









Which beer cup design has the less impacts on sustainability?

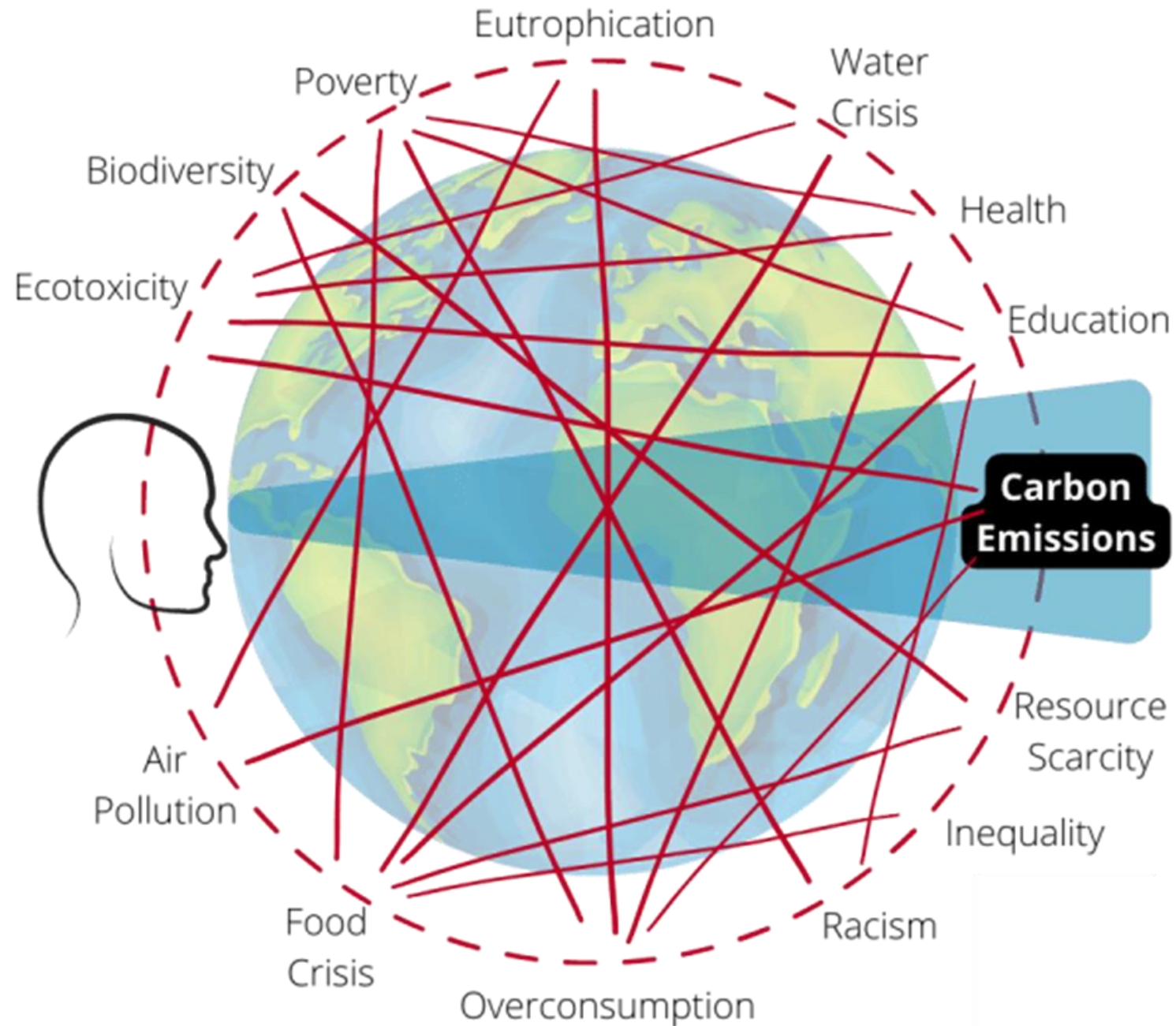






03

What's next?



# Looking beyond Carbon

Environmental indicators considered in the new European PEF methodology

## 16 ENVIRONMENTAL IMPACTS CONSIDERED IN THE PEF METHOD



Climate change



Water use



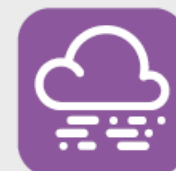
Land use



Acidification



Eutrophication,  
terrestrial



Particulate  
matter



Resource use,  
mineral and metals



Resource use,  
fossils



Ozone depletion



Human toxicity,  
non-cancer



Eutrophication  
marine



Ecotoxicity  
freshwater



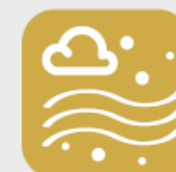
Eutrophication,  
freshwater



Human toxicity,  
cancer



Ionising radiation,  
human health

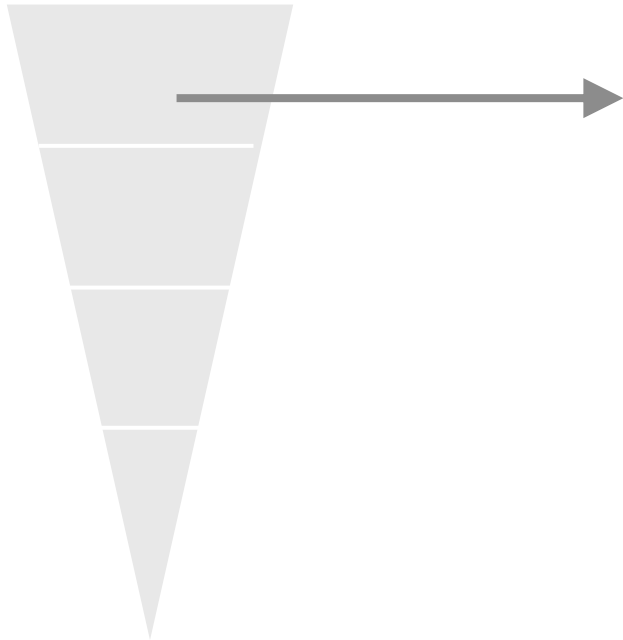


Photochemical  
ozone formation,  
human health



# Dismantling will be more and more important

Very Easy

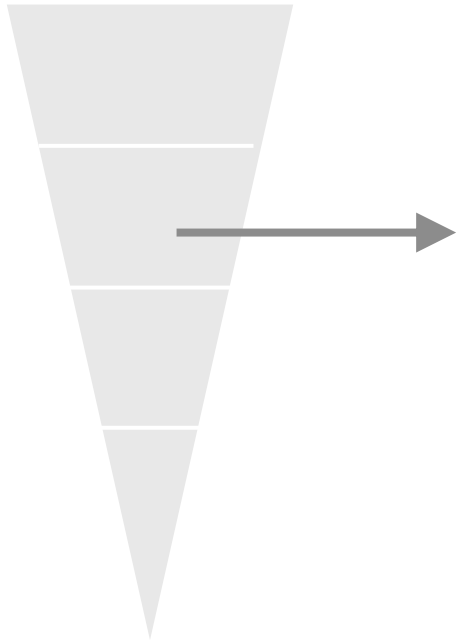


Hard



# Dismantling will be more and more important

Very Easy

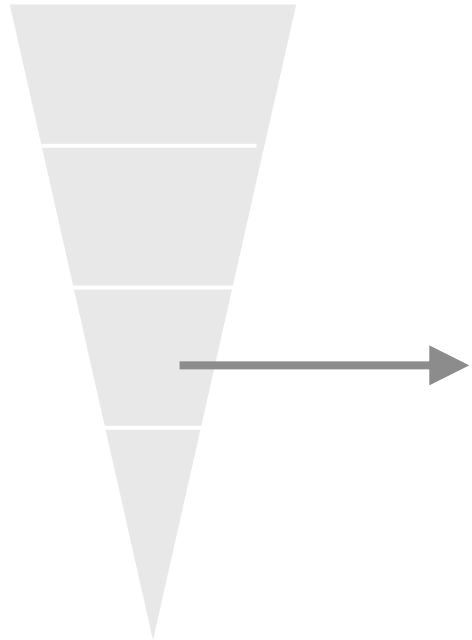


Hard



# Dismantling w

Very Easy



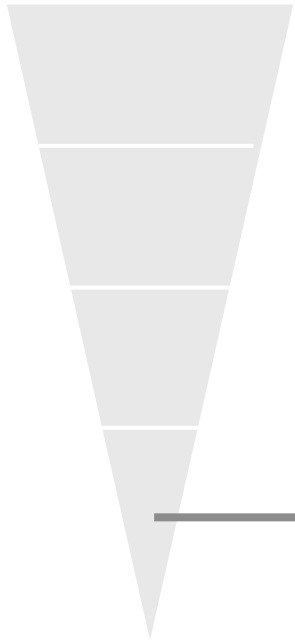
Hard





# Dismantling will be more and more important

Very Easy



Hard





A man with dark hair and glasses, wearing a grey and white checkered button-down shirt, is standing in a supermarket aisle. He is holding a smartphone in his left hand and a bottle of orange juice in his right hand, appearing to scan the bottle. The background shows shelves stocked with various products, including more bottles of orange juice in the foreground. The scene is brightly lit with overhead store lights.

## Consumer Goods Trend: Traceability

Delivers unified and digitally connected models to fulfill compliance mandates and enhance product quality and safety



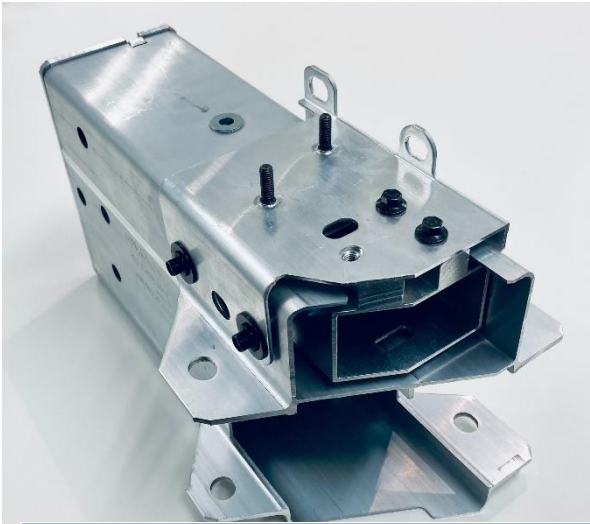
# Our aim full disclosure



Ensuring full value chain transparency on emissions and many other characteristics from mine to finished product, – also for recycled aluminium



If it's not reported, it's not done



Zero fatalities	TRI
0	3.3
2020 (0)	2020 (2.7)
Direct GHG emissions*	
7.74	
Indirect GHG emissions*	
3.57	
Share of women employees	
20%	
2020 (18%)	

Impacts of mill finished profile implemented with Hydro Sunnen Low Carbon billet. Method EN15801+A						
Core impacts indicators	A1-A3	A4	C1	C2	C3	
Climate Change - total - GWPot [kg CO2 eq.]	3,47E+00	5,10E-02	0,00E+00	1,30E-02	1,99E-02	5,80E-03
Climate Change, fossil - GWPF [kg CO2 eq.]	3,46E+00	5,08E-02	0,00E+00	1,29E-02	1,98E-02	5,97E-03
Climate Change, biogenic - GWPB [kg CO2 eq.]	9,86E-03	-4,64E-05	0,00E+00	-1,79E-05	1,49E-04	-1,77E-04
Climate Change, land use and land use change - GWPluc [kg CO2 eq.]	9,73E-04	2,32E-04	0,00E+00	7,24E-05	6,23E-06	1,10E-05
Ozone depletion - ODP [kg CFC-11 eq.]	1,81E-11	3,03E-15	0,00E+00	7,78E-16	2,78E-13	1,40E-15
Acidification - AP [Mole of H+ eq.]	1,71E-02	5,87E-04	0,00E+00	7,65E-05	4,73E-05	4,23E-06
Eutrophication, freshwater - Epfr [kg P eq.]*	3,03E-06	1,26E-07	0,00E+00	3,88E-08	5,70E-08	1,01E-09
Eutrophication, marine - EPmar [kg N eq.]	2,88E-03	2,11E-04	0,00E+00	3,75E-05	1,11E-05	1,08E-06
Eutrophication, terrestrial - Epter [Mole of N eq.]	3,14E-02	2,32E-03	0,00E+00	4,15E-04	1,17E-04	1,19E-05
Photochemical ozone formation, human health - POCP [kg NMVOC eq.]	8,55E-03	4,84E-04	0,00E+00	7,22E-05	2,99E-05	3,29E-06
Resource use, mineral and metals - ADPe [kg Sb eq.]**	2,00E-06	3,82E-09	0,00E+00	1,09E-09	5,24E-09	6,12E-11
Resource use, fossils - ADPf [MJ]**	4,65E+01	6,69E-01	0,00E+00	1,74E-01	3,53E-01	7,82E-03
Water use - WU [m³ world equiv.]**	7,03E-01	3,90E-04	0,00E+00	1,17E-04	4,32E-03	6,55E-05
Indicators required by the PCR 2019:14	A1-A3	A4	C1	C2	C3	C4
GWP-GHG [kg CO2 eq.]***	3,46E+00	5,10E-02	0,00E+00	1,30E-02	1,98E-02	5,98E-04
						-3,06E+00







# Testing provenance with Vestre

## Proof of Concept



- Hydro donating furniture to Kvinherad municipality, delivered by Vestre
- Vestre's commitment to sustainability – post-consumer recycled scrap an integrated part of this.
- Simple PoC: Hydro CIRCAL be used, data flow from Hydro merged with data from wood-input
- Exploring communication interface with end-users - journey presented on landing page
  - Simple, intuitive sustainability message
  - Access to in-depth data that confirms

### PRODUCT PASSPORT Vestre FOLK Seat

pays tribute to the Swedish 'Folkhemmet' and the classic park bench. It is available with or without a backrest. The unique ends are made from extruded CIRCAL aluminum made from over 75% recycled scrap.



### Material data

56.4 %

ALUMINIUM

43.6 %

WOOD

### Aluminium:

19.0 KG

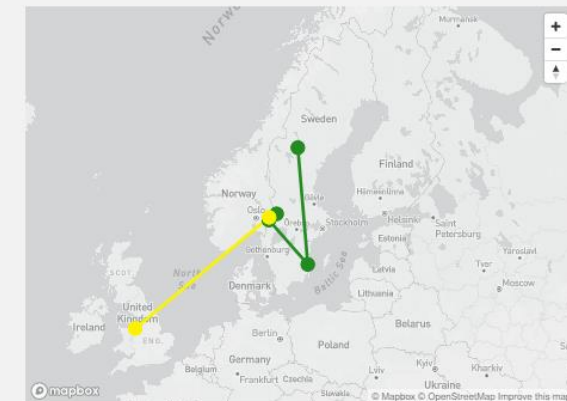
Hydro Circal Aluminium

☑ Certificate of origin

Made from 81.4% recycled post-consumer scrap



See journey map ▾



Vestre AB Dem  
2021-04-08  
Torsby, Sweden

### Journey for Aluminium

Hydro Aluminium Deeside Ltd  
dem  
2020-03-05  
Wrexham, UK

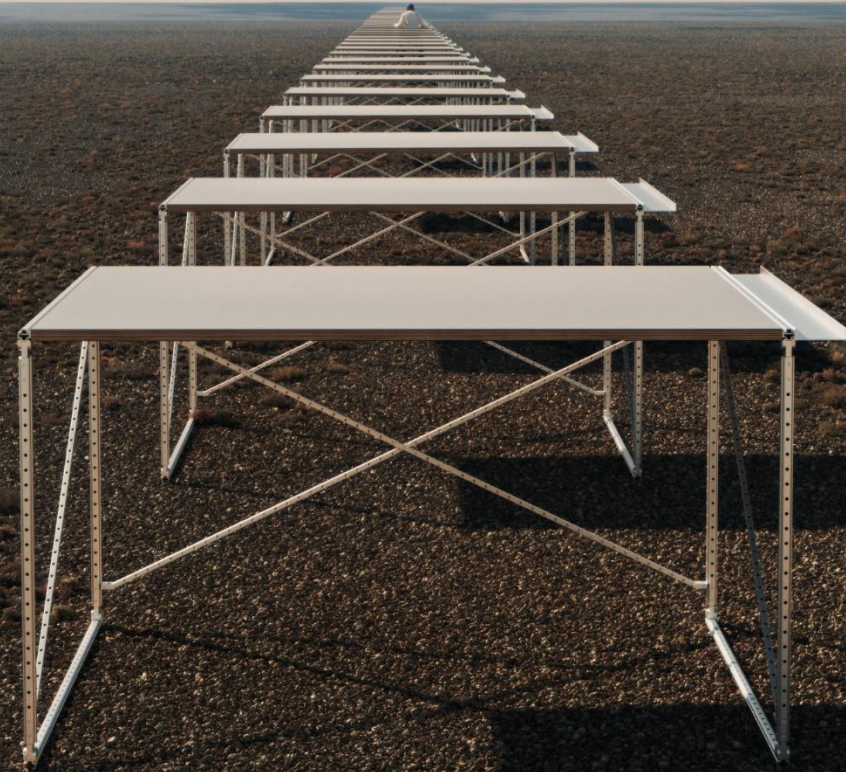
Hydro Extrusion Norway  
Delivered: 2020-04-08  
Processed: 2020-04-16  
Magnor, Norge

Vestre AB Dem  
2021-03-29  
Torsby, Sweden



04

# Circular designs with aluminium





Designing for circularity,  
durability and recycling



Innovative Design, Safe Materials,  
Intelligently Cycled

Integrate ESG criterias  
into the product  
development process

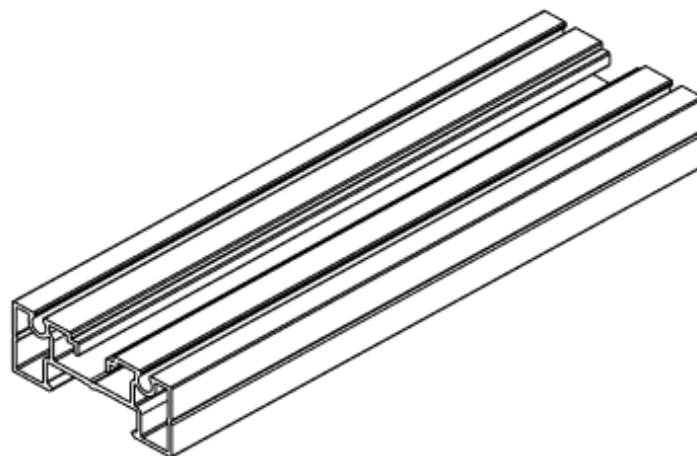
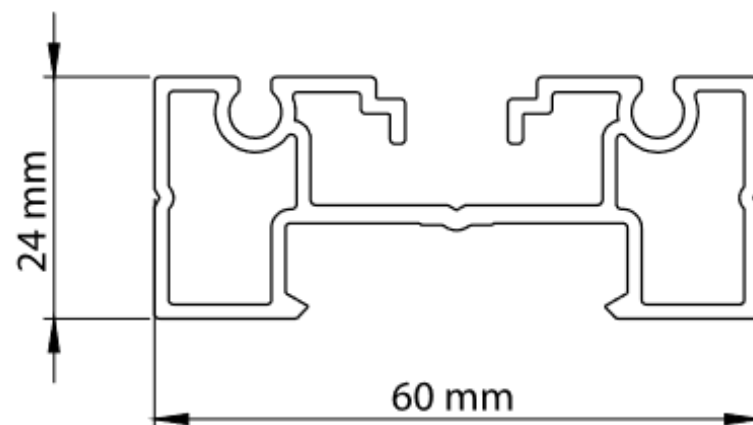
Reducir los desperdicios	Seguridad	Aleaciones respetuosas con el reciclado	System Thinking	Colaboración entre empresas
Facilidad de mantenimiento	Se puede reutilizar	Take backs	Recogida y fin de vida útil	Facilidad de desmontaje
Aligeramiento	Reyclable	Diseño flexible	Gobernanza	Embalaje respetuoso con el medio ambiente
LCA	Contenido reciclado, Post consumer scrap	Mayor vida útil	No tóxico	Facilidad de montaje
ASI	Escalabilidad	Social/CSR	Cadena de suministro transparente	Otras ideas inteligentes...

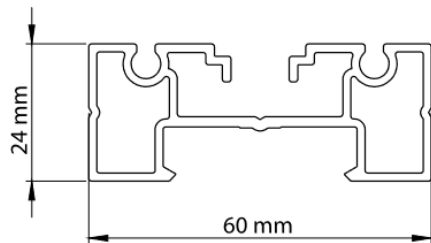




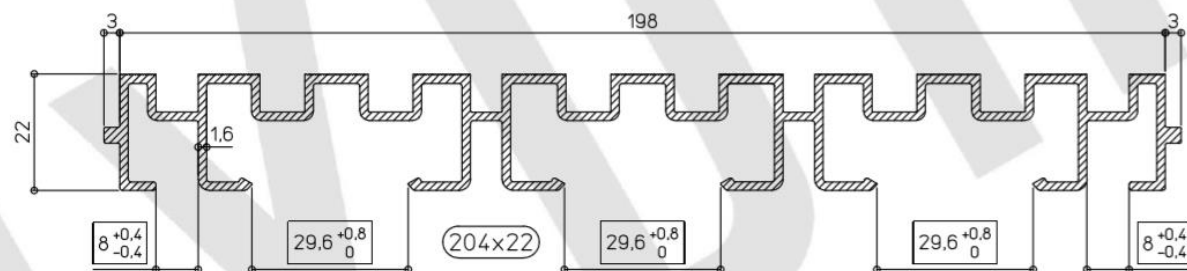
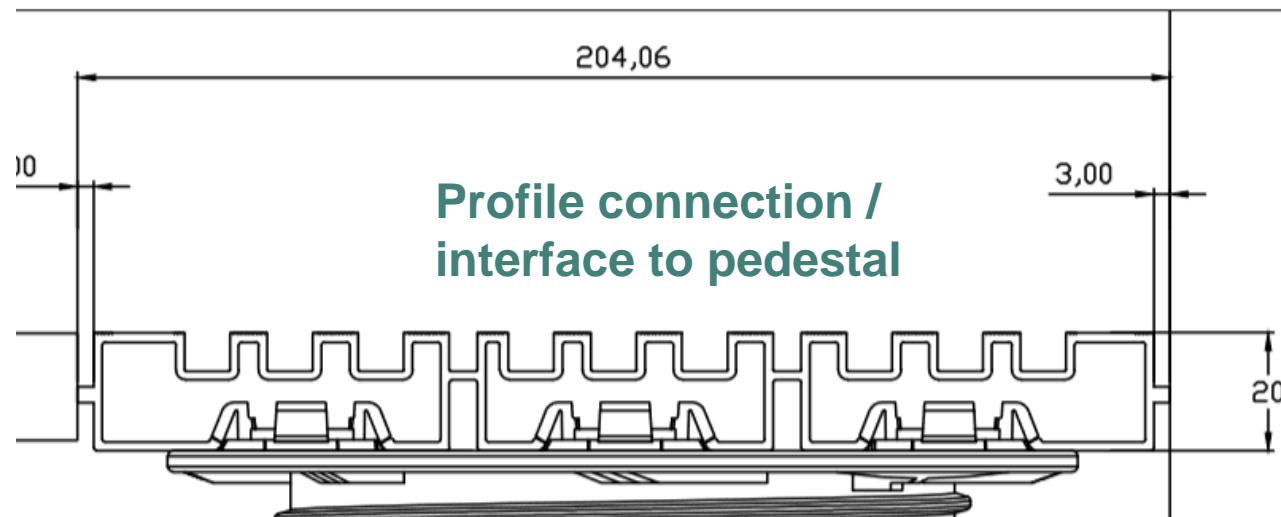
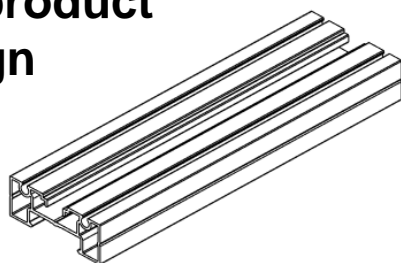


**Old product  
design**



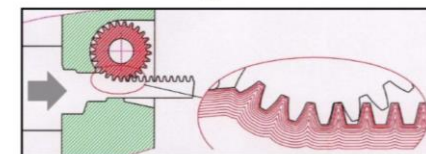
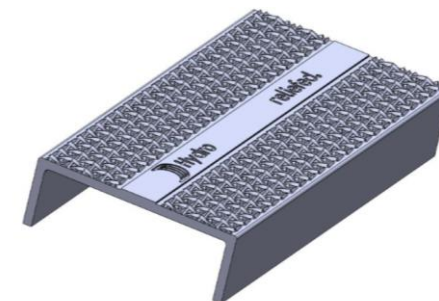


Old product design



Hydro Proposals for new design

204x22  
All values are calculated on basic dimensions  
Weight: 2.326 kg/m  
Ext.peri: 1076 mm

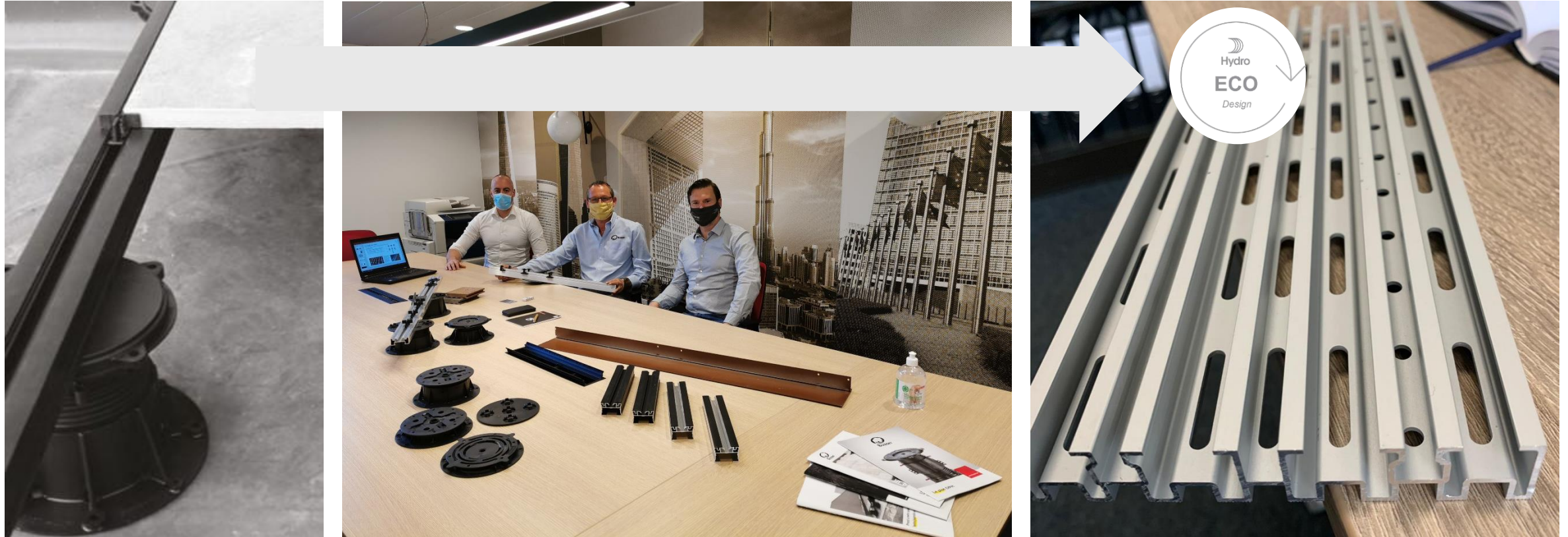


Additional functionalities to think about:

- More uses (upstands, detailing...)
- Integrated LED channel
- Improved slip resistance
- Logo engraving
- Increased surface finishing resistance



# Hydro EcoDesign process applied with Buzon







# Designing for circularity

EcoDesigned Product – Vita Power case – using recycled aluminium with PCS



ewo

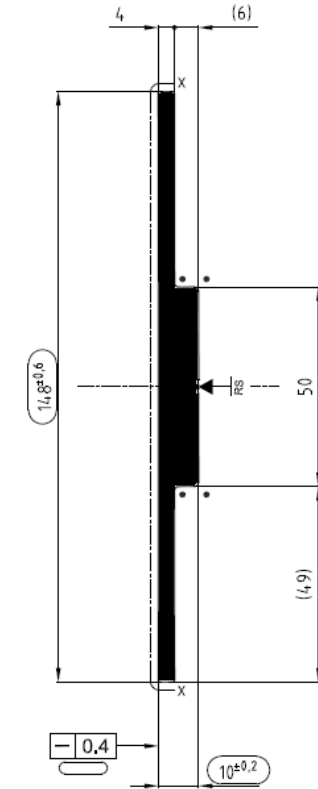


Hydro

This is the old  
welding construction  
from the customer







1. Eliminate the die bending process and the flap
2. Eliminate the welding process
3. Built from one piece, no welding
4. Higher quality level
5. Reduction of two externally sourced parts
6. Higher quality engraved customer logo (mill instead of a laser)



## Old product design



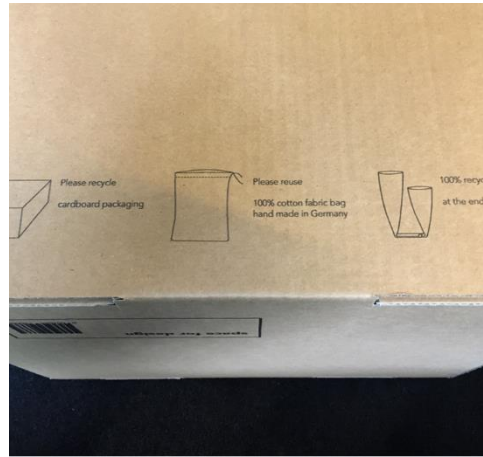
We decreased the number of machining steps by two, changed the profile design, eliminated welding and die bending processes and optimized the design by making two externally sourced parts unnecessary, improved the easthetic

## New product design



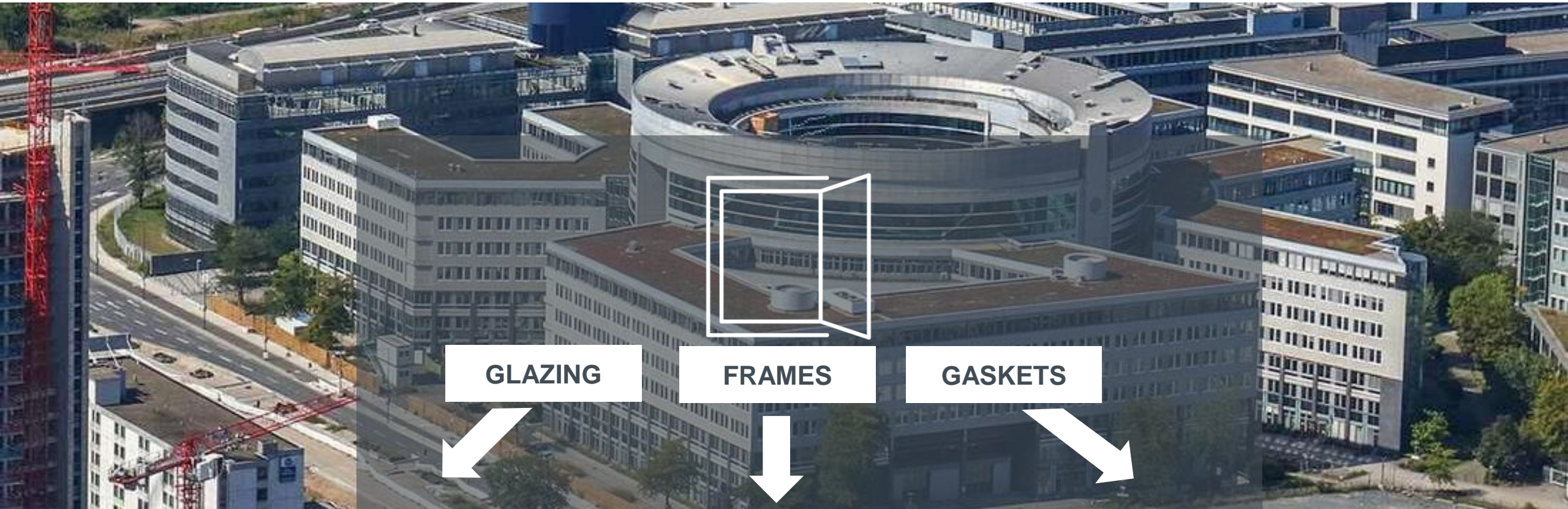




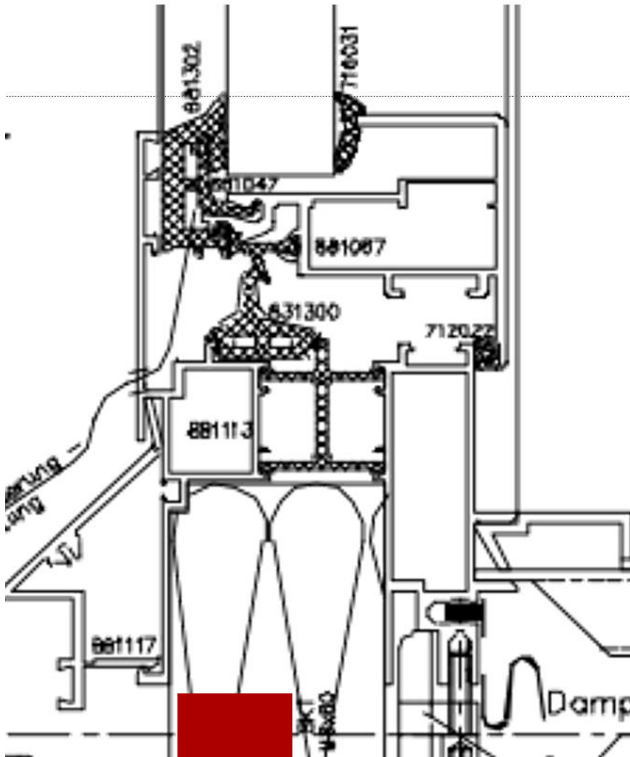




# Omega-Haus Offenbach: full B&C circularity in action

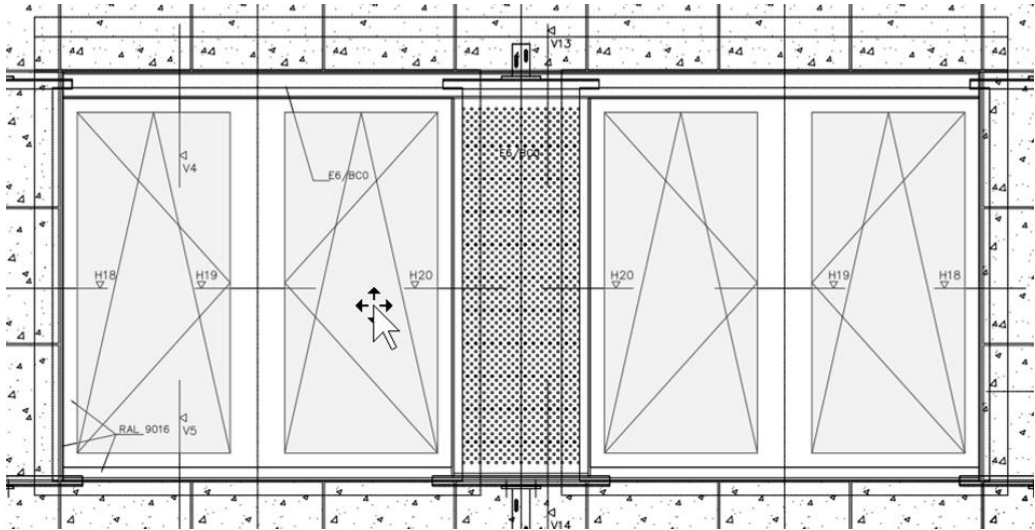


# Omega-Haus, sustainable renovation

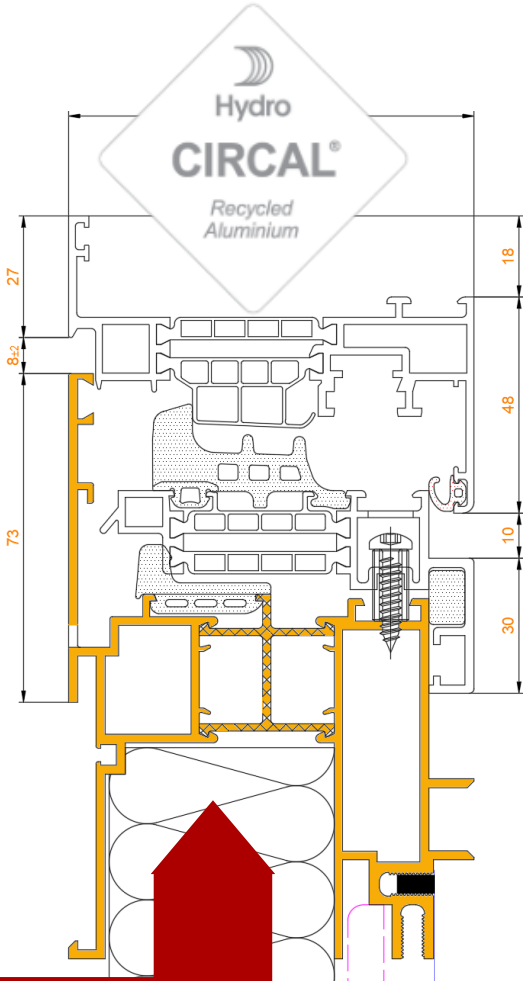


**Windows to  
raw material**

Performing design



**raw material  
to Windows**





# CAKE - Hydro

The world's  
cleanest battery

The world's  
cleanest steel

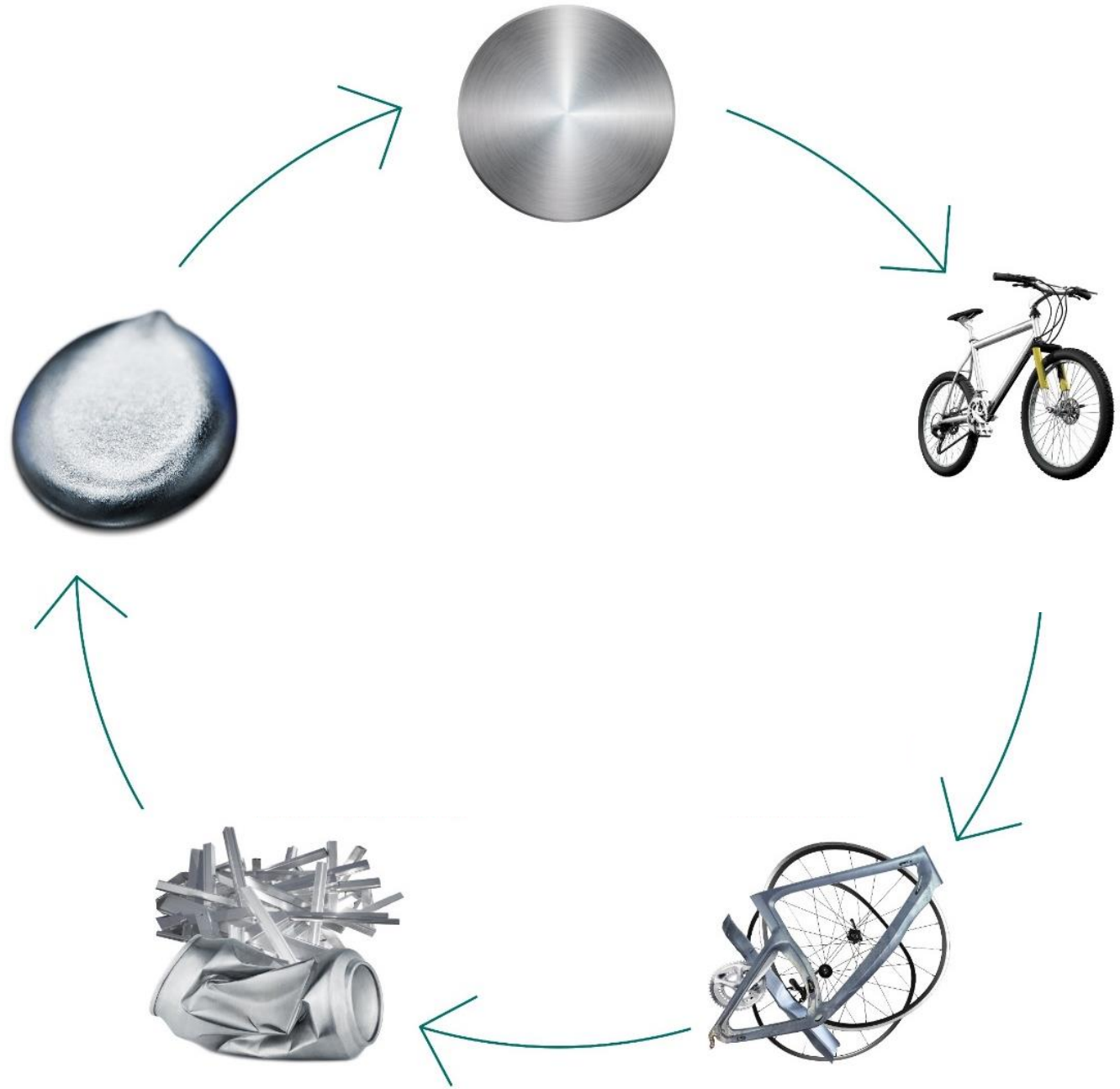
The world's  
cleanest aluminium







# Closing the Loop in the circular economy



Closing the loop will become a standard practice in the civil construction industry



“Take Back” started in 2011





RE-USE

45 year old lightpoles were dismantled,  
refurbished, delivered as new, and reinstalled

First RE-USE project 2014











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First RE-USE project 2014





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45 year old lightpoles were dismantled,  
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First RE-USE project 2014





## **Bicycle As A Service**

300.000+ customers

Benelux, Germany,  
Denmark and some  
large cities across  
Europe and expanding

*Did use mostly steel  
frames (80%), now  
switching completely to  
aluminium frames*

Target 'Close the Loop'





# You have an opportunity to accelerate a better future for itself, the climate and communities



# Which beer cup design has the less impacts on sustainability?



Usage	One time	One time	Infinite until breaks	Finite until damaged	Infinite
Likely lifespan expectancy	10 min	10 min	10 years	20+ years	40+ years
Manufacturing impacts	Low	Low	High	Low?	Medium (recycled alu)
Recycled content	+	*	++	-	+++
Recyclable	Yes	Depends	Yes, Yes	Yes	Yes, Yes
Recycle rate	Very Low	Very Low	Medium	Low	High
Recycled value	Zero	Zero if unsorted	Very low	Zero	High
Fate (most likely)	Incinerated	Incinerated	Recycled	Incinerated	Recycled
Harmful for nature	Depends	Yes	No	No	No
LCA total 1 use	<b>Winner</b>				<b>Winner if given as gift</b>
LCA total 10y					<b>Winner</b>





**Hydro**

*Industries that matter*