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RUF.
BRIQUETTING SYSTEMS

Compressed and free of cooling lubricant

RUF's briquetting press increases the efficiency of Zollner's aluminium production

Zollner AG compresses more than 100 tons of aluminium chips per year using a RUF briquetting press. The mechatronics service provider thereby reduces the volume of this recyclable material to a fraction and isolates clinging oils and emulsions. By recovering cooling lubricant and thanks to increased prices for aluminium briquettes, the press has amortized itself within a very short time.

Everyone has come into contact with Zollner Elektronik AG's products in some way, but hardly anyone has ever heard the name of this family enterprise from the Bavarian village of Zandt. But this is part of their business principle. Zollner does contract manufacturing of mechatronic products for many different industry sectors as individual items or for large-scale production. The check in terminals of Lufthansa and Deutsche Bahn's tickets machines for example are made by Zollner and the complete power electronics of the pre-production models of the BMW electric vehicle i3 also come from the main factory in Zandt.

But the company often goes beyond producing according to customer specifications. On request the mechatronics service provider develops the required products partly or sometimes even completely.

More than 100 tons of aluminium chips are left over every year

Almost 50 years ago, the electrician Manfred Zollner founded an electronics shop and installation service. Back then a one-man-company, it has developed into the biggest European EMS service provider and is part of the worldwide top 15 of this business sector. To this day, the founder Manfred Zollner is an active part of the company as chairman of the board. The list of buyers like longtime customers IBM, Miele and Siemens has grown by hundreds over the years.

Numerous turned and milled parts are produced in the main factory in Zandt. 80% of the material used is aluminium, which makes it the most important material. 40 to 50 percent of the processed material is left behind in the form of aluminium chips. Back when the company's own CNC manufacturing was still very small and a lot of parts were bought in, handling the voluminous and cooling lubricant soaked chips was costly, but still acceptable for Zollner.

But in recent years the chipping production, for example the 5-axes-technology, has been massively expanded. Approximately 250 tons of aluminium are processed every year in 18 machining centers and eight long and short automatic lathes. Through this process, at least 100 tons of chips are left over. For Johann Dietl, head of CNC manufacturing, it became clear very quickly that the chips from his state of the art production had to be dealt with more efficiently, considering these kind of bulks. He recalls: "We had to transport the chips a long way to a warehouse and used up an enormous amount of space. It was definitely not a clean process due to the adhesive cooling lubricant and oil." Always in search of new ways to perfect his production, he steadily exchanges information with other production plants. When he discovered a RUF briquetting press in one of them it was clear to him that this was the solution for the chip problem at Zollner.



ADDING VALUE

RUF.
BRIQUETTING SYSTEMS

A shorter path – briquetting press directly integrated into the production

After comprehensive consultation, RUF provided the main factory in Zandt with a rental unit. This way the decision makers could convince themselves of the briquetting system on site and under real conditions. After this successful trial run the purchase was agreed in no time. In spring 2012 the RUF 4/2400/60x60 was delivered, set up and set to work. With a specific pressing power of 2,400 kg/cm², the 4 kW strong motor compresses the aluminium chips and produces briquettes with a size of 60 x 60 mm and a length of 50 mm. From then on it has produced more than 220,000 of these about 450 g heavy briquettes every year.

The press has many advantages for the CNC manufacturing at Zollner: “Back in the day we had to transport the chips to a recycling depot, which is 300 meters away”, Gerhard Köstner, head of quality assurance for CNC manufacturing reports. There they were picked up by a scrap merchant with a truck twice a week. Today the chips are being pressed to handy briquettes and collected in lattice boxes right in the production hall. This way the aluminium remains are reduced to a twentieth of the volume and the storage requirement has been strongly reduced.

But transporting the chips all the way through the plant wasn't the only time consuming process: The cooling lubricant had to drip off the chips for days. This was awkward to do and did not get everything off the chips, which caused problems during transportation, because more cooling lubricant dripped off the chips due to the vibration during the ride. This problem was also solved by the RUF press: Now the aluminium chips are almost completely cleared of any adhesive cooling lubricant, directly and without dripping, right during the briquetting process. “This also increases the sales value of the aluminium greatly”, Johann Dietl happily explains. The RUF system pumps the extracted oils and emulsion directly from the drip pan to consolidated

containers. A recycling company takes the drained cooling lubricant and processes it for further use.

The press amortized itself quickly

Zollner can now sell the aluminium briquettes for more money, not only because they are free of cooling lubricant, but also because considerably bigger amounts can be sold at once. Johann Dietl explains: “Thanks to the noticeably smaller space requirement, we can collect briquettes until we have 22 to 25 tons. Next we deliver them with a truck trailer directly to an aluminium plant. This has to be done about four times a year.” For Zollner advantages like cutting down on internal transportation, selling drained cooling lubricant and achieving higher market prices for their aluminium have added up quickly: “RUF's press amortized itself quickly” Johann Dietl summarizes. “Furthermore”, Gerhard Köstner adds, “the whole process is now much cleaner and environmentally friendly thanks to the extraction of oils and emulsions.”

Briquetting does not require a lot of effort: At the milling and turning machines, the aluminium chips are caught in mobile collecting tanks, which are equipped with a tilting mechanism. When they are filled with about half a cubic meter of chips, they are delivered to the RUF press, lifted over the hopper with a forklift and emptied. A multiple screw conveyor at the bottom of the hopper transports the aluminium chips into the pre-charger of the press. There the material gets pre compressed so that there is enough material to make a briquette in the pressing chamber. The press ram pushes the pre compressed material into a mould until the configured pressure is achieved. The finished briquettes are transported by the press via outlet chutes directly into the collecting boxes. Apart from filling in the chips and transporting the lattice boxes filled with briquettes, there is hardly any manual work to be done. An employee merely has to press the start button when there are enough chips in the hopper of the press. A filling



ADDING VALUE

RUF.
BRIQUETTING SYSTEMS

level indicator sends a signal to the press as soon as the chips are used up. The press then automatically stops.

There are three daily work shifts at Zollner. "The RUF press operates approximately 1,000 hours per year, depending on the demand", Köstner explains. His coworkers lubricate the machine from time to time. The RUF service had to be called only once, when a wear part had to be exchanged: The press ram was replaced in no time so that production was not affected according to Johann Dietl. To this he adds: "We are thoroughly satisfied with this equipment and are considering an expansion of its use. At present we are performing tests with mixtures containing steel and plastic chips."

Zollner Elektronik AG ...

... produces complete mechatronical products for a number of business sectors to the customer's specifications and even participates in the development of these products. The well-balanced sector distribution includes industrial electronics, railroad engineering, the automotive industry, medical technology, aeronautics, office electronics, data systems technology, other consumer goods and telecommunication. All in all, the company has around 13,000 products to offer. Zollner has more than 8,200 employees in 17 worldwide locations. A factory in Costa Rica is currently being built. The company with its headquarters in the Bavarian district of Cham is owned one hundred percent by the family of the founder Manfred Zollner and achieved a turnover of 889 million Euros in 2013.

More than half of the revenue was achieved in Germany. The most important export markets are Europe, Asia and North America. In the CNC manufacturing, 5-axes milled parts with a size of up to 800 x 800 x 600 mm and turning parts with a diameter ranging between 1 and 300 mm are being produced.

Ruf GmbH & Co. KG ...

... located in Zaisertshofen, was founded by Hans Ruf in 1969. Today he runs the company together with his sons Roland and Wolfgang.

Around 100 employees develop and produce highly innovative briquetting systems on a modular basis for wood, metal and other residual materials.

The smallest unit manufactured by RUF is the RAP (RUF integration press) features a 4kW motor and a throughput rate of 20 to 150 kg per hour (depending on material and chips size). The biggest unit featuring a 90 kW motor achieves a throughput rate of up to 4,800 kg per hour.

Back in 1985 RUF produced its first briquetting press and sold it to a wood machining firm. It is still in working order, proof perfect for the company's philosophy, highest innovation and quality, are the basis for economic success with maximum environmental benefits. In the meantime over 2,300 customers worldwide have been satisfied with their RUF briquetting systems.



ADDING VALUE

RUF
BRIQUETTING SYSTEMS



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“We are thoroughly satisfied with this equipment and are considering an expansion of its use“, Johann Dietl, head of CNC manufacturing at Zollner reports.



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B02b_RUF-Zollner_b_DSC_4118.jpg

“The briquetting system presses clinging cooling lubricant out of the aluminium chips. This makes the whole process much cleaner and environmentally friendly“, Gerhard Köstner, head of quality assurance for Zollner's CNC manufacturing explains.



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The RUF briquetting system presses more than 100 tons of aluminium per year at Zollner and turns them into handy aluminium briquettes with the format 60 x 60 mm.



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B04b_RUF-Zollner_b_DSC_4010.jpg

The finished briquettes are transported by the press via outlet chutes directly into the collecting boxes.

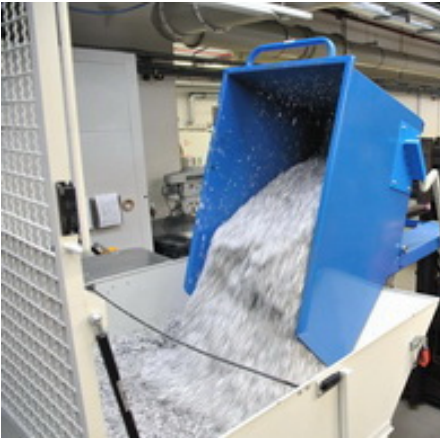


ADDING VALUE

RUF
BRIQUETTING SYSTEMS



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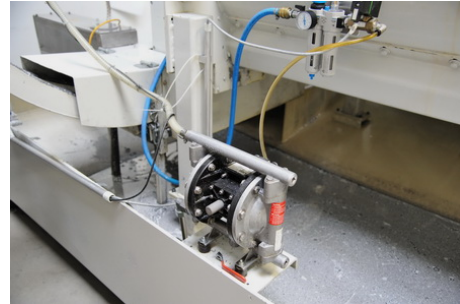
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At the milling and turning machines the aluminium chips are collected, transported to the briquetting press and emptied into a hopper with the help of a forklift.



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Now almost completely freed of oils and emulsions, the 60 x 60 mm sized aluminium briquettes have a noticeably higher sales value than loose chips.

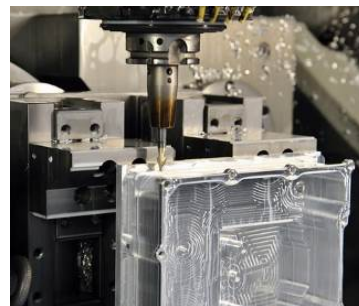


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With the help of this pump, the oils and emulsions which are pressed out of the aluminium chips are guided into collecting tanks.



B08a_RUF-Zollner_b_DSC_4075.jpg



B08b_RUF-Zollner_b_DSC_4090.jpg

Zollner's CNC manufacturing produces milled parts with a size of up to 1000 x 600 x 400 mm for mechatronic products.



ADDING VALUE

RUF.
BRIQUETTING SYSTEMS



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Approximately 250 tons of aluminium are processed every year in 18 machining centers and eight long and short automatic lathes



B10_RUF-Zollner.jpg

As a mechatronics service provider without an own brand, Zollner AG delivers to numerous companies worldwide. Lufthansa's check-in terminals for example are produced at Zollner.

Further information about the company, technology and products can be obtained directly from Ruf Maschinenbau GmbH & Co. KG.

We would be very grateful if you could publish this information.
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