The EU directive 2000/53/EG stipulates that as of 2015, 95% of the weight of a car that has reached the end of its life span have to be recycled. The work of ARN is strongly focused on this objective. Together with partner companies, they make sure that old cars are processed in an environmentally compliant way. The recycling chain begins with the companies that dismantle the car and remove raw materials and liquids. Waste management companies collect these materials and deliver them to the processing companies who reuse the materials in accordance with high production standards.

ARN (Auto Recycling Nederland) was founded by the automobile industry in 1995 following the passing of an EU directive which stipulates that cars have to be sustainably exploited at the end of their life span. ARN see themselves as an advisory body within a network of 300 partner companies who guarantee a very effective process from the dismantling of the car and the disposal of waste to the actual recycling.

www.arn.nl
In April 2011, ARN opened a production site at Tiel which forms the last chain link in the transformation process of shredded waste to reusable raw materials.

After a car wreck has been emptied and dismantled, the remaining parts are put into a shredder. The resulting shredded light scrap (without metals) is then separated into 3 fractions: raw sand, raw fluff and raw granulate. These fractions are delivered to ARN where they are processed and refined in highly modern production facilities.

Marcel van der Veer, Manager Quality and Environment, explains: “Our production facilities are designed for 100,000 tons per year. We are planning on processing all of the Dutch shredder light scrap which amounts to 35,000 tons. The recycling of car scrap will of course remain our main task but it is also conceivable that we will in future process electronic scrap and plastic waste as well in order to produce with maximum capacity.”

To ensure reliable inbound and outbound inspection, the laboratory at Tiel is very well equipped. Their customers are critical and very demanding when it comes to the quality of the recycled raw materials supplied by ARN: “We deliver, for example, materials for the dewatering of sludge in wastewater treatment plants. Or heating material for furnaces where the operator needs to know in detail what kind of material is burnt”, explains lab coordinator Anita van Ooijen.

For these reasons, constant quality control is a big issue at Auto Recycling Nederland. Typical analyses include, for example, the determination of ash content, dry matter content, calorific value as well as the PCB and PAC content. Moreover, the percentage of minerals, oils or heavy metals is determined as well as the nitrogen, carbon or sulfur content.

The variety of materials which ARN produces is great. Therefore, the lab has acquired several different RETSCH instruments to prepare the required analytical samples. Anita van Ooijen appreciates the good quality of the RETSCH equipment: “We use RETSCH mills and sievers because we know they work well and are easy to operate and clean. Working with RETSCH equipment is a piece of cake!”

For the grinding of fibers and plastics, which are pre-chilled in liquid nitrogen, the laboratory uses a RETSCH Cutting Mill SM 300. Anita van Ooijen: “The SM 300 is perfectly suited for grinding plastics!”

RETSCH’s Ultra Centrifugal Mill ZM 200 is used to grind small pieces of rubber which are also pre-cooled with LN₂, whereas the RETSCH Planetary Ball Mill PM 100 predominantly grinds the hard-brittle components of the shredded waste. Anita van Ooijen comments that “the PM 100 provides excellent grinding results; we merely use a bit of methanol to prevent the sample from caking to the jar walls.”

Particle size analysis is also an issue at ARN laboratory in Tiel as the particle size distribution of a product, among other factors, influences further processing and use. For this application, the lab uses RETSCH’s Vibratory Sieve Shaker AS 450 which separates up to 25 kg of sample material very efficiently, even with short sieving times.