BEYOND SUSTAINABLE BUILDINGS ENVELOPES

ANNE-CHRISTINE ROULET, 13 JUNE 2023, HELSINKI

WICONA® By Hydro

ALUMINIUM IN BUILDINGS


WICONA
By Hydro
The construction industry worldwide is behind about 39%
percent of global energy-related CO_2 emissions through construction, heating, cooling and demolition of existing buildings.
28%
CONSTRUCTION PHASE
72%
USE PHASE


UPFRONT CARBONS WILL BE **RESPONSIBLE FOR HALF** OF THE ENTIRE CARBON FOOTPRINT OF NEW CONSTRUCTIONS BETWEEN **NOW AND 2050**

What is the construction footprint in CO_2 per surface m^2 of office buildings?

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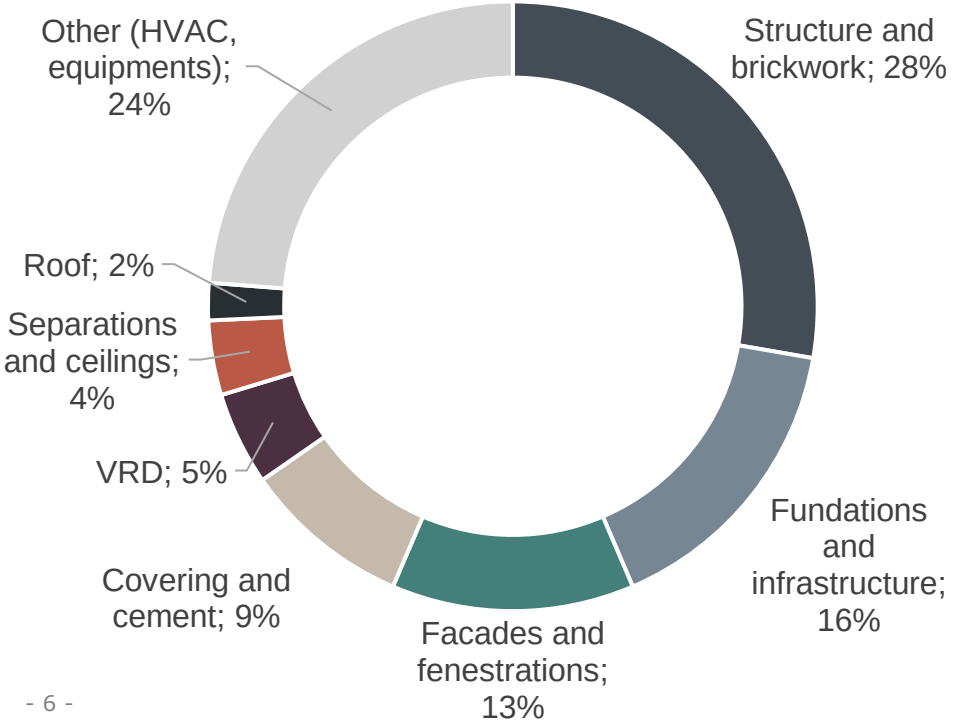
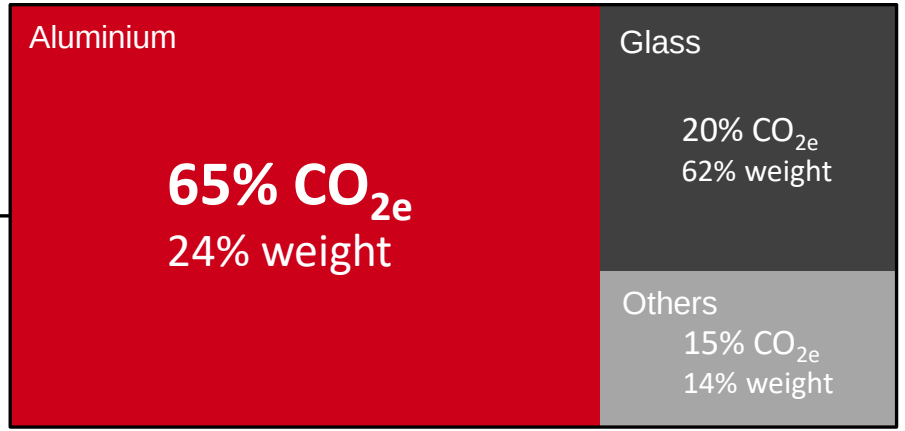


Environmental footprint of an aluminium window

200kg CO_{2e}



Source: EPD of Wicona Wicline 75 MAX 1230x1480 mm window

Sustainable reuse of building materials

200kg CO_{2e}

Aluminium

65% CO_{2e}
24% weight

Glass

20% CO_{2e}
62% weight

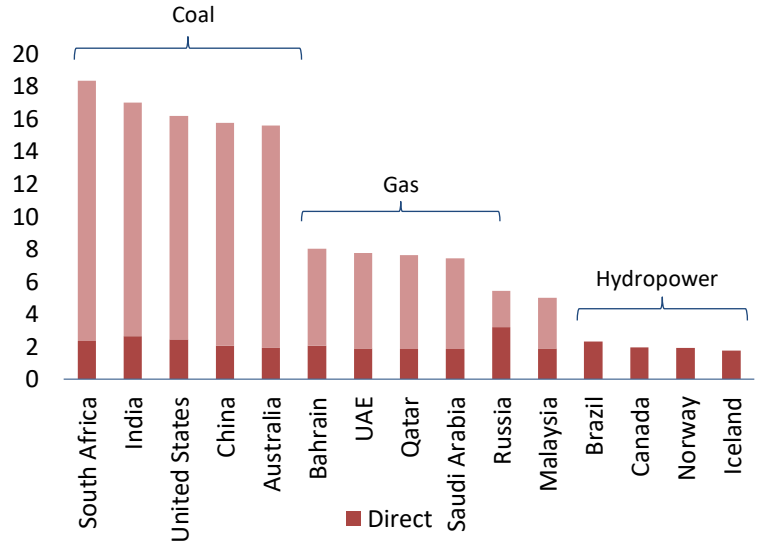
Others

15% CO_{2e}
14% weight

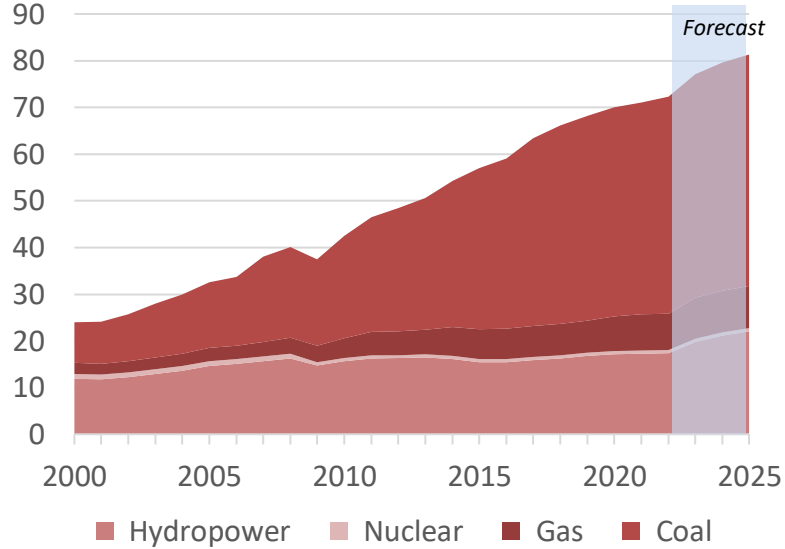
End of life circularity potential
40% CO_2
86% weight

It matters **WHERE** and **HOW** primary aluminium is produced

- Aluminium production by power source
- Mill tonnes



- CO2 emissions and main energy source in aluminium production by country
- Tonne CO2 / tonne aluminium



Source: CRU

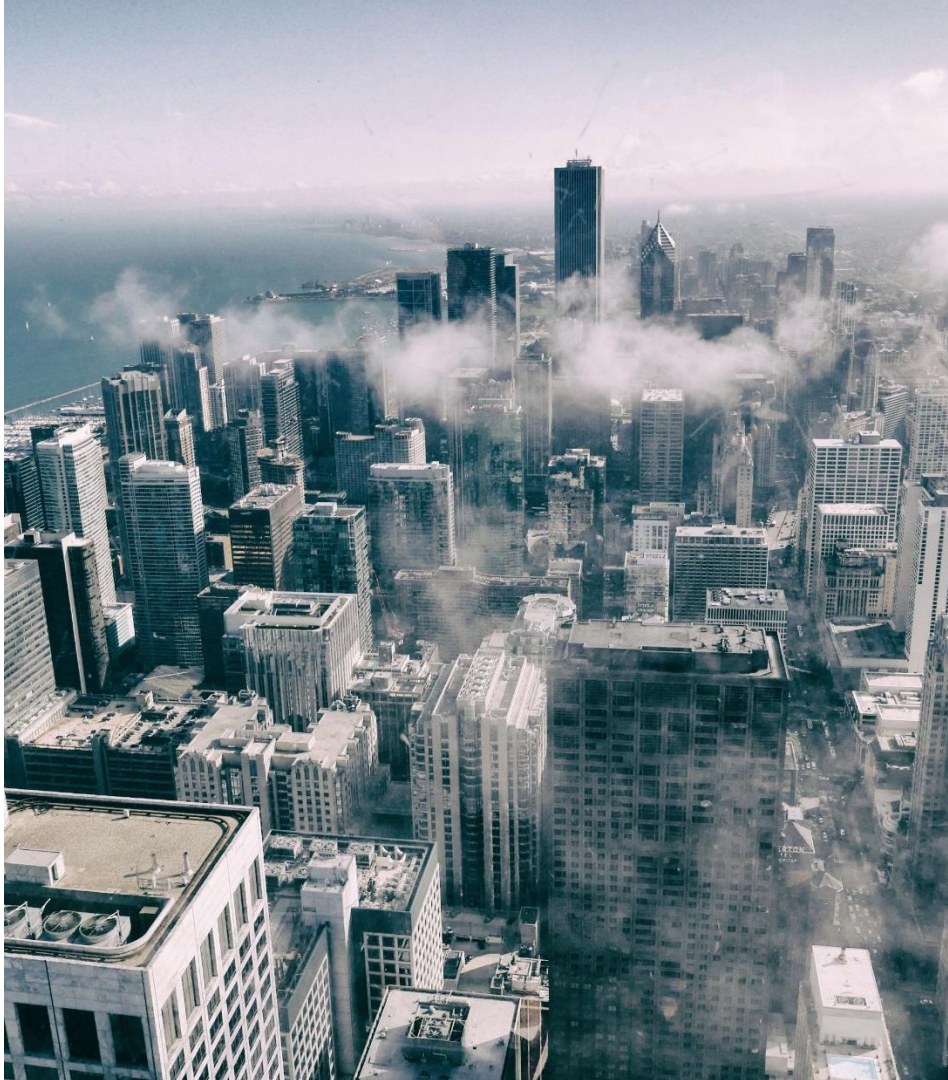
RECYCLING OF ALUMINIUM

Why we act

- Climate change
- Urbanization

  The world’s population should increase by 2 billion people in the next 30 years with a 70% living in urban areas.

- Increase and sometimes shortage in energy, material and labour costs
- Growing legislation



SUSTAINABILITY IS KEY FOR THE FUTURE…

High European emissions targets

In the European Commission's sustainability targets, all **new buildings** are set to operate at **net zero carbon emissions** by **2030**, and by **2050** all **buildings must** operate at **net zero carbon**.

With the world climate challenges and stricter regulations, **the industry needs to adapt** to enables builders and architects to meet the highest sustainability targets.

Infinitely recyclable – a high recycling rate

- One of the world's largest energy reserves, increasingly utilized through urban mining and recycling

75%

of all aluminium ever produced still in use

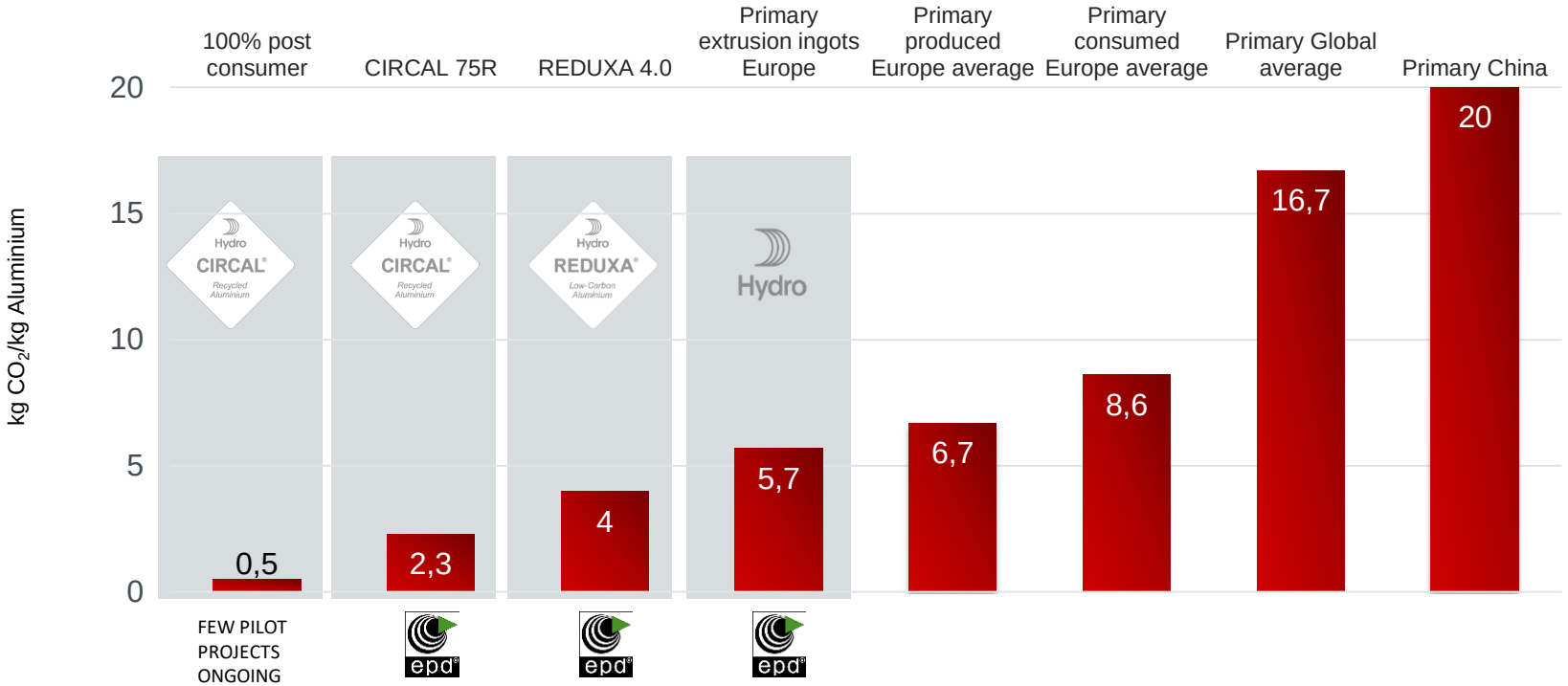
5%

of original energy use to recycle

>90%

Recycling rates of aluminium in automotive and construction

Aluminium and CO_2 Footprint



Sources:
Hydro internal analyses
European averages: EAA 2018
Global average: IAI 2018
China average: IAI 2017

There are two very different types of aluminium scrap

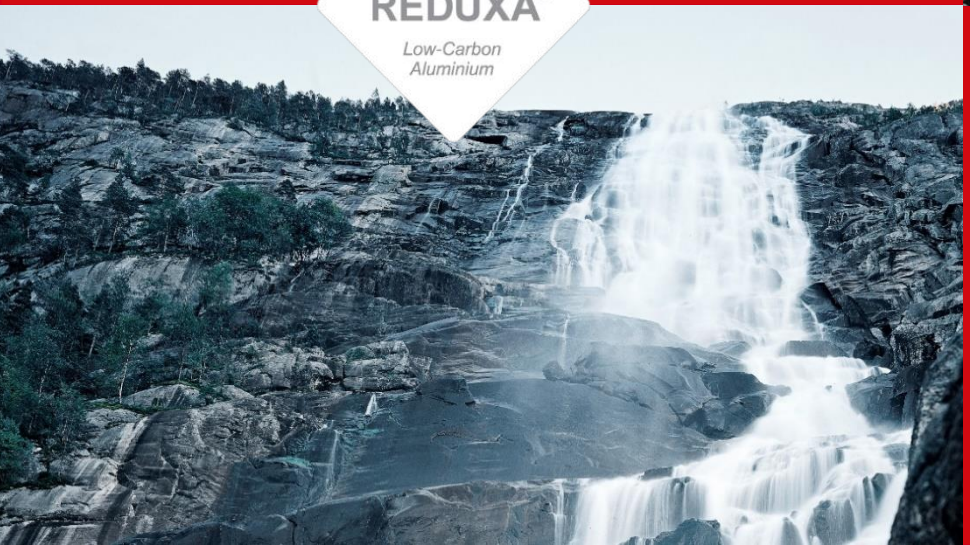
Process scrap

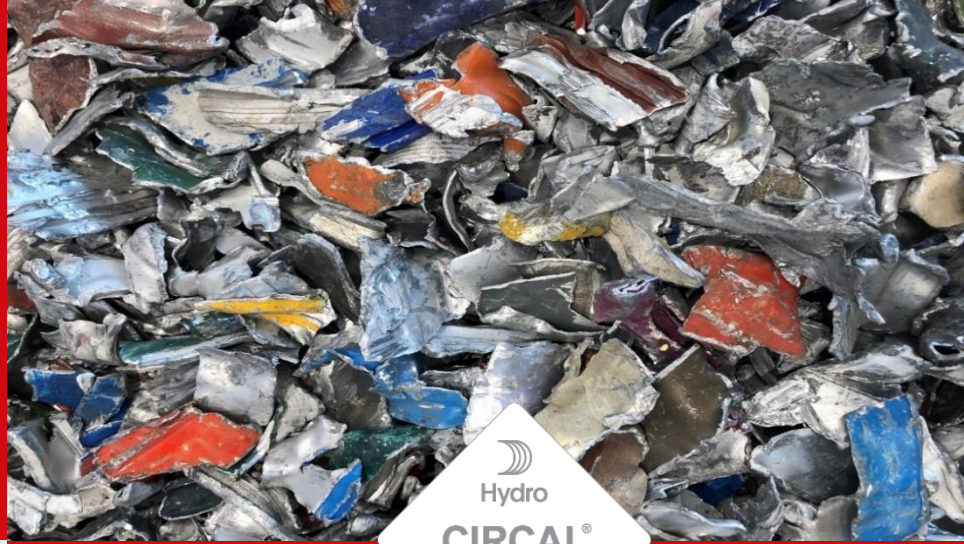
has never before been a product

Post-consumer scrap

has been used by consumers before, goes back into our billets

Hydro REDUXA is an aluminium exclusively produced with renewable energy and has a carbon footprint of 4.0 kg CO_2/kg of aluminium.



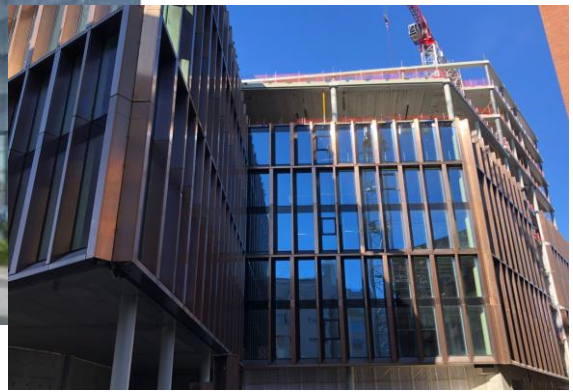


Hydro CIRCAL is an aluminium with at least 75% post-consumer scraps.

CIRCAL as a carbon footprint of 2.3 kg CO_2/kg of aluminium.

CIRCAL PROJECT WE LAND WITH STATICUS

Architects: JKMM
Investor: NCC Suomi
Category: Office Façade
Area: 11.418 m2
Façade system: WICONA element, semi SG, object solution based on WICTEC EL evo
Place: Helsinki,Ruoholahti
Year: In progress/2023



Source Internet https://welandruoholahti.fi/ and Hydro/Staticus info


15
100%
POST
CONSUMER
Hydro

WICONA DESIGN AND SUSTAINABILITY

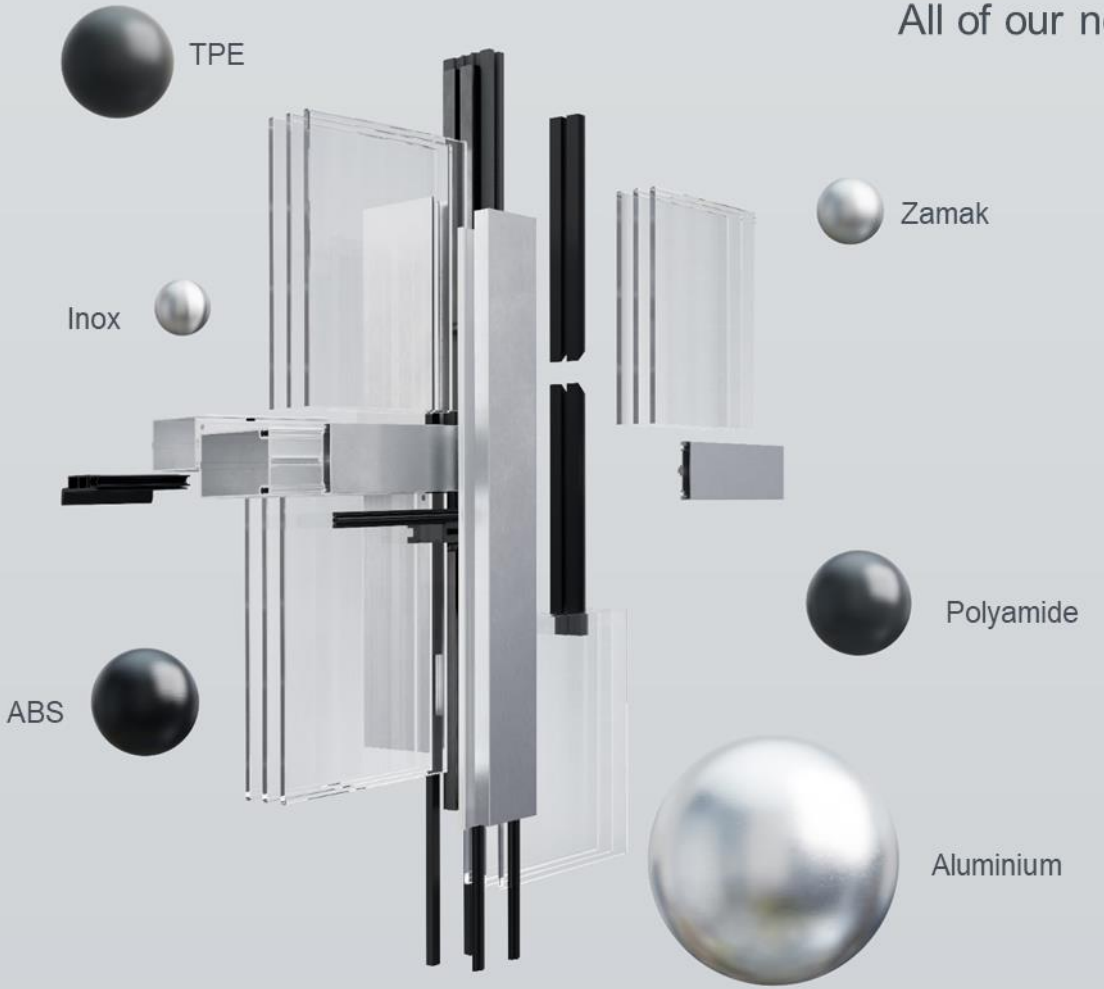
All of our new products contain at least

75%

recycled content

95%

recyclable content

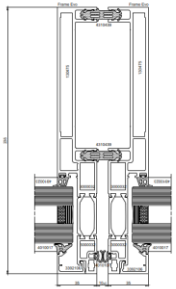


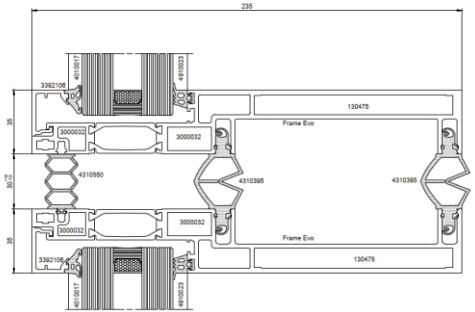
CERTIFIED
cradle to cradle
SILVER

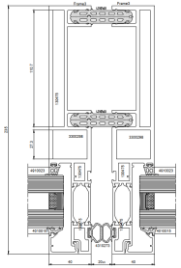
Thermal Break & CO_2 Footprint

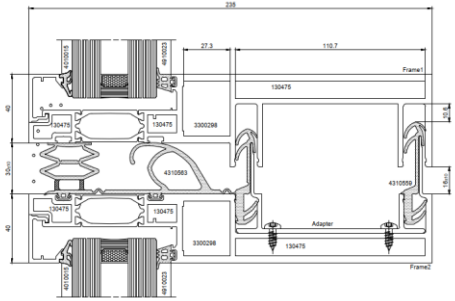
- Recycled polyamide
- Reduction of CO2 emissions with 84 %
- Reduction of water consumption with 32 %
- Reduction of products CO2 emissions with up to 25 %

CO_2 Emissions (A1) relates to design Design & Material







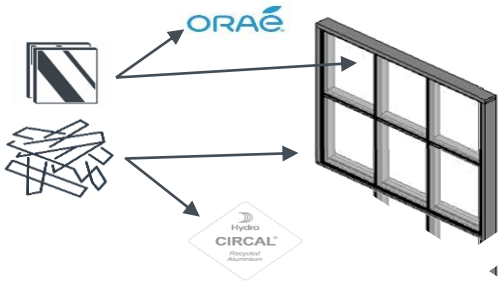


GWP in kg CO2 for Unit 2,4m x 3,6m	WICONA WICTEC EL evo			
	Hydro CIRCAL		Hydro REDUXA	
Only billet profiles& corner cleats	185,9 Kg	100%	319,1 Kg	172%
Polyamid-recycled Thermal breaks	2,3 Kg	100%	2,3 Kg	100%
EPDM Joint Gaskets	19,5 Kg	100%	19,5 Kg	100%
sum	**207,7 Kg**	**100%**	**340,9 Kg**	**164%**

GWP in kg CO2 for Unit 2,4m x 3,6m	traditional unitised			
	European Average		Primary China	
Only billet profiles& corner cleats	711,5 Kg	383%	2123,8 Kg	1143%
Polyamid-virgin Thermal breaks	26,4 Kg	1159%	26,4 Kg	1159%
EPDM Joint Gaskets	34,3 Kg	176%	34,3 Kg	176%
sum	**772,2 Kg**	**372%**	**2184,6 Kg**	**1052%**

Going further with Saint Gobain

REDUCING THE CO2 FOOTPRINT BY 50% IN FACADES



MATERIAL	WEIGHT (kg)
ALUMINIUM	61
GLAZING	290
GASKETS	12
OTHER	2.5

REGULAR FAÇADE

105
KG CO2 eq./SQM

ORAÉ CIRCAL 75

50
KG CO2 eq. /SQM

-50%

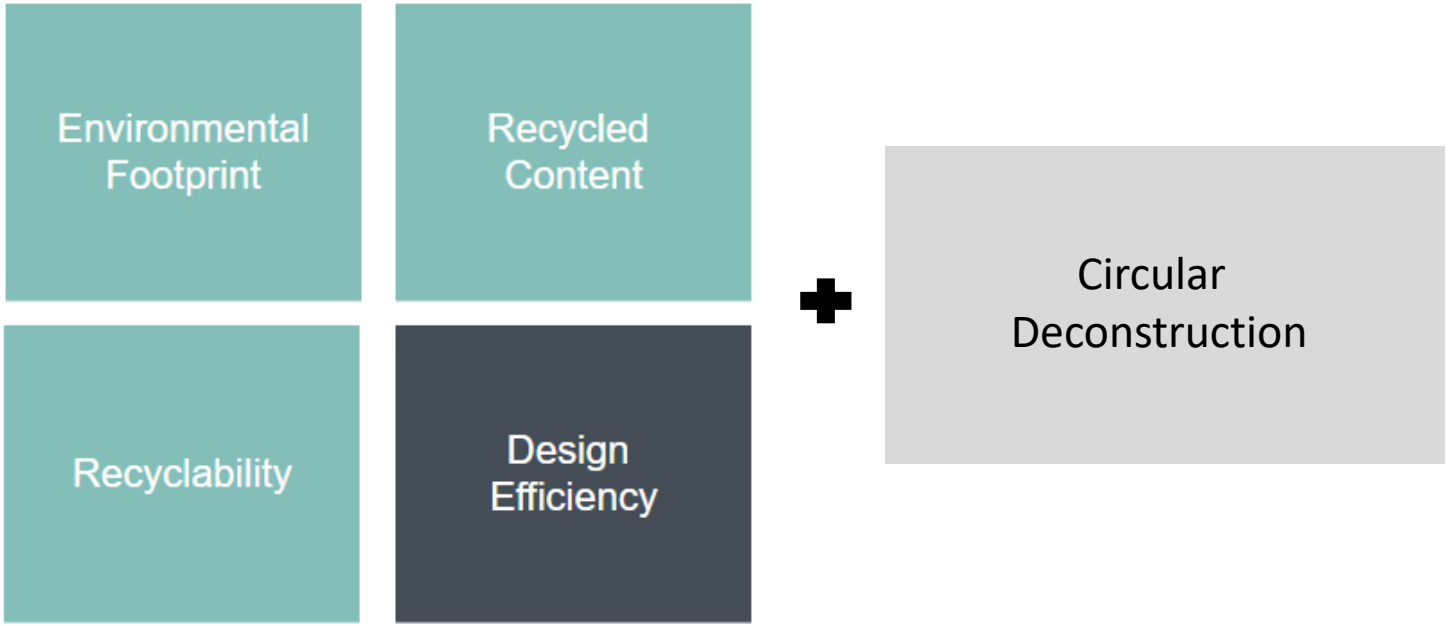
ORAÉ CIRCAL 100

40
KG CO2 eq./SQM

-60%

CIRCULARITY … AND BEYOND

WHAT IS A GOOD SUSTAINABLE PRODUCT ?



Enter the loop

Inserting for a new life

Material Choice

Reducing embodied carbon

Performances

Reduce emissions, increase comfort

Closing the loop

Re-inserting for a new life

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GO BEYOND!

www.wicona.com/gobeyond