

THE USE OF ALUMINIUM IN GREEN CONSTRUCTION

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Experience: 20+ Years

Position: CEO of Salimus Consultancy
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Credentials: BSME, PE, LEED AP, Estidama PQP, CEM, GSAS CGP, EHS-Trakhees EGBR.

Nationality: Russian, Canadian

The use of aluminium in construction contributes to the achievement of sustainable development goals

- Buildings account for up to 40% of global energy consumption, therefore the improvement of the overall systemic efficiency of buildings while maintaining their value as residential and working spaces is a key aspect of sustainable development.
- Aluminium-based materials enable architects to design adaptable, energy-efficient buildings that can be built (and demolished) faster, safer, and with better cost-effectiveness than traditional buildings.
- Aluminium components in a well-maintained interior such as a church or library seem to have an infinite lifespan. However, aluminium structures that are exposed to weather conditions have a life expectancy of over 120 years.
- Aluminum provides the most important sustainability properties of building structures - durability, recyclability, flexibility, lightness / strength, potential for energy savings and a carbon footprint reduction.

Alcoa Building - the world's first aluminium skyscraper

- This 30-floors office tower in downtown Pittsburgh was designed by architects Harrison and Abramovich for the aluminium giant Alcoa and opened in 1953. In December of that year, Popular Mech described it as "the world's first aluminium skyscraper." It is lined with 6ft x 12ft (1829mm x 3658mm) uniform extruded aluminium elements that are pre-glazed.
- In the summer of 2013, when engineer Stephanie Carlisle performed an inspection of the building's condition, he found that the building was still in very good condition, with the original windows preserved.



Contribution of aluminium products to the LEED certification



LEED v4 for BD+C: New Construction and Major Renovation Project Checklist

Project Name:
Date:

Y	?	N			
Y			Credit	Integrative Process	1
0	0	0	Location and Transportation		16
Y			Credit	LEED for Neighborhood Development Location	16
Y			Credit	Sensitive Land Protection	1
Y			Credit	High Priority Site	2
Y			Credit	Surrounding Density and Diverse Uses	5
Y			Credit	Access to Quality Transit	5
Y			Credit	Bicycle Facilities	1
Y			Credit	Reduced Parking Footprint	1
Y			Credit	Green Vehicles	1
0	0	0	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Credit	Site Assessment	1
Y			Credit	Site Development - Protect or Restore Habitat	2
Y			Credit	Open Space	1
Y			Credit	Rainwater Management	3
Y			Credit	Heat Island Reduction	2
Y			Credit	Light Pollution Reduction	1
0	0	0	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
Y			Credit	Outdoor Water Use Reduction	2
Y			Credit	Indoor Water Use Reduction	6
Y			Credit	Cooling Tower Water Use	2
Y			Credit	Water Metering	1
0	0	0	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
Y			Credit	Enhanced Commissioning	6
Y			Credit	Optimize Energy Performance	18
Y			Credit	Advanced Energy Metering	1
Y			Credit	Demand Response	2
Y			Credit	Renewable Energy Production	3
Y			Credit	Enhanced Refrigerant Management	1
Y			Credit	Green Power and Carbon Offsets	2

Y	?	N			
0	0	0	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
Y			Credit	Building Life-Cycle Impact Reduction	5
Y			Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
Y			Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
Y			Credit	Building Product Disclosure and Optimization - Material Ingredients	2
Y			Credit	Construction and Demolition Waste Management	2

Y	?	N			
0	0	0	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
Y			Credit	Enhanced Indoor Air Quality Strategies	2
Y			Credit	Low-Emitting Materials	3
Y			Credit	Construction Indoor Air Quality Management Plan	1
Y			Credit	Indoor Air Quality Assessment	2
Y			Credit	Thermal Comfort	1
Y			Credit	Interior Lighting	2
Y			Credit	Daylight	3
Y			Credit	Quality Views	1
Y			Credit	Acoustic Performance	1

Y	?	N			
0	0	0	Innovation		6
Y			Credit	Innovation	5
Y			Credit	LEED Accredited Professional	1

Y	?	N			
0	0	0	Regional Priority		4
Y			Credit	Regional Priority: Specific Credit	1
Y			Credit	Regional Priority: Specific Credit	1
Y			Credit	Regional Priority: Specific Credit	1
Y			Credit	Regional Priority: Specific Credit	1

Y	?	N	TOTALS		Possible Points: 110
					Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

Contribution of aluminium products to the LEED certification

Section: Energy and Atmosphere

- **Credit EA (Optimize Energy Performance): Energy efficiency optimization** - framing systems, curtain walls and windows, light shelves, sun shades.
- **Credit to EA (Renewable Energy Production): Renewable Energy Production** - Renewable energy systems such as photovoltaic (PV), panels and mini wind turbines are usually made from aluminium frames and aluminium products.

Contribution of aluminium products to the LEED certification

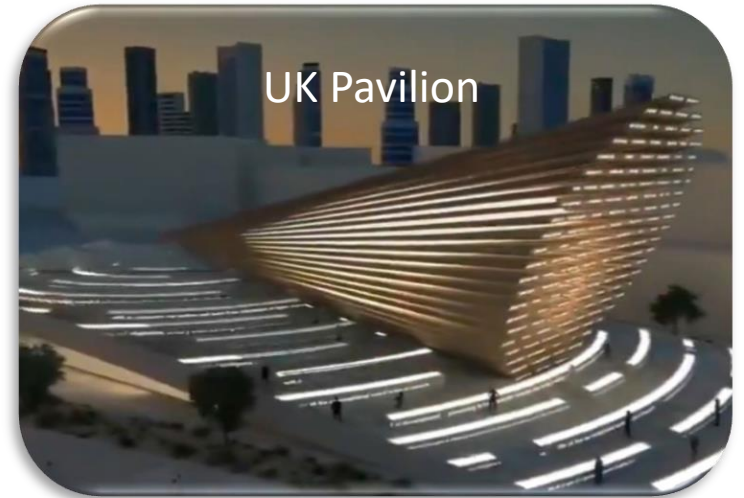
Section: Indoor environmental quality

- **Credit EQ: Thermal Comfort** - Controllable aluminium windows provide adjustable natural ventilation for increased thermal comfort.
- **Credit EQ : Daylight** - Aluminium frames and windows offer reliable and versatile solutions to make optimal use of natural light and direct sunlight.
- **Credit EQ : Quality Views** - Nice Scenery Outside The Window - aluminium frames and windows offer reliable and versatile solutions that enhance the ability to take a break from work while admiring the view outside.
- **Credit EQ : Acoustic Performance** - aluminium framing systems and curtain wall systems, as well as double and triple insulated glass, contribute to improve thermal and acoustic performance.

Contribution of aluminium products to the LEED certification

- **Section: Materials and Resources**
- **MR Credit:** (Construction and Demolition Waste Management) Construction and Demolition Waste Management - Most aluminium building structures or components are prefabricated. This means that scrap is collected and recycled centrally, which minimizes excess waste on the construction site. Due to the high cost of aluminium scrap and the ease of recycling, almost all of the aluminium used in construction is recycled.

EXPO 2020 Pavilions



Positive Energy & Near-Zero Energy Building Projects



Project: Saint Gobain's Multi Comfort House

Service: Energy Modeling & Commissioning.

Location: Abu Dhabi, UAE

Energy Savings: 114%



Project: DEWA HQ - Al Sheraa

Service: Energy Modeling (Winning Competition with Obermeyer)

Location: Dubai, UAE

Energy Savings: 78%

Center for Contemporary Art GES-2 in Moscow



LEED Gold



Salimus Consultancy

Thank you!

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