



Automotive recycling  
in the Netherlands

2017

Cover photograph:  
Kevin van Dijk, assistant operator  
at the post-shredder technology  
plant in Tiel.

# Automotive recycling in the Netherlands 2017



# ARN

**ARN. In the past, we were known as Auto Recycling Nederland; today, our scope has expanded and we now call ourselves ARN. For more than twenty years, we have been the recycling experts for the mobility sector.**

The governing board of our shareholder, Stichting Auto & Recycling, consists of representatives from BOVAG, RAI Vereniging, Stiba and Vereniging FOCWA schadeherstel.

## **Collaborative venture**

ARN today can perhaps best be described as a collaborative venture. We work together with all the links in the automotive recycling chain to achieve the 95% recycling target. At least 85% consists of material reuse, supplemented to at least 95% recovery. Imposing figures like those can never be achieved alone.

## **Dynamic chain**

We now have more than 300 chain partners including car dismantling companies, collection companies, processing companies, intermediate traders and shredder companies. Each partner has its own role in the process. We offer training, provide workshops and share our knowledge. Our advanced post-shredder technology (PST) plant in Tiel, the final link in the chain,



retrieves the final remaining reusable materials from the shredder residue.

### **Two decades of innovation**

Over the past 20 years, the process has been massively professionalised. Oil and coolants are recycled to the maximum possible extent. Materials are separated and reused, and we are even capable of ensuring the safe dismantling of high-tech Li-ion batteries from electric and hybrid cars. Partly thanks to our efforts, automotive recycling has become self-evident. Master tyre inspector Ko van Kesteren (62) who works at our chain partner Lintire based in Vianen summarised the situation in the following words, “I wouldn’t know where else to go to with old tyres.”

### **People make the difference**

Many people who work in automotive recycling deliver an enthusiastic contribution to a cleaner world. In this publication, they talk with obvious pride about their work. More than 95% recycling is quite an achievement. Together, we make the difference. “We do it all for a better environment and for a healthy future,” commented Kevin van Dijk (23), assistant operator at the PST plant in Tiel. “Particularly as a young person, I think it’s a great thing to be involved in.”

# Inspiring stories

**In the Netherlands, automotive recycling is well organised. When account managers at ARN tell their discussion partners that in 2016, in the Netherlands, we were able to recover and reuse 98.7% of the weight of end-of-life cars, the response is often one of disbelief. But their statement is nonetheless true.**

The car is the most recycled of all consumer products. It is truly fascinating to put the chain on show and to see people's faces when they learn how we have successfully solved the challenges facing us.

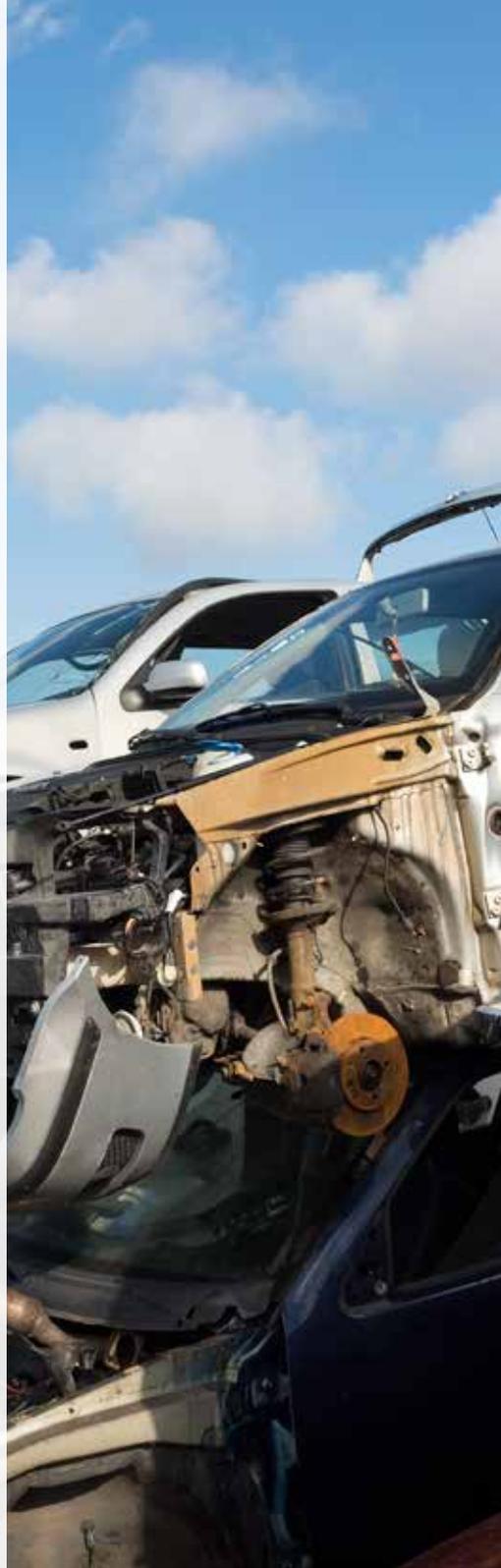
## **The chain on show**

What happens when a car is handed in?

- Who dismantles an end-of-life vehicle?
- What does the lab at ARN test for?
- How is a Li-ion battery safely dismantled from a car?
- Who operates the shredder?
- Why is it so difficult to separate plastic residues from iron?

## **Shared passion**

This publication presents fifteen stories from fifteen inspired employees. One has been in automotive recycling for forty years, while another is new to the business. And although all the people we have portrayed here play a different role in the chain, they





all share a passion for cars and a passion for a clean world.

Their photographs and stories show how each part of the chain is linked together and reveal the progress already achieved.

### **Innovative capacity**

Van Gils senior from Nootdorp earned his money from breaking up cars. His two sons have converted the car dismantling company into an online parts shop. An excellent example of innovative capacity in the sector. That same innovation has in fact given birth to entirely new branches, for example Autobedrijf Peter Ursem in Zwaag, where batteries from cars are given a second life.

### **New but already recycled so many times**

Without car owners realising it, their new car today is often partly produced using recycled material. Take the new Renault Clio being worked on at dealership Oving in Zwolle; a staggering 30% of the parts are in fact produced from used raw materials.

Recycling is the subject of much discussion. In the end, however, it is above all a question of buckling down and doing business.

Take a look.

## Welcome to the chain

“For some people, taking their car to a breakers' yard is an emotional experience. For others, it is merely a financial transaction. They ring around various car dismantling companies or check out on the Internet how much their car is worth.

Older cars are recycled straight away. Newer cars are reserved for the parts trade. In the past we earned our money from scrapping cars. Now we focus on the sale of used parts. In that sense, anything we can recycle is a bonus.

I see ARN as a quality label. In the same way that people like to buy organic produce, selling an end-of-life car to an ARN-affiliated company is for many people a preferred option. Being part of a partnership means that people know that their car will be safely dismantled and recycled at the end of its life.”

***“I see ARN as a quality label”***

**Jan Pater**  
Autobedrijf Pater, Ede





# A fond farewell

# Environmental protection





*“If all the liquids are not correctly removed from a car, they could end up leaking into the soil”*

Pascal van der Mark  
Autobedrijf van der Mark, De Lier

## Careful dismantling

“We have a stockpile of around 250 end-of-life vehicles. When people come looking for parts, we are happy to remove them for them. On average, I dismantle two cars a day, all according to the ARN guidelines. Tyres, petrol tank and all liquids (coolant, oil, petrol, diesel, brake fluid and windscreen washer fluid) first have to be removed. If these liquids are not correctly removed from a car, they could end up leaking into the soil. And that means pollution. Recycling helps ensure a cleaner world. Once we have finished with the cars, they are collected by a truck on which they are crushed, and transported to the shredder. In the past, we had to remove all the seat upholstery ourselves. Difficult and dirty work. You could easily trap your hands in the sharp metal wire seat supports. It was certainly no fun.”

# Distilling oil





***“The products must be completely free from PCBs and chlorine”***

**Victor Schell**

GS-Recycling Nederland,  
Amsterdam

## **Saving every single drop**

“The trucks travel from Sonsbeck in Germany. That is where we have our processing plant. We collect the used oil and coolant from the ARN chain partners. We have a central collection point for brake fluid, which is turned into DOT4 brake fluid. The tank on the truck has a number of different chambers, one for each type of liquid. Before everything is unloaded at our refinery, we take a sample of the drained liquids for analysis. They must be completely free from PCBs and chlorine.

Once we have been given the go-ahead, the liquids enter the distillation process. One of our products is base oil for the production of lubricants. And from the used coolant we produce pure glycol that can once again be used in the production of new coolant, for example. I am proud to be part of a process that truly makes the world a little bit cleaner.”

## The latest technology

“Although there is not yet much demand for dismantling hybrid and electric cars, we have been providing courses on how to do it, since 2013. After all, a hybrid car sold today could end up a write off just tomorrow. The dismantling operators then need to know exactly what to do.

In a conventional car there is no high-voltage battery. We have to teach people how to use a voltmeter. Before you remove a high-voltage battery, the entire system has to be carefully disconnected. If you are not sure how to do that, things can go badly wrong. The entire process must be carried out precisely according to the instructions. If a lithium-ion battery were to end up in the shredder, still in the carcass, the result could be huge damage and danger for the work force. That is something we have to avoid.”



***“These batteries must never end up in the shredder, still in the vehicle carcass”***

**Rob van der Linden**  
ARN Training Centre, Tiel

# High voltage



## Separate disposal

“Once the tyres have been removed by the car dismantling companies, and stacked in a container, it is my job to collect them. I pull the container up onto the truck and drive it to the processor. A certain percentage of tyres will still be usable. They are all carefully checked and sorted by the tyre processor. They lay down the lines for future use. Today, everything is recycled and reused. In the past, everything was simply placed in a single container, taken to the landfill, and dumped. End of story. Fortunately, things have changed. Today, everything is disposed of separately. As a result, very little waste actually ends up at the landfill site. Practically everything is sorted or incinerated, and turned into green power, for example.”

***“Very little waste is dumped in landfill sites today”***

**Andre Smeulders**  
Van Gansewinkel, Eindhoven



# Tyres

by road



***“Recycling is a world  
with many faces”***

**Willem Nuiten**

Account manager ARN,  
Amsterdam

## **The connecting link**

“As an account manager at ARN, I am the contact person for all car dismantling companies affiliated to ARN. Personal contact is essential to ensure smooth cooperation in the sector. It is a world with many faces. Today, across the entire supply chain, we achieve 95% reuse and recovery, but we can only maintain that record if we all continue to work together. And therein lies a challenge. We visit all the car dismantling companies in the Netherlands at least twice a year. During every visit, we discuss any points for concern and answer the questions that have arisen within the businesses. In the past we were traditional inspectors; today, we are more relationship managers.”





# Partnership in practice

## “Why use new parts?”

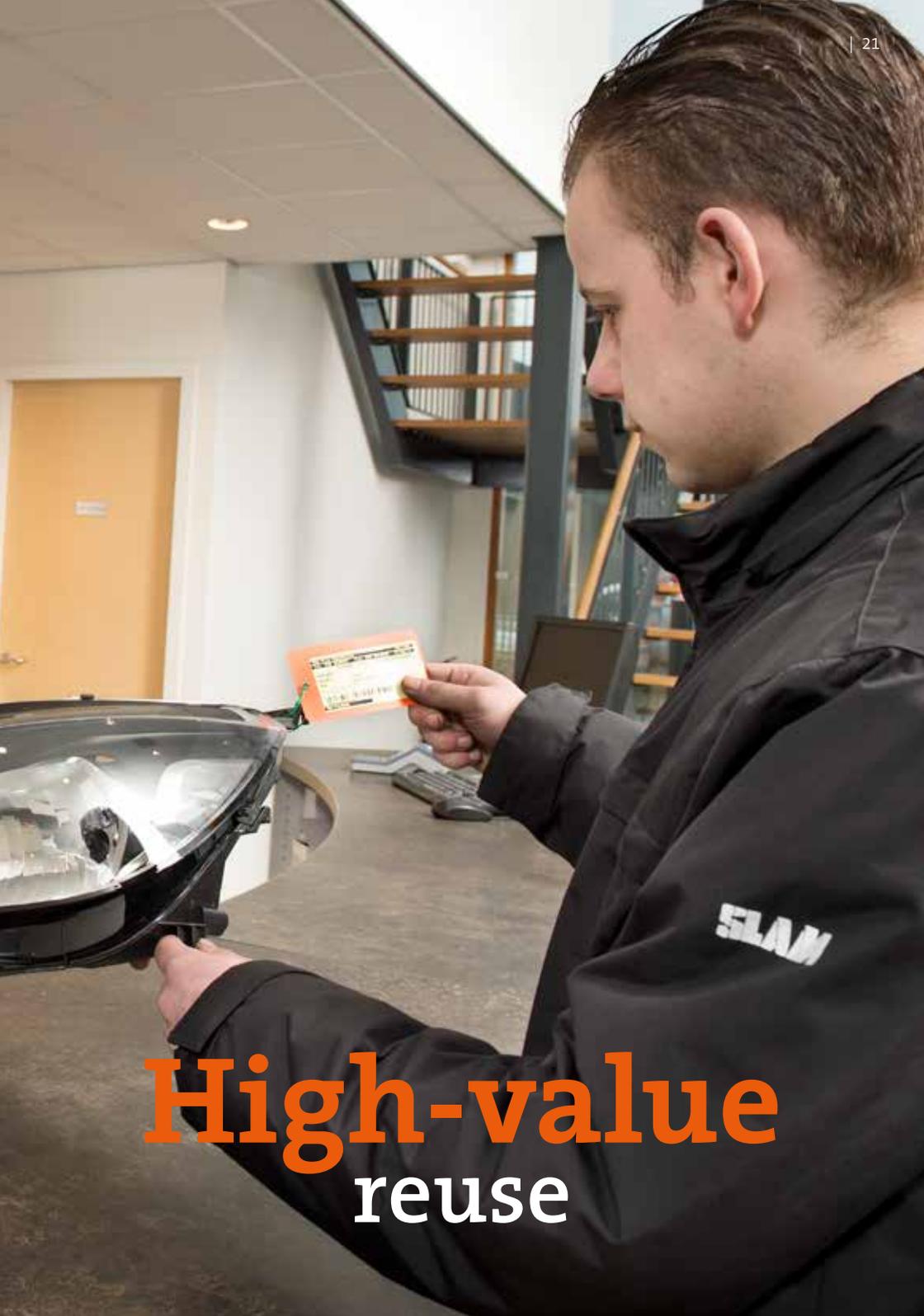
Sacha van Gils

Van Gils Automotive,  
Nootdorp

### Careful with raw materials

“Thirty years ago, my father would unscrew parts from cars at a breakers’ yard, to customer order. Today, we remove all reusable parts and they are placed in initial storage where they are photographed, placed on the product pages in the web shop, and stored in our warehouse. Every part is tested, classified and linked to the chassis number and mileage reading of the car, so that everything is traceable. 90% of our work is *business-to-business*. The ultimate goal is to see damage to a car built in 2012 repaired with parts from 2012 or more recently. Why use a new door? The quality of young second-hand parts is excellent and they are often available in the same colour. Raw materials are becoming increasingly scarce. We should use them more carefully. Only then can we create a more sustainable world.”





# High-value reuse

# Corporate social responsibility





***“Certification is a question of making the effort. You have to go the extra mile”***

**Marc Schonewille**  
Autobedrijf Renault Oving,  
Zwolle

## **Approved Sustainability**

“Sustainability is a catch-all phrase. Sustainable also means supervising your trainees and accepting corporate social responsibility. We all have boxes under our desk for used paper. And separate containers in the workshop for other waste. Metals end up in the metal container, and fuels and liquids are sorted and separately collected. We were recently recertified. Nothing was left unchecked: energy consumption, waste, internships, local businesses. Do you choose a local window cleaner, or do you hire someone in from far away? There are building contractors from Friesland working in Amsterdam and vice versa. It seems crazy to me. Applying for the Approved Sustainability certificate is a question of making the effort. You have to be willing to go the extra mile. The certificate is now hung proudly on the wall. Like it should be!”

## Second life

“I pick up a tyre, and the first thing I check is the running surface and the depth of the tread. Then I check whether the sides are still undamaged. There must not be any gouges or holes. I then make sure that there are no nail holes on the inside. And finally I code the tyre. Each category has its own code. Practically all the tyres I get to see will be reused. Six millimetres of tread should never be thrown out. Tyres like those can easily be reused. In some countries they run them right down to bare rubber. Even then they may be recovered before being ground down and then used as raw material for a new tyre. Any tyre that passes through my hands will mostly be given a second life, and after that recycled. That’s what I call valuable.”

***“You have to keep focused when inspecting tyres”***

**Ko van Kesteren**  
Lintire, Vianen





The  
**multipurpose**  
tyre

*“My machine  
grinds everything  
into chips”*

**Will Snoeren**

Van Dalen Metals Recycling  
& Trading, Moerdijk

## Valuable chips

“Even though cars represent less than ten percent of what we process here, they are still great items. You can pick them up and load them in in one go. Just like toys. I could easily shred 200 an hour. Drop them in and there they are: gone. My machine grinds everything into chips, including plastics. Coarse ‘light’ fractions are vacuumed out; the rest goes through the magnetic drum that separates all the iron from the waste. Every month, we deliver 30,000 tonnes of iron to the foundries to be turned into new steel. The same goes for aluminium. That we crush into huge blocks, which are smelted to make new aluminium cans. Quite impressive! Plastic is disposed of to be processed elsewhere.”





Just like  
toys

*“If there are bits of plastic in the tray, you need more air”*

Kevin van Dijk  
ARN, Tiel

## Renewable raw materials

“There is so much more to be taken from a car than you would believe. Here at the PST plant we separate materials. This M-module separates out materials like copper and plastics. The module consists of four huge sieves and a number of air tables. All the material is blown and shaken using compressed air. The bigger pieces are left behind while the smaller material is transferred to the next sieve. The settings are precise, because the big pieces of plastic weigh almost the same as the small metal parts. I have just finished setting the machine. If there are bits of plastic in the tray, then you need more air to blow them to the back. If you end up blowing the copper to the back as well, then you have to cut back on the air supply.

At the end of the line, everything is sorted again. That way the end fractions are even purer, and more valuable.”





# The art of separation

# From the Laboratory





***“Plastic needs to be ground into powder, not turned into chewing gum”***

**Jessica Verwoert**  
ARN Laboratory, Tiel

## **Quality takes priority**

“The residue from the shredder ends up here, and is separated into plastics, fibres, rubbers and sand. Practically the whole of this laboratory is automated, and we take samples of everything.

We sample whether what we get delivered is what we expected, and we check to make sure the separation process in the plant is working effectively.

The most spectacular thing we do here is grinding plastic. Because plastic normally melts during grinding, we first freeze it with liquid nitrogen. What we are looking for is to grind plastic completely into powder, rather than turning it into chewing gum. A proportion of the recovered plastic will be melted in granule form to form new plastics. Another fraction is used as a catalyst in the metal incinerators. The work is extremely varied. That’s what makes it so much fun.”



# Multipurpose cells



***“You can also use batteries to store solar energy”***

**Erwin Takken**  
Autobedrijf Peter Ursem,  
Zwaag



## **New energy**

“The batteries are delivered to us by ARN in crates. We then measure the individual cells for voltage, so we can dismantle them safely. Cells that have not been damaged, say in a collision, can be reused for a whole range of applications. For example storing solar energy or for runway landing lights in the jungle, where they have no power storage facilities. Under no circumstances are the batteries allowed to be returned to the automotive industry, as they have all been rejected. If they are really no longer usable, they are disposed of. But if batteries still have some remaining use, then they deserve a second, non-automotive life. Why throw something away that is still perfectly good? These cells are truly multipurpose.”

## High-value metal recycling

“We convert scrap into usable aluminium. The vast majority of the innumerable tonnes we process each year are turned into new products. A small proportion is burned, for example paint, plastics and a tiny amount of aluminium. We produce primary alloys in 460 kg blocks that are sent to the bigger foundries. And we make ingots. Ingots are 7-kg bars used by the automotive industry for car gearboxes, alternators and engine blocks.

We smelt metal under a layer of salt, that absorbs all the oxides. We then cast the molten ‘lava’ in a mould. It’s like pouring a cake into a cake tin. The quality of our aluminium is just as good as new. But recycling requires far less energy. Because we afterburn all the gases, we eradicate all the chlorides. It’s incomprehensible to me that the government still classifies recycled aluminium as waste.”

***“The air that leaves  
the factory is cleaner  
than the air that  
comes in”***

**Bennie Marquering**  
Roba Metals, IJsselstein





# Aluminium Lava



# Renault circulaire



*“Our marque demonstrates how the production of parts can be made circular”*

**Stefan Lette**

Autobedrijf Renault Oving,  
Zwolle

## Extended reuse

A new Renault already consists of 30 percent recycled material. Manufacturing refurbished parts requires 80% less energy, 88% less water and 92% less chemicals. And it generates 70% less waste.

Renault is also involved in redesigning and standardising car parts such as gearboxes, so that they can be more easily reused at the end of their lifecycle.

Automotive technician Stefan Lette is keen to show us the latest innovations by the French automotive manufacturer. “The latest bumpers for example are for the most part made from recycled material. There is much talk about Renault’s pioneering approach to the environment, sustainability and technology, in the workshop. Our marque is already demonstrating in practice how the production of parts can be made both circular and affordable.”



## Colophon

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### Design and realisation

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