SMV), one Heavy Granulator (HG169), one Silo (SMV), one Fine Granulator (FG952), one Silo (SMV), one Separation Table (C22) and one Classifier (PC12). Two

complete automatic filter systems were also included in the installation – i.e. one for the Ring-Shredder and one for the remaining plant with high aspiration capacity around the whole plant.

Flexibility and expertise

"We would recommend Eldan for the flexibility of the recycling lines to manage processing different types of recycling materials" says Drăghici. "Also their technical support is remarkable. Some time ago we had a technical problem with our recycling line. We contacted Eldan and we start to discuss about our problem with Michael Larsen from the technical department. We were impressed how, step by step, he lead us to check and eliminate possible reasons for the problem and finally to fix it."

The Eldan Combi-plant has shown larger flexibility than expected in regard to which materials to process. Today the system can also successfully process e.g. waste tyres.

Great potential: only 20-30% of waste is recycled

Today Remat Bucuresti processes approx. 150-160 ton copper cables, 50 ton aluminium cables and 150-200 ton waste tyres monthly.

"It is always great to visit Remat, since the company has an innovative and young business culture. Main shareholder and president of REMATHOLDING, Mihai Sofian, trust and take advantage of the spirit of the young employees, and combine it with more experienced personnel within technical department and management. The average age of the Remat top management employees is around 35 years" comments Laurentiu Figaro, Sales Manager at Arcon Industrial Services, Eldan Recycling partner for Romania.

"The success of Remat is made possible by Mr. Sofian's vision, determination and confidence that Romanian recycling industry has a great business potential and opportunities for the future" says Drăghici. "The future of recycling industry in Romania looks very bright. Taking into account that today only 20-30% of the waste and garbage non metallic material with recycling potential is recycled in Romania, you can imagine how big business opportunities are here. Not only in terms of diversify the range of recycled material but also in existing lines extensions. We hope that some parts of local legislation will come to support recycling industry development in Romania. Considering above, naturally we have many plans for further investments."



REMAT Bucuresti Sud personnel from left to right:

Ovidiu Ariton, Eldan Line Manager - Cristian Drăghici, General Manager - Mihai Sofian, President & co-owner of REMATHOLDING

Company:
Location:
Founded:
Employees:
Turnover 2012:

REMAT Bucuresti Sud S.A (Group: REMATHOLDING CO. SRL)
Bucharest; Romania
Group: 2003
180 (Group: 450)
> EUR 33 million (Group: ~ EUR 135 million)



REMAT Bucuresti Sud S.A is a part of REMATHOLDING CO. SRL group. REMATHOLDING was founded in 2003 as a recycler of metallic and non-metallic scrap. Today they have the most compact and extended waste collecting network in the South and Eastern part of Romania, owning the largest machining railway network in Bucharest and the most complex transporting system for waste (auto and by train).

They take care of all the steps of the recycling process – from collection through to recycling and finally for resale. They collect and recycle e.g. ferrous and nonferrous waste, scrap metal, WEEE/electronic waste, batteries and accumulators waste, cardboard, paper, plastics of all types and hazardous waste. They are also the main car recycling company in Romania, and buy and dismantle cars and sell auto parts.

**Company**

MPI Reciklaža Metalurgija,
plastika inženiring d.o.o.
(MPI Recycling Ltd.)

**Recycling area:
Title:**

Recycling of car batteries.
**Lead and polypropylene
materials from car batteries.**

MPI Recycling d.o.o., located in the picturesque valley of Meža river, surrounded by mountains, is the only company in Slovenia, and wider area, active within recycling of used lead-acid batteries and other lead-base waste. The secret behind the success is tradition, extensive experience and the best equipment and powerful filter facilities. This ensures the company the highest quality level of processing, at the same time keeping the environmental impact as low as possible.

Lead separation experts

The owner of MPI Recycling, TAB Group, is a Slovenian producer of lead acid flooded, VRLA AGM and VRLA Gel batteries. They run three modern production factories with approx. 900 employees, throughout the Group. As a step towards a sustainable future, TAB are also actively taking care of ecological removal and decomposition (recycling) of used batteries in its subsidiary company MPI Recycling. Through MPI Recycling, TAB ensure the completed life cycle

of a battery; from its production to recycling and reuse of lead, polypropylene and sulphuric acid. The consumer of the battery can be sure that all returned batteries to TAB and their lead content will be reused and that all procedures required by law will be respected.

Lead recycling industry

MPI Recycling first came in contact with Eldan Recycling in 2010, through a mutual Danish contact, KONGSKILDE A/S, whose plastic cleaning equipment is being used in their downstream process. This was a new field for Eldan, and Jan Kjaer, Product Manager at Eldan visited the company in Slovenia to see which material they wanted to process. After having presented a solution, and material tests had been conducted at Eldan's production facility in Faaborg, Denmark, MPI acquired an Eldan Granulation line, in 2010, for processing and separation of lead separators. Lead separators consist of polyethylene and some percentage of lead, as a mixture, and are used in every car battery construction, as an isolator, which allows ions, (i.e. electricity) to be transferred, while keeping material in place.

Previously, during old separation technology of batteries recycling process, such material would be treated as a pure waste and dumped on disposal area. In attempts to clear up the disposal area, liberating more space for the disposal of metal slag, MPI has found a new potential market for separator waste, where such material can be burned in

Austrian incineration plants, producing energy. Following this procedure, delivered material must be granulated to the size of ≤ 15 mm. Having that in mind, MPI's Production Manager Viktor Fortin and main technologist, Alojz Grauf came to the idea to solve both aspects of the same problem, i.e. ENVIRONMENTAL and ECONOMICAL by asking themselves: "why not separate lead from that granulated material and return it back into production?". After a few tests performed at Eldan, both sides realized that for effective separation, material must be sized down to ≤ 8 mm, and so that become a main parameter for the determination of the separation plant.

The plant included one Fine-Granulator (FG952), one Overband Magnet (DM1450), Separation Table (C22) and two Silos (BF and SMV). The plant would be able to process lead separators with polyethylene with maximum thickness of 2-3 mm, at capacity of approx. 2-3 ton/production hour separating lead ≤ 8 mm and polyethylene ≤ 8 mm.

The lead (<8 mm) is further processed in rotary furnaces in order to extract the raw lead. The raw lead undergoes refining, which results in lead alloys ready for their internal consumption, i.e. new battery production as done by TAB.

"As far as we've been told, we are the only company in the world using Eldan equipment for this purpose!"

Environmental and health focus

The environmental issues, health protection measures and safety of workers attract the company's special attention. Companies within the TAB Group are certified with ISO 9001, ISO 14001 for Environmental protection, and OHSAS 18001 for Health protection. All values (released into the air or water) are within their strict limits and are measured on real time basis.





The only lead separator recycler in Slovenia
Each year MPI Recycling produces 30.000-35.000 tons of refined lead and lead alloys. This amount corresponds to approx. 70% of the total annual lead consumption within the Group, so the rest of the metal is imported from abroad, in a form of ingots.

For this production the company require approx. 50.000-70.000 tones of raw materials (waste materials), which are collected locally in Slovenia but also imported from the countries such as Italy, Croatia and Bosnia and Herzegovina.

In 2012, TAB made the acquisition in Probitip, Macedonia by buying "VESNA SAP, car batteries" manufacturing plant, a well known brand in former Yugoslavia. They were already investing in a new technology and setting up recycling facilities there, in addition to TAB Group who will become the leading battery producer in South East Europe.

"We are happy with the Eldan equipment, and it is very efficient in separating into both fractions – lead and polyethilen," says Grauf. "As far as we've been told, we are the only company in the world using Eldan equipment for this purpose!"



Company:
Location:
Founded:
Employees:

MPI Recycling (member of TAB Group)
Črna na Koroškem , Slovenia
1990
86

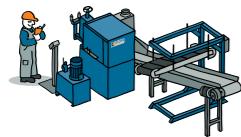


TAB is a Slovenian producer of lead acid flooded, VRLA AGM and VRLA Gel batteries. They run three modern production factories with approx. 900 employees. TAB was established in 1965 as a subsidiary of Rudnik Mežica Holding (Lead Mine Mežica Holding). TAB is also active within recycling through its subsidiary MPI Recycling.

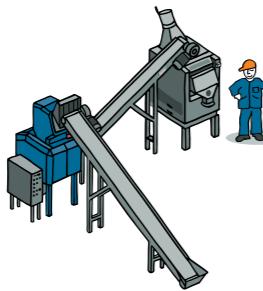
MPI Recycling is responsible for taking care of ecological removal and decomposition (recycling) of used batteries.

Cable recycling for

your requirements

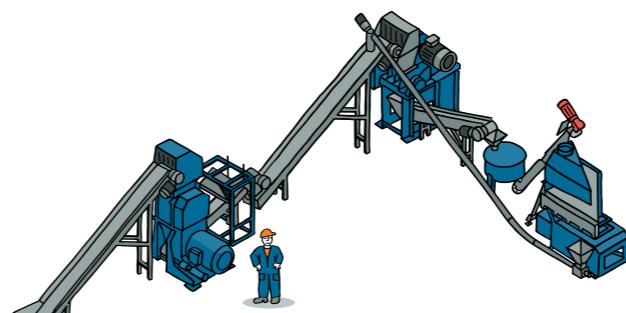
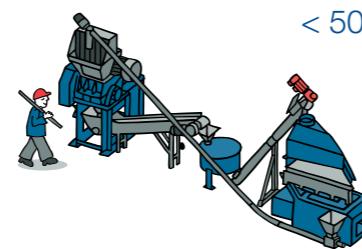


ACSR Shear M16-2
4-60m/min



Cable Plant D400C
< 400kg/h

Mini Module
< 500kg/h



Cable Plant E600C
< 600kg/h



Cable Plant E1000C
< 1000kg/h

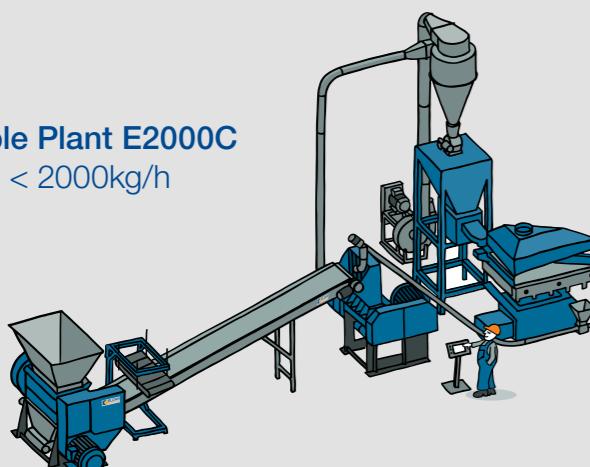
LOW

CAPACITY

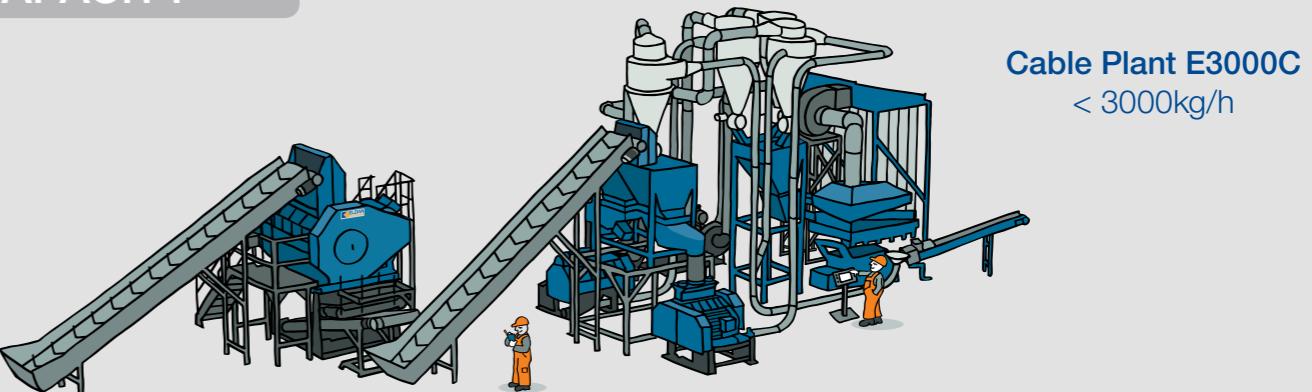
HIGH

CAPACITY

Cable Plant E2000C
< 2000kg/h

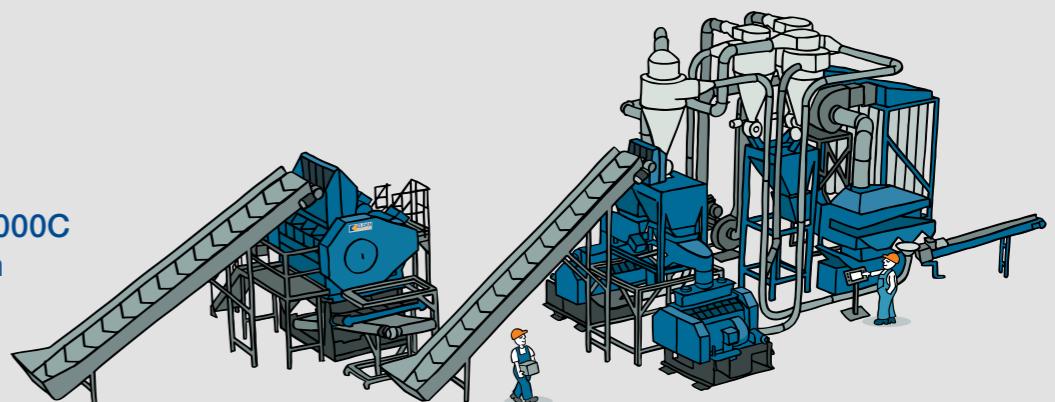


Cable Plant E2500C
< 2500kg/h



Cable Plant E3000C
< 3000kg/h

Cable Plant E4000C
< 4000kg/h



Eldan expanding into...

... the UK due to increased demand by opening an Eldan UK Sales Office in Pulborough with Peter Jones as Branch Manager. Jones has a solid background within the recycling industry and extensive knowledge about Eldan recycling equipment. He has been with the Eldan UK agent, MMH Recycling Systems since the 1990's. MMH and Eldan have had a long and very close relationship, and together we have built up a large customer base under the helm of Philip Keatley.



Welcome to Eldan, Peter. Which opportunities will the recycling industry face in the UK in 2014?

We have always been catching up with the rest of Europe when it comes to recycling and we have succeeded, but now there is a lot of focus on waste to energy which is an area where we can also use our equipment as part of the process

Which challenges will the recycling industry face in UK in the 2014?

To continually improve the level of material that is being diverted from landfill,

The improved economy and building of new houses will hopefully increase the levels of scrap material to be recycled.

Having a drink with one famous person, who would it be?

I am a keen rugby fan, I would love it to be with Jonny Wilkinson who I have admired for his dedication and professionalism.

Dr. Toni Reftman, Managing Director at Eldan advises "We have a wide customer base in the UK, and this is a very important region for us. We would not have been as successful as we are today if it were not for Philip Keatley and Peter Jones. When we proposed the idea to open an UK office, Philip immediately suggested that as he is not getting any younger, Peter would be the ideal person to take this next step. Philip is like family at Eldan, he has seen the company grow and will be sadly missed. He will however continue as our agent for South Africa so he will still be on the phone and keeping us busy."

... Brazil due to increased demand by appointing Vinicius Casselli as Sales Manager. Casselli has previous experience within the recycling industry, and from Eldan Recycling equipment. The Brazil office is located in São Paulo.

What makes Eldan stand out from its competitors?

With over 55 years experience and an amazing track record of installed equipment worldwide, Eldan offers not only machines, but also a solution that best applies to the needs of each client. Every project is carefully analysed with the client, understanding the materials to be recycled and which plants best fits your needs. Eldan has a very specialized technical team with a manager for each recycling segment, which greatly facilitates the understanding of the needs of our clients, meeting with agility and efficiency.



What will happen within the recycling industry in Brazil in 2014?

The year 2014 will be a very important milestone for Brazil – it will be the year of the National Policy on Solid Waste. The law establishing the National Solid Waste casts a modern take on the fight against one of the biggest problems on the planet: urban waste. As a principle shared responsibility between government, business and population, the new law boosts the return of products to industries after consumption and forces the government to make plans for waste management. Brazil will follow the guidelines established in European countries such as the processing of tyres, WEEE, packaging, filters. A reverse logistics is established, returning to manufacturer packaging produced by them. Brazil is one of the references to the destruction of waste tyres, but mostly still for the thermal destruction, being sent to cement industries. There is still plenty of room for the use of waste tires as rubber products and use in asphalt blanket.

If you would have been a professional athlete, which sport would you practice?

I have always liked sports, and practiced it much when I was younger - like swimming and water polo. In college I learned to play rugby, which is a sport I love. Playing rugby, teamwork is essential and combining players with a lots of differences. Each player has a specific function, but all are essential for the team to achieve its success.

... the Benelux region by establishing an own sales office in Beverwijk. The office is managed by Carrel Rutte, who has long experience in the Dutch recycling industry.

What makes you most proud about working at Eldan?

I am proud to be working with a group of skilled and motivated colleagues that are not afraid of a challenge. It does not matter if the challenge concern delivering a project or an answer to a customer on a deadline, or have a more athletic angle like completing a half marathon, like we did in Copenhagen in March of this year.



Tell us something about Eldan which you do not think is generally known.

Some people still see Eldan as a company that makes good shredders. For these people it is good to know that Eldan is a company that sells complete recycling plants. Customers today want the complete solution for their recycling needs. By combining their knowledge about recycling with the state-of-the-art technique of Eldan create innovative solutions.

Personally, what do you to gather new energy?

I like to go out in the forest in the dunes near the beach. Here I can go out with my specially adapted kick bike in the sand. Taking the kick bike for some 30 to 40 kilometres through the terrain really helps to clear out my head. By performing and putting myself to the limits I get new energy and often new ideas on how to get the focus on my job.

Royal and governmental interest in Eldan Recycling

Eldan Recycling attended the EcoWaste exhibition in Abu Dhabi January 2014. During this exhibition we were honoured to receive a visit from Crown Prince Frederik of Denmark and Danish Minister of Development Rasmus Høvsgård Petersen.

Henning Nørgaard, Territory Manager at Eldan introduced the company to the distinguished guests: "I am very proud to see the interest for environmental issues in Denmark. Both Crown Prince Frederik and Rasmus Høvsgård Petersen were very up to date on the industry as well as on our company."

During the visit in Abu Dhabi, Denmark signed a wide-ranging clean energy cooperation deal with Abu Dhabi that paves the way for commercial partnerships across a range of areas.



Manoj Kumar (Sales Manager, Ferrostaal Equipment Solutions FZE), Henning Nørgaard (Territory Manager, Eldan Recycling) and Danish Crown Prince Frederik of Denmark.



Danish Minister of Development Rasmus Høvsgård Petersen and Henning Nørgaard (Territory Manager, Eldan Recycling)

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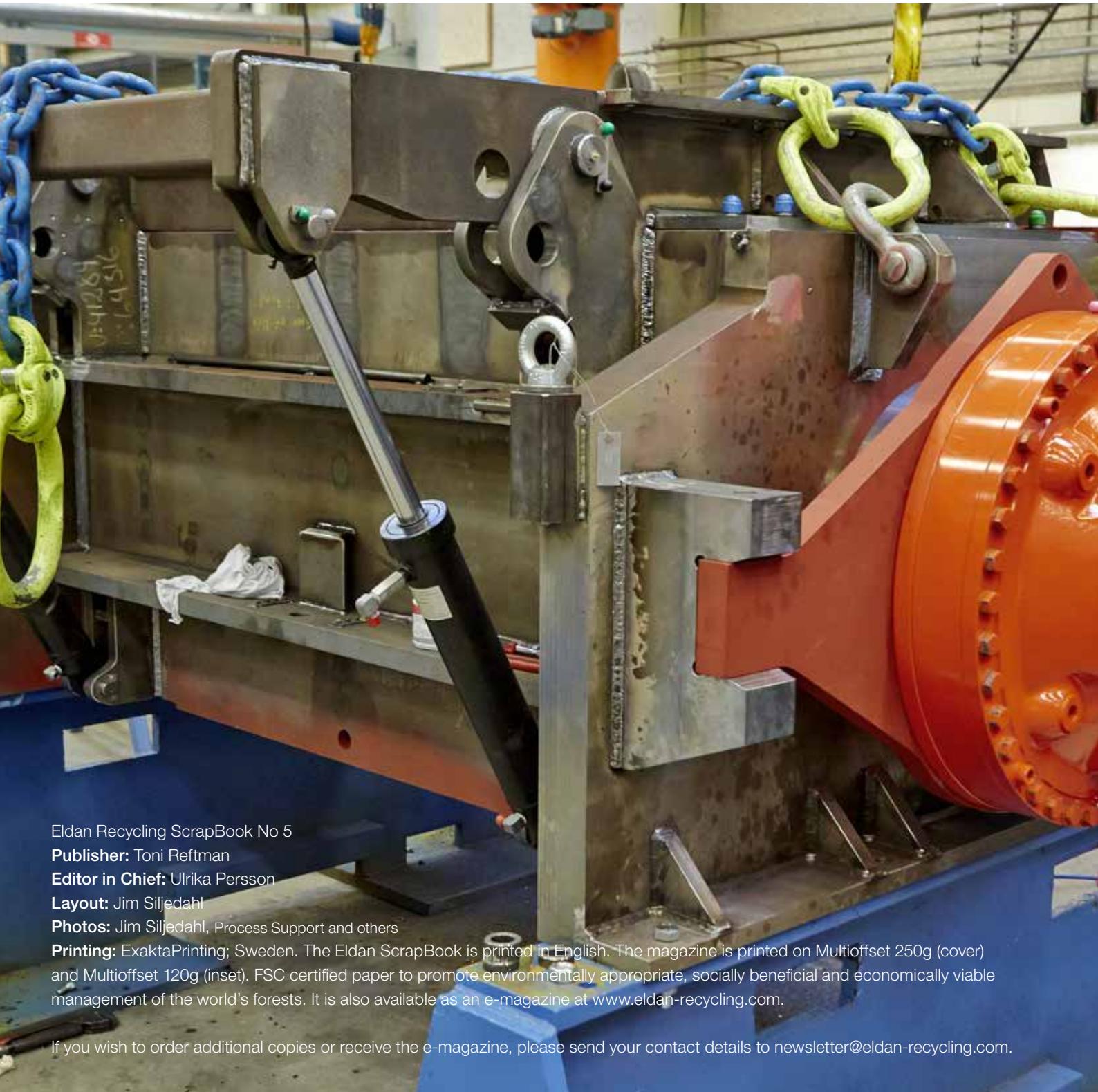
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Eldan Recycling ScrapBook No 5

Publisher: Toni Reftman

Editor in Chief: Ulrika Persson

Layout: Jim Siljedahl

Photos: Jim Siljedahl, Process Support and others

Printing: ExaktaPrinting; Sweden. The Eldan ScrapBook is printed in English. The magazine is printed on Multioffset 250g (cover) and Multioffset 120g (inset). FSC certified paper to promote environmentally appropriate, socially beneficial and economically viable management of the world's forests. It is also available as an e-magazine at www.eldan-recycling.com.

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