

nZEB
U PRAKSI



Održiva gradnja uporabom „zelenih“ aluminijских legura i sistema

Mario Štimac struč.spec.ing.aedif.

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KAKVI SU IZAZOVI KOJE SI MOŽETE ZADATI?

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Estetika
Akustika
Inženjering
Struktura
Vatra i sigurnost
Toplinska izolacija
Održivost
Održavanje / pristup
Isplativost
Svojstva
Instalacija / Logistika

By  Hydro



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Inženjering

Aluminijski profili bili su zakrivljeni kako bi stvorili poseban oblik poput odjeće po mjeri; Talijanski ili paralelni otvori (PAF) s ručnim ili motoriziranim vanjskim sustavom otvaranja sa skrivenim motorima

Toplinska izolacija

Na raspolaganju su PA6.6 poliamidne stege ojačane fiberglasomeglass

Instalacija / Logistika

Jednostavna instalacija pojedinih montažnih jedinica kako bi se umanjilo vrijeme i potreban prostor na gradilištu

520 WEST 28th, New York City, USA

Architect: Zaha Hadid Architects

Fabricator: Stahlbau Pichler

Photo: Hufton+Crow

Discover more: [WICONA Finder](#)

NAGRADE

Architizer A+Award 2018, Diamond Award 2018, ABB LEAF Award 2018

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HENNINGER TURM, Frankfurt, Germany

Architect: Meixner Schlüter Wendt Architekten

Fabricator: Rupert App GmbH & Co.

Photo: Conné van d'Grachten

Discover more: [WICONA Finder](#)

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Instalacija / Logistika

Precizno planiranje potpuno montažnih jedinica WICTEC EL 60 koji je vrlo koristan u gradovima poput Frankfurta s nedostatkom prostora oko zgrade

Toplinska izolacija

Ucw vrijednost do $0,9 \text{ W} / (\text{m}^2\text{K})$ zahvaljujući toplinski izoliranim aluminijskim kompozitnim profilima

Inženjering

Poseban dizajn s motoriziranim paralelnim vanjskim otvorima na otvorenom, uključujući zakrivljeno staklo; Funkcija zaključavanja: vrata se mogu otvoriti samo kad su druga zatvorena

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NEWFOUNDLAND TOWER, London, UK

Architect: Horden Cherry Lee Architects
Building owner: Canary Wharf Group PLC
Photo: Courtesy of Horden Cerry Lee Architects

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Struktura

Neustavljen fasadni sustav karakterističnog dijamantskog uzorka stvoren vanjskom strukturom koja pruža bočnu stabilnost i otpornost na opterećenje vjetrom

Estetika i izvedbe

Rješenje za vrata integrirano u element fasadu, jedinstveni klizni sistem sa Pull Slide mehanizam za otvaranje, kao i „francuski” prozor s dvostupanjskim graničnikom okreta

Inženjering

Inovativno zatvaranje, obodna brtva, klasa propusnosti zraka 4, vožnja kiše nepropusno klasa 9A

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ØKERN PORTAL, Oslo, Norway

Architect: Dark Arkitekter
Fabricator: Staticus
Photo: Courtesy of Dark Arkitekter



Video: <https://www.youtube.com/watch?v=ksGzLV34apk&feature=youtu.be>

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Toplinska izolacija

Rješenje koje se sastoji od modularne aluminijske noseće konstrukcije s termičkim prekidom za dvostruko ostakljene prozore i neprozirne ploče visoke izolacije.

Održivost

Upotreba Hydro CIRCAL 75R, aluminija vrhunske kvalitete s certificiranim sadržajem više od 75% recikliranog ostatka nakon upotrebe.

Hydro CIRCAL 75R ima najmanji trag CO₂ na svijetu: oko 2,0 kg CO₂ (1,5-2,3 kg CO₂) po kilogramu aluminija. To je šest puta ili 84% manje od svjetskog prosjeka za primarnu ekstrakciju.

By  Hydro

A photograph of a man and a young boy in a natural setting, planting a small tree. The man is kneeling on the right, smiling and looking at the boy. The boy is standing on the left, holding a sapling and looking at the man. The background shows a field with some trees and a clear sky. The text 'WICONA' is in the top right corner, and 'By Hydro' is in the bottom right corner. A semi-transparent dark banner with white text is across the middle.

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ZAŠTO JE ODRŽIVOST KLJUČ BUDUĆNOSTI?

By  Hydro

» City of the Future – Factors

Budući trendovi - Ciljevi UN-a za transformaciju svijeta



» City of the Future – Factors

Ciljevi UN-a za transformaciju svijeta - temeljni su za našu strategiju



**Poboljšanje
našeg otisaka**



**Prihvatanje
različitosti**



**Pokretanje
inovacija**



ODRŽIVOST JE KLJUČNA ZA BUDUĆNOST ...

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 enable builders and architects to meet the highest sustainability targets.

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Koji od ovih materijala je
beskonačan?

By  Hydro

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Aluminij je prirodni dio našeg okoliša.

Zemaljska kora sastoji se od:
46% kisika
28% silicija
8% aluminija



 Hydro

The background of the slide is a close-up photograph of several rows of aluminum ingots. The ingots are rectangular with a distinctive shape, featuring a central raised section and a recessed section. They are arranged in a tray, and the lighting highlights their metallic texture and the way they are packed together. The overall color palette is monochromatic, focusing on shades of gray and silver.

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ALUMINIJ - METAL BUDUĆNOSTI

Hydro

BAUXITE



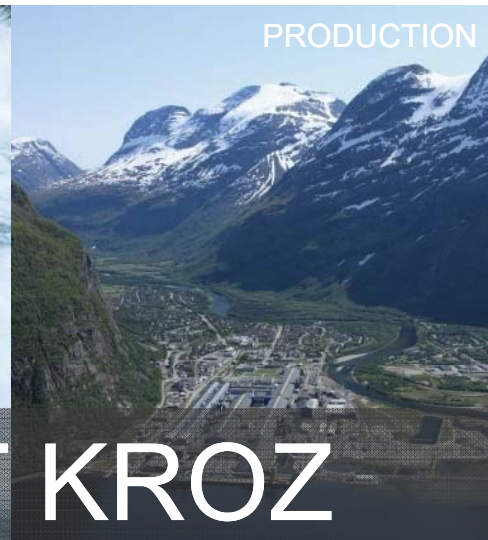
ALUMINA



HYDROPOWER



PRODUCTION



KREIRAMO VRIJEDNOST KROZ CIJELI ŽIVOTNI CIKLUS.

CASTING



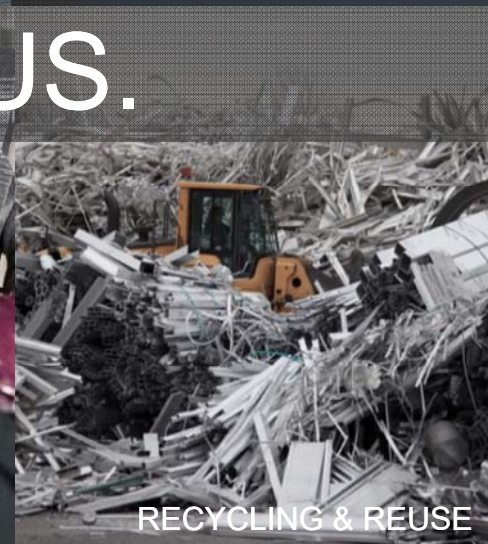
EXTRUSION



PRODUCTS



RECYCLING & REUSE



The WICONA logo is positioned in the top right corner of the image, set against a background of aluminum scrap. The logo consists of the word "WICONA" in a bold, white, sans-serif font.The background of the entire image is a dense field of aluminum scrap, showing various shapes and sizes of metal pieces, some with blue and red paint. A dark, semi-transparent horizontal band runs across the middle of the image, containing text.

PRIJE-UPOTREBE

Ekstrudiranje, industrijski i ostaci za
proizvodnju

Nikada nije postao proizvod

POSLIJE-UPOTREBE

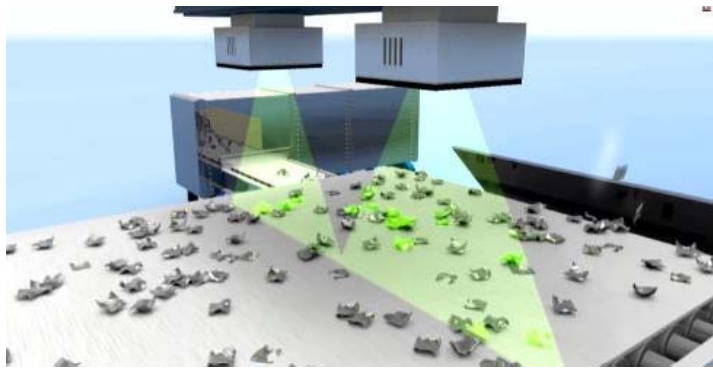
Fasade i prozori demontirani sa
zgrada; prelazi u Hydro CIRCAL

The Hydro CIRCAL logo is a white diamond shape located in the bottom right corner. It features a stylized "H" icon at the top, followed by the text "Hydro CIRCAL" and "Recycled Aluminium" below it.

Hydro
CIRCAL
Recycled
Aluminium

A smaller version of the Hydro logo, consisting of a stylized "H" icon and the word "Hydro", is located in the bottom right corner of the image.

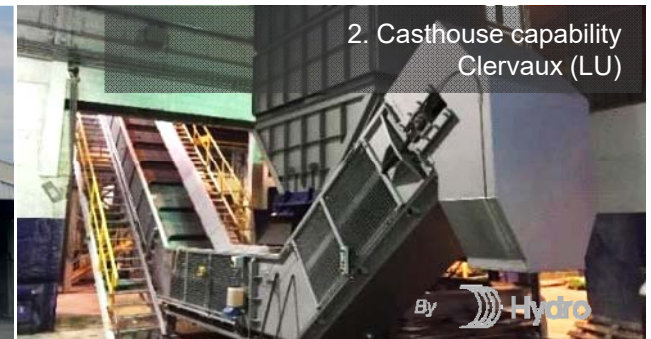
Hydro



KOMBINACIJA DVA POGONA I JEDNOG TEHNOLOŠKOG CENTRA

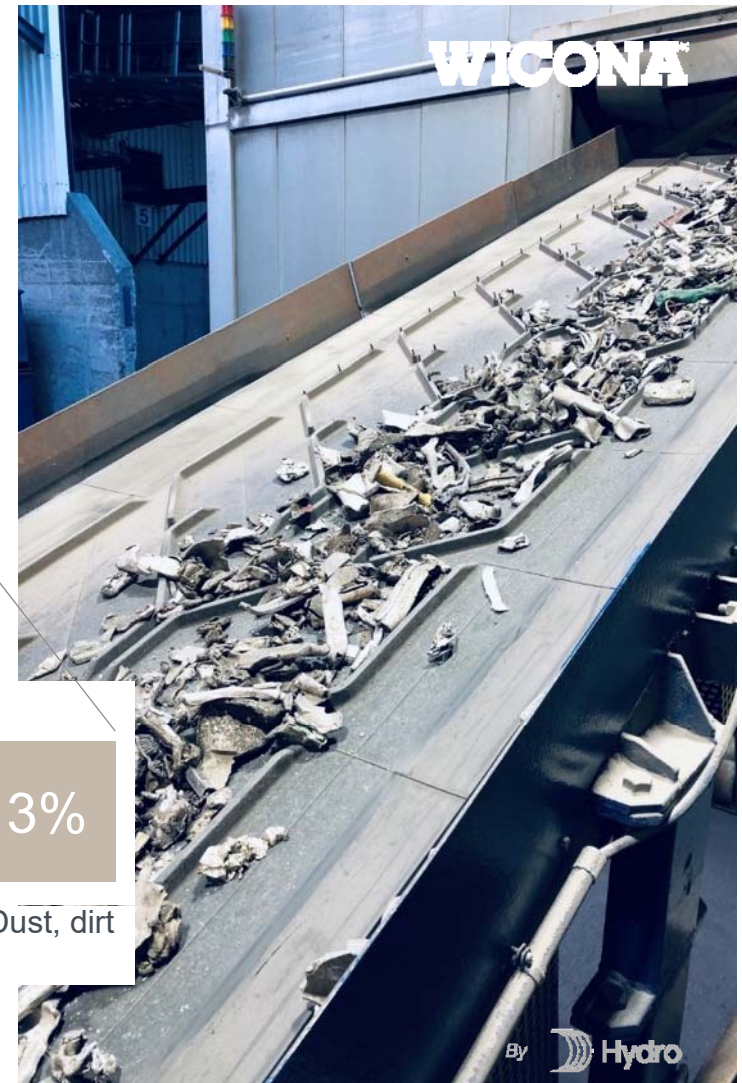
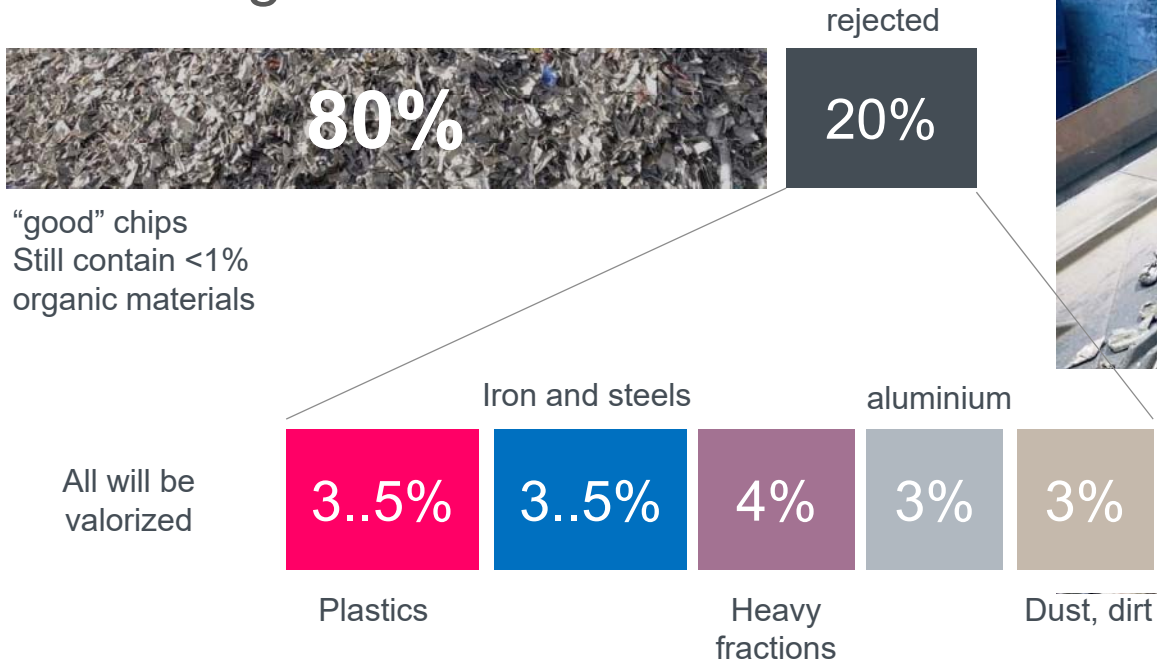


1. Sorting capability
Dormagen (DE)



2. Casthouse capability
Clervaux (LU)

» Postupci sortiranja i drobljenja u Dormagenu



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DNV·GL

Statement no: 250232-2017-OTH-NOR Valid from: 01.12.2018 Valid to: 31.12.2019

Hydro Aluminium AS

DNV GL Business Assurance AS (DNV GL) was commissioned by Hydro Aluminium AS (Hydro) to provide a reasonable assurance third-party verification of the claim made under Hydro's 75R product line. The 75R claim secures that a minimum of 75% end-of-life (or post consumer) aluminium is contained in each production batch under this product line.

The verification was conducted under the requirements of Hydro's developed Standard Operating Procedure (SOP) for the 75R product line.

The verification was conducted in the period from week 44 to week 47 2017 and updated with a site visit 21. November 2018. The verification has undertaken the following approach:

- Confirmation of organizational boundaries
- Document review, including review of SOP and audit of key personnel to confirm sufficient implementation of the SOP
- Traceability and segregation of end-of-life aluminium in the supply chain within the scope of the 75R related production
- Review of calculation methods to confirm an accurate calculation of minimum of 75% end-of-life aluminium in production batch is attainable
- Interviews with key personnel

To maintain the validity of this verification statement, DNV GL shall conduct one audit in 2019 and perform spot checks of production campaign documentation.

In our opinion, the procedure undertaken in the 75R product line follow a good industry practice and the claim made under the Hydro 75R product line is fairly stated. We believe that 75R product line contain a minimum of 75% end-of-life aluminium.

Place and date: Hevik, December 01, 2018

DNV GL BUSINESS ASSURANCE NORWAY AS

Thomas Haug

Thomas Haug
Lead auditor

Rafiq-ud-Din Khanajia

Rafiq-ud-Din Khanajia
Lead auditor and Technical reviewer

DNV GL Business Assurance (Norway) AS, Veritasveien 1, 1322 Høvik, Norway. Tel: +47 67 57 99 00. assurance.dnvgl.com

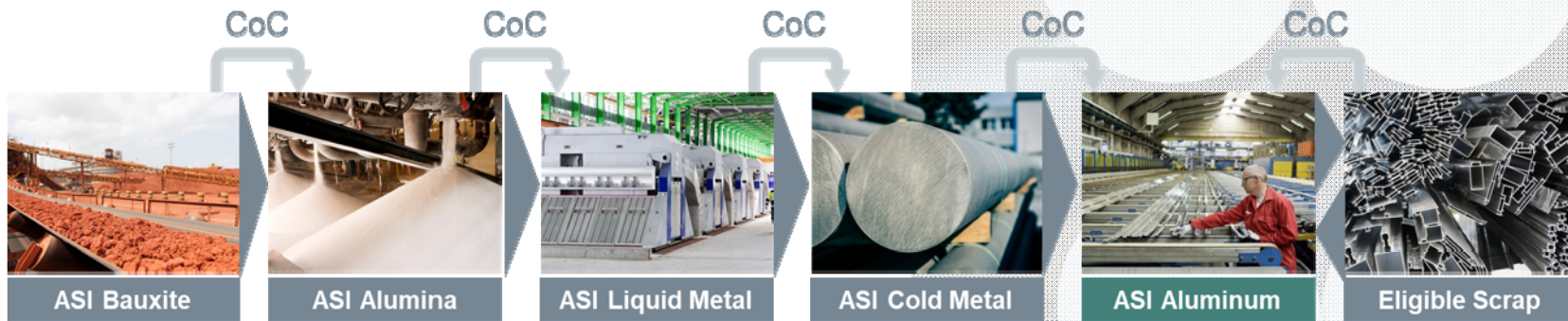
KOMPLETAN PROCES PROIZVODNJE JE CERTIFICIRAN (DNV-GL).



By  Hydro



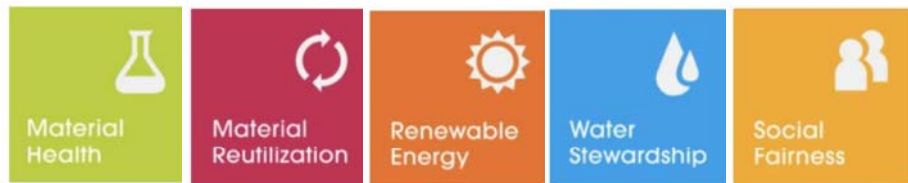
Neovisni certifikat koji pokriva cijeli lanac vrijednosti aluminija za rješavanje problema održivosti iz perspektive pitanja zaštite okoliša, društvene zajednice i upravljanja.





The leading multi-attribute, multi-industry science based standard for verifying products for the circular economy with integration of beneficial Environment, Social and Governance features.

5 categories, which are considered for the assessment



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5 levels of product certification

BASIC	→	 SILVER
BRONZE		
SILVER		
GOLD		
PLATINUM		

By Hydro

The advertisement features a background of various grey aluminum extrusion profiles. The WICONA logo is in the top right. A central graphic shows a vertical list of five certification levels: BASIC, BRONZE, SILVER, GOLD, and PLATINUM. An arrow points from the SILVER level to a larger Cradle to Cradle Certified logo with the word "SILVER" below it. The Hydro logo is in the bottom right corner.

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» C2C certified solutions



Aluminium Façades
WICONA Bronze
HYDRO BUILDING SYSTEMS GERMANY
GMBH



Aluminium Windows
WICONA Bronze
HYDRO BUILDING SYSTEMS GERMANY
GMBH



Aluminium Doors WICONA
Bronze
HYDRO BUILDING SYSTEMS GERMANY
GMBH



Aluminium Windows
WICONA Silver
HYDRO BUILDING SYSTEMS GERMANY
GMBH

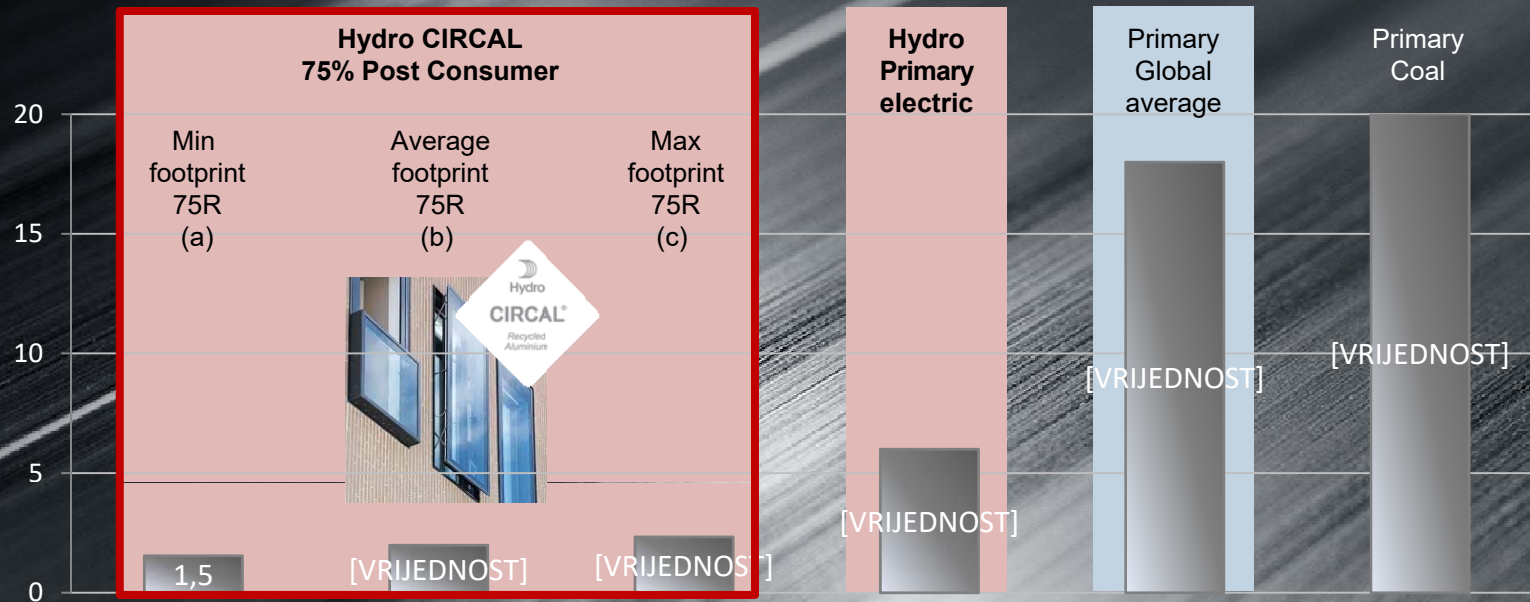


Aluminium Façades
WICONA Silver
HYDRO BUILDING SYSTEMS GERMANY
GMBH



Aluminium Doors WICONA
Silver
HYDRO BUILDING SYSTEMS GERMANY
GMBH

Aluminium CO₂ Footprint by Processing Route



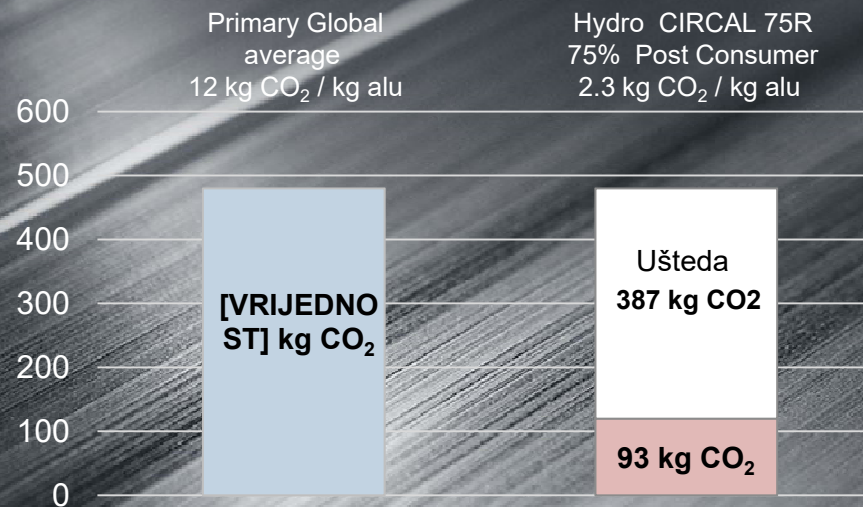
(a) 85% EOL Scrap + 15% Primary Ingot: 1,5 kgCO₂/kg 75R
 (b) 80% EOL scrap + 12% Primary Ingot + 8% Process Scrap: 1,988 tonCO₂/ton 75R
 (c) 75% EOL Scrap + 10% Process Scrap + 15% Primary Ingot: 2,3 kgCO₂/kg 75R

Source:IAI/EAA/Hydro

1500 x
3500 mm
= 5.25 m²

40 kg
aluminija po
elementu
fasade

kg CO₂ po elementu fasade (40 kg aluminija)



1000 elemenata fasade proizvedenih sa Hydro CIRCAL 75R osigurava uštedu od 387 t CO₂

Pitanje je 387 tona ...
Koji lanac opskrbe biste koristili / odredili?





“Da bi apsorbirala jednu tonu CO₂, stablo bukve treba rasti oko 80 godina.”

(Izvor: Handelsblatt)



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387 bukovih stabala moraju se zasaditi i rasti 80 godina kako bi se nadoknadila pogrešna odluka o ovom projektu!

By  **Hydro**

Aluminium CO₂ Footprint

2019 WICONA DACH – CSEE – CZ - SK

- CO₂ Emissionen 2019 bez CIRCAL: 12.920.000 kg Alu x 8 kg CO₂/ kg Alu (EU Mix) = 103.400 tona CO₂
- CO₂ Emissionen 2019 sa CIRCAL: 9.420.000 x 8 + 3.500.000 x 2,3 = 83.400 tona CO₂



- U 2019. godini uspjeli smo smanjiti emisiju CO₂ za ~ 20%.



- Spasiti 20.000 stabla bukvi koje bi trebale apsorbirati tu količinu tijekom 80 god.



- Naši kupci su platili 1.000.000 eura manje poreza na CO₂.
50 € / t CO₂ emisije

Aluminium CO₂ Footprint

2020 WICONA DACH – CSEE – CZ - SK

- CO₂ Emissionen 2020 bez CIRCAL und REDUXA:
 $14.000.000 \text{ kg Alu} \times 8 \text{ kg CO}_2 / \text{kg Alu (EU Mix)} = 112.000 \text{ tona CO}_2$
- CO₂ Emissionen 2020 sa CIRCAL und REDUXA:
 $9.000.000 \times 4 + 5.000.000 \times 2,3 = 47.500 \text{ tona CO}_2$



- U 2020. godini moći ćemo smanjiti emisiju CO₂ za ~ 58%.



- Spasiti 64.500 stabla bukvi koje bi trebale apsorbirati tu količinu tijekom 80 god.



- Naši kupci će platiti 3.225.000 eura manje poreza na CO₂.
50 € / t CO₂ emisije

A low-angle, upward-looking photograph of a skyscraper under construction. A red tower crane is visible on the left side of the building. To the right, a modern glass-clad building is partially visible. The sky is clear and blue. The text 'WICONA' is in the top right corner, and 'Hydro' is in the bottom right corner.

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PREUZMIMO ODGOVORNOST!

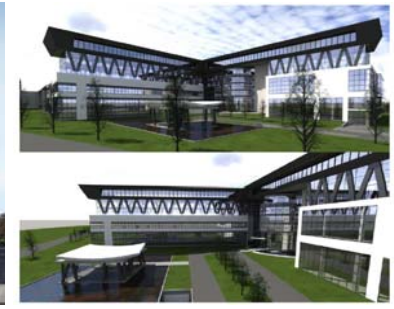
Fasade od Hydro-Wicona aluminija daju vam slobodu za stvaranje zelenih zgrada visokih performansi s trajnom vrijednošću za društvo... DANAS!

KOJI DOBIJATE SA VRLO MALIM DODATNIM TROŠKOVIMA!

Hydro

#INFINITEALUMINIUM

by WICONA



KOGC – Kuwait, Zielstadtquartier München – Neue Balan München –
Koran 1 Sweden – DIN Hochhaus Berlin – CH Krankenhaus – ZF Friedrichshafen

#INFINITEALUMINIUM

by WICONA



TICON Oslo – Dronings Mault Oslo – Primary School Marseille - Terraced Tower Rotterdam – LIXA Poland – Lancaster University GB – OKÉRN Oslo

#INFINITEALUMINIUM

by WICONA



MEDI Bayreuth; ALDI Campus Essen, Palaghiaccio (Brunico - Italy), Mandarin Drive (Tirana - Albany)
Strasbourg France, Iperion Tower Bordeaux, WEST Lougagge Company

... und es geht weiter

#INFINITEALUMINIUM



DER NEUE LANSERHOF SYLT
FERTIGSTELLUNG ENDE 2020



Lanser Hof List; MERCATOR One Duisburg, 99 West Frankfurt,



... to be continued

WICONA®

T E C H N I K F Ü R I D E E N

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