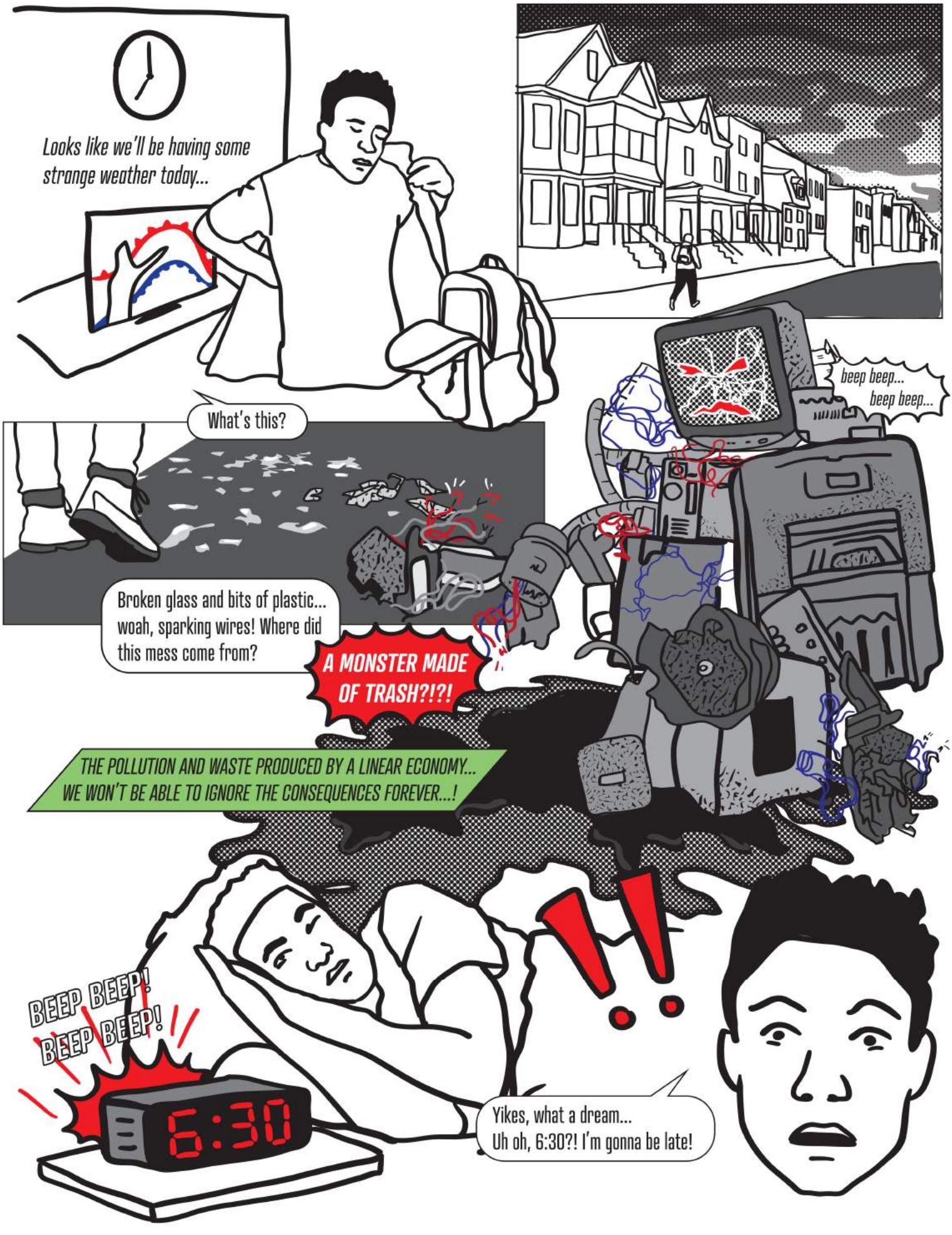
# ADVENTURES IN REMANUFACTURING


Looks like we'll be having some strange weather today...
What's this?
Broken glass and bits of plastic... woah, sparking wires! Where did this mess come from?
beep beep...
beep beep...
A MONSTER MADE OF TRASH?!?!
THE POLLUTION AND WASTE PRODUCED BY A LINEAR ECONOMY... WE WON'T BE ABLE TO IGNORE THE CONSEQUENCES FOREVER...!
BEEP BEEP!
BEEP BEEP!
6:30
Yikes, what a dream...
Uh oh, 6:30?! I'm gonna be late!


LATER THAT DAY...
Uh oh, Missed!
Right into the trash!
So much waste...
All this junk reminds me of a crazy dream I had last night...
There was an angry monster made of trash with a TV for a head and a glitching face! It was leaking oil everywhere and about to catch on fire! Such a nightmare...
Wow, sounds scary. This stuff isn't alive, but look...
Tvs, old computers, even messed up chairs and tables! This stuff isn't in great shape, but why is it going to a landfill instead of being recycled?
The earth only has so many natural resources... there has to be a more sustainable choice!

That stuff must've come from the old computer lab!

Those computers might be old, but they still work...

And the new computer lab is nice, but is it worth sending all that stuff to a landfill?

*BELL RINGS*

Alright everyone let's --

What's up? I'm not moving next week's quiz!

Have you seen all the old computers that the school is just throwing away?! That doesn't seem like such a sustainable choice...

People have been saying ***"REDUCE, REUSE, RECYCLE"*** for ages, but why can't we really even do that!

Actually, that old equipment isn't headed for a landfill at all... It'll be picked up later today and taken to a ***REMANUFACTURING*** facility!

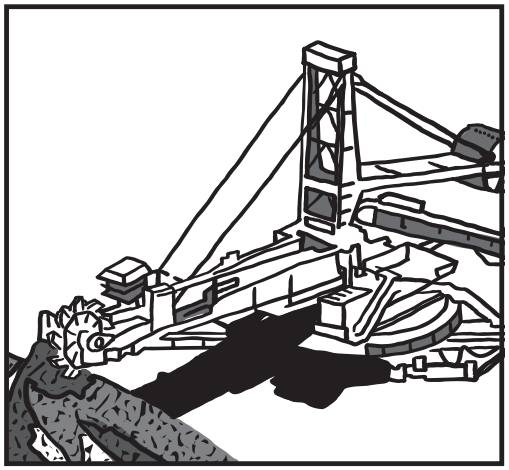
But it was all thrown in a big dumpster... and besides, I've never heard of remanufacturing. What does that even mean?

Well, when our school gets new technology we do a sort of trade-in.

We get newer and better equipment, and we send the old or broken stuff off to be taken apart and made new again...

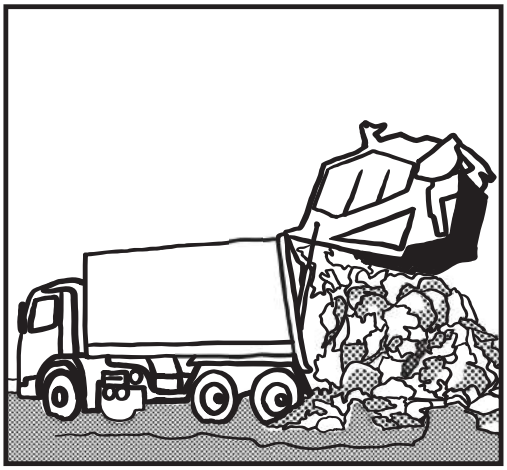
Think of it this way... A landfill is the end-stage of something called the

## *LINEAR ECONOMY:*



First we ***TAKE*** natural resources from the earth...

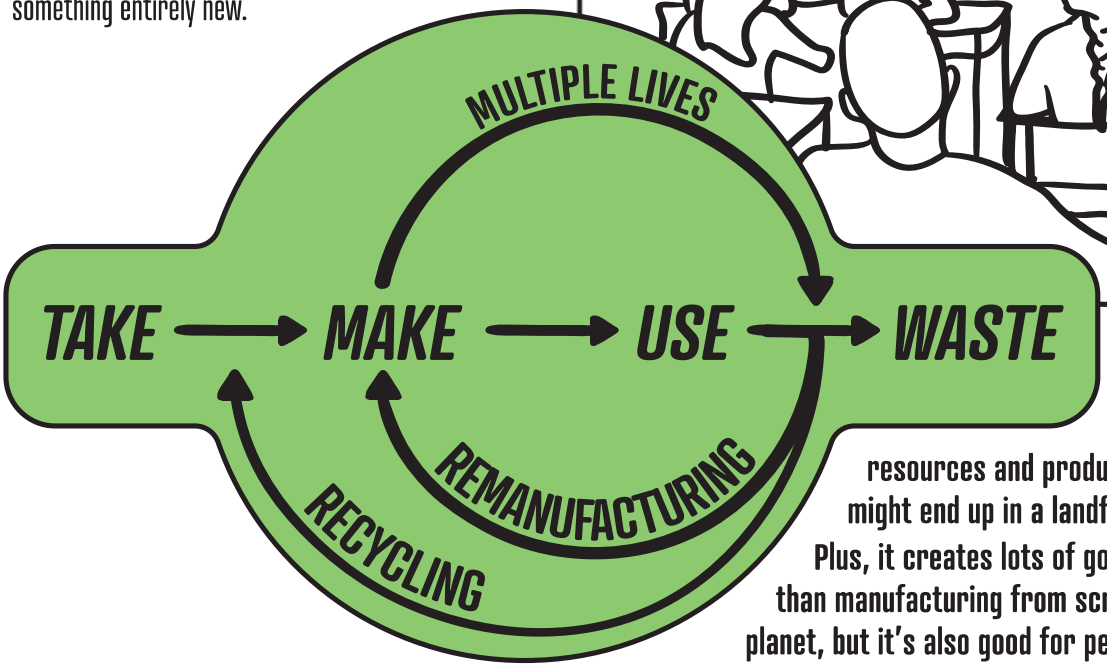
Then we ***MAKE*** (manufacture) products to sell to consumers...



Eventually those products become ***WASTE,*** which usually means they'll end up in a landfill.


***That's how Remanufacturing works, it's part of something called the CIRCULAR ECONOMY:***

Instead of allowing used-up products to become waste, **Remanufacturing** makes it possible for a product to have *multiple lives*. And when Remanufacturing is no longer an option, **Recycling** turns that product back into raw materials that can be used to produce something entirely new.




**The Circular Economy requires the extraction of far fewer natural resources and produces less waste that might end up in a landfill...**

**Plus, it creates lots of good jobs and costs less than manufacturing from scratch. It's good for the planet, but it's also good for people and businesses too.**

If you're interested, I'll see if there's a way for us to learn more!

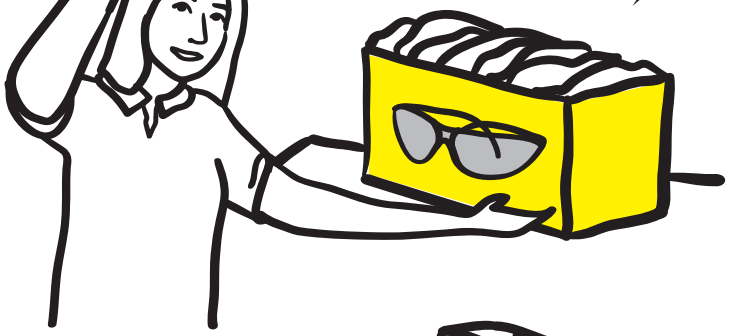
A WEEK LATER...

I thought the best way to learn about Remanufacturing would be to see it in action... so today we're going to visit a local Reman facility!

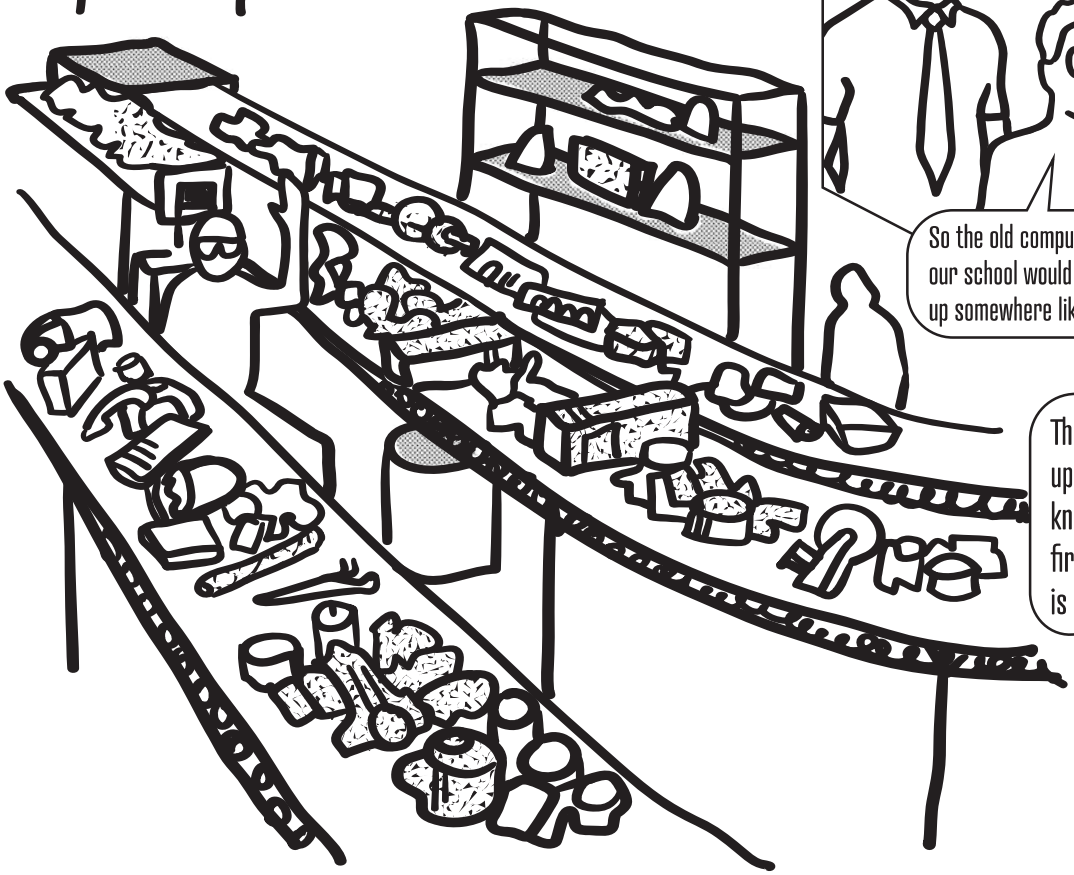

Hi everyone, I'm Elaine and I'll be showing you around our facility today. Grab a pair of safety glasses and come on in!

I heard that you know a little bit about Remanufacturing and the role it plays in the circular economy...

Waste from the last part of the linear economy is what comes in to our facility. Electronics, appliances, heavy machinery, medical equipment, even furniture can become what we call ***CORE***; the raw materials for the Remanufacturing process that we take in and make new again.



So the old computers from our school would have ended up somewhere like this!



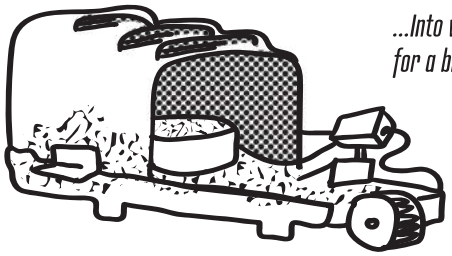
That's right! All kinds of core gets packed up and sent to us, and we don't always know exactly what's coming. That's why the first step of the Remanufacturing process is sorting it all out.


Once the core has been sorted, we take each piece to be disassembled...
We have detailed instructions for each product we work on in binders like this, so we can make sure the process adheres to our stringent quality management system.
Any parts that we notice are broken or damaged are sorted out to be recycled, so our Remanufactured products only include the very best.
Next we take the sorted, disassembled components to be thoroughly cleaned...
We choose a cleaning method depending on which parts we're working on and what type of debris we want to remove...

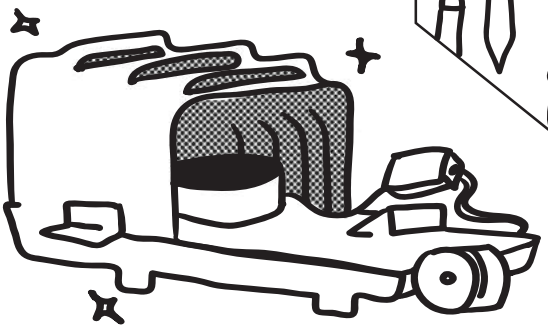
An ultrasonic bath like this allows us to submerge a basket of components and remove dirt using high-frequency vibrations.

Or we might use a machine like this instead... We add the dirty components to this substrate and shake everything up until any grime has been removed by friction.

*By the time we finish the cleaning process, each piece of core has been transformed from grimy junk...*

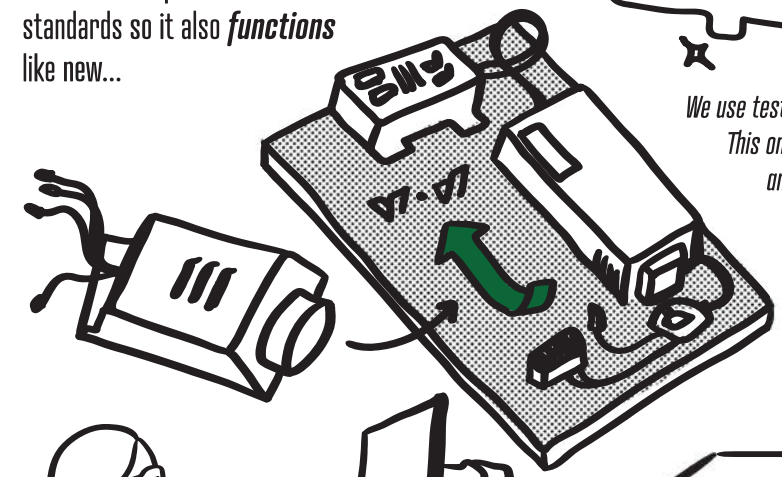


*...Into what you might easily mistake for a brand-new component:*




Wow, Reman really does look just as good as new!

Now that the core ***looks*** like new again, we want to make sure it meets performance standards so it also ***functions*** like new...



*We use test systems like this to simulate performance in the final product. This one is pretty simple: the core is hooked up here, we turn it on, and these lights on the side indicate whether it passes or fails.*

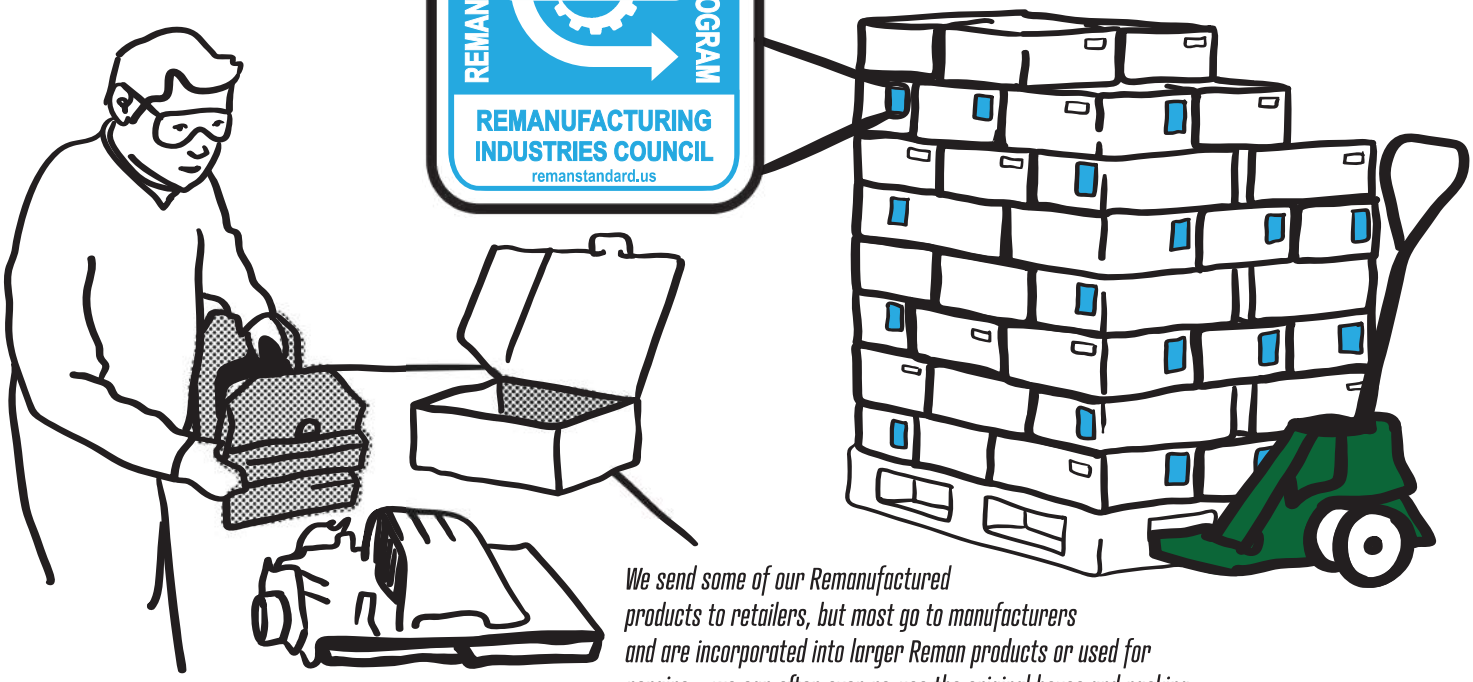


*Other tests have different readouts, but each system is designed to tell us whether or not the core can function as well as a new part would.*

*Since our facility meets the highest Remanufacturing Standards, each piece of core that passes our tests can get packed up and labeled with one of these Reman Seals:*

REMANUFACTURING ACCREDITATION PROGRAM
RIC 001.1-2016
REMANUFACTURING INDUSTRIES COUNCIL
remanstandard.us

*This way, everyone can tell that our Remanufactured products are certified good-as-new, or sometimes even better than new!*



*We send some of our Remanufactured products to retailers, but most go to manufacturers and are incorporated into larger Reman products or used for repairs... we can often even re-use the original boxes and packing materials to eliminate another source of waste!*

*Remanufacturing is an industry with operations all over the world, and its one that continues to grow. It takes a whole team of people to do work like you've seen here today...*

From warehouse inventory and logistics to the technicians, drivers, and machine operators who carry out the nuts-and-bolts process of Remanufacturing.

We also couldn't do it without the engineers who develop new materials, products, and technologies to make remanufacturing more effective...

Or the people in sales and marketing who help to spread the word about Reman and get our products out into the world.

*Remanufacturing is one really important way to help create a more sustainable future for us all...*

REMAN DAY™

*I'm ready to join the Reman movement, are you?*

# Definitions & Terms

**As-new/Like-new:** A product returned to a condition where it meets its original manufacturer's specification from a quality, performance and service-life perspective.

**Assembly:** The process by which qualified parts (whether remanufactured or new) are combined or connected together to create a subassembly, assembly, system or remanufactured product.

**Core:** A worn, failed, or end-of-use part or product that is retained with the objective of restoring or improving its original functionality through remanufacturing. It can also be used as a source of parts for a remanufactured product. A core is NOT waste or scrap and is not intended to be reused before being remanufactured.

**Circular Economy:** An economic system of closed loops in which raw materials, components and products lose their value as little as possible, renewable energy sources are used and systems thinking is at the core.[1]

**Disassembly:** Complete sequential removal of parts of an assembled product into its components, materials or parts.

**Linear Economy:** An economic system in which raw materials are extracted and processed into a product that is thrown away after use.[2]

**OEM:** Stands for Original Equipment Manufacturer. Without a new/existing product, there couldn't be remanufactured products.

**Product Verification:** Process of using established, documented test and/or inspection procedures to confirm that the specific requirements are fulfilled for the intended use of a product.

**Reman Day:** A day to demonstrate the innovative ways members of all industry sectors are advancing remanufacturing and substantiate the positive environmental impact of this global industry.

**Remanufacturing:** A comprehensive and rigorous industrial process by which a previously sold, leased, used, worn, or non-functional product or part is returned to a "like-new" or "better-than-new" condition, from both a quality and performance perspective, through a controlled, reproducible, and sustainable process.[3]

**Technical Specifications:** A collection of product documents that provide a detailed description of technical requirements, with specific acceptance criteria, and form the basis for the design, development and product processes of a product and ensure that a remanufactured product delivers a performance and service life functionally equivalent to that of a new product.

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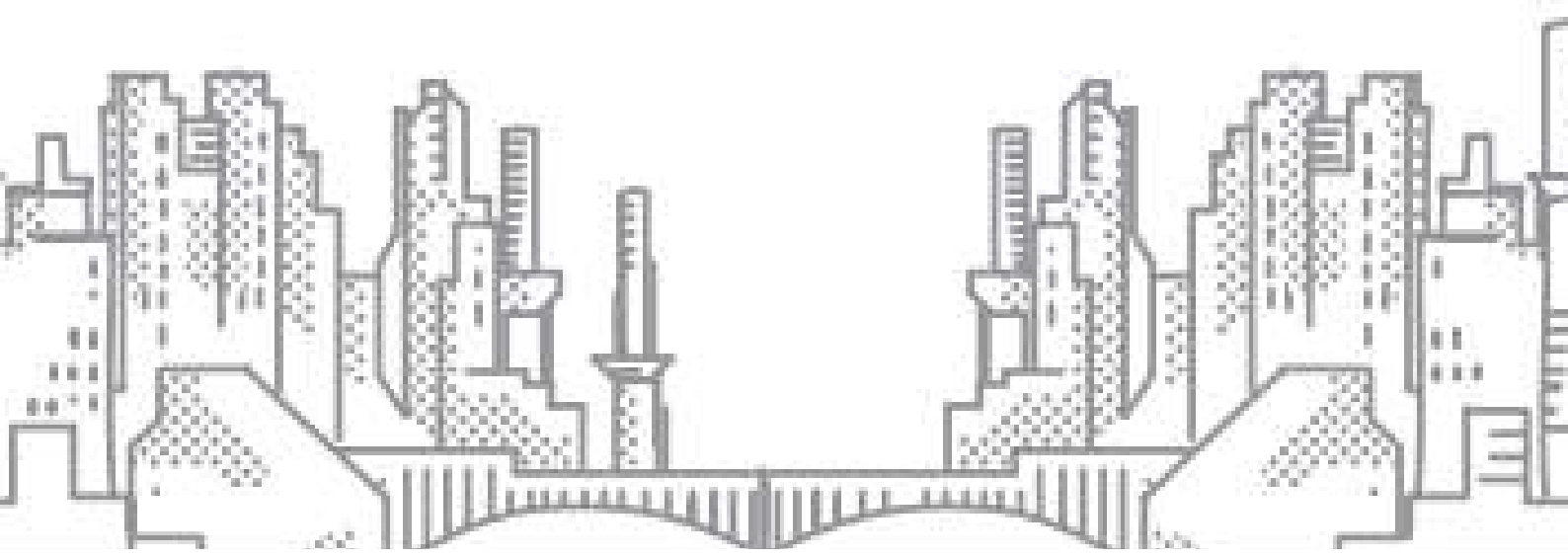
[1] https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/what-is-the-definition-a-circular-economy/

[2] https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/how-is-a-circular-economy-different-from-a-linear-economy/

[3] ANSI/RIC001.1-2016 Specifications for the Process of Remanufacturing

Rentwise



*Celebrating*

REMAN DAY

*In collaboration with*

REMANUFACTURING INDUSTRIES COUNCIL