



Soluterials

Save and innovate

# NEW MATERIALS AND DISRUPTIVE INNOVATIONS

## POTENTIALS THROUGH »OUT OF THE BOX« THINKING

29.10.2022, Düsseldorf

Patent  
Pending



Co-funded by  
the European Union

# Welcome



## **Dr. Alla Kasakewitsch**

Co-Founder, Managing Partner of Soluterials

- Technology & material development
- Raw material purchasing/ powder preparation
- Quality control & certifications

» Increasing resistance through the development new materials by means of »out of the box« thinking. «





**Soluterials**

Save and innovate

# Aluminium: key player

Young history and big future

- Transportation: aircrafts, vehicles, trains, boats, etc.
- Buildings and construction: windows, doors, cladding, curtain walls, etc.
- Packaging: beverage cans, foil, food trays, boxes, etc.
- High-tech engineering: electrical transmission lines, ladders, cylinder blocks, pistons, pulleys, etc.
- Consumer products: Household appliances, cooking utensils, cutlery, coins, etc.





**Soluterials**

Save and innovate

## Vision Europe 2030 - 2050



Quelle: FROTCOM

**2030:**  
Reduce EU greenhouse gas emissions **by at least 55%**



Quelle: FROTCOM

**2050:**  
Getting closer to target of reducing pollution **by 60%**



**Soluterials**

Save and innovate

# How can the goals be achieved?



Quelle: FROTCOM



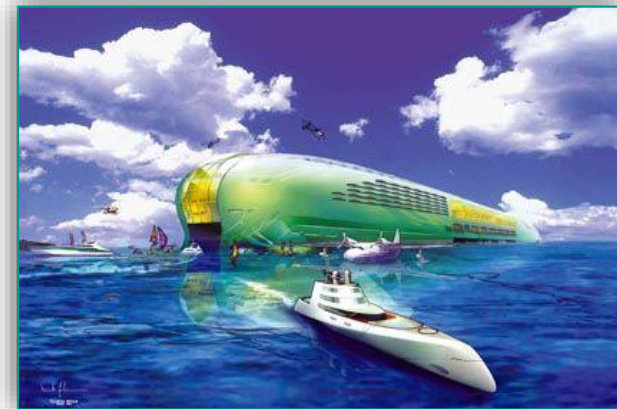
Quelle: FROTCOM



Quelle: virtualdesignmagazine.de



Quelle: galileo.tv



Quelle: spiegel.de

- ✓ Reduction of about 50% of CO<sub>2</sub> emissions per kilometer for passenger cars
- ✓ Increasing the use of renewable energy in the transport sector
- ✓ A crucial role for clean hydrogen





# Soluterials

Save and innovate

EUROPEAN ALUMINIUM @EU\_Aluminium · 18h

🕒 Immediate and impactful actions are needed if we want to maintain a complete and competitive European aluminium value chain.

High energy prices are threatening the long-term viability of our industries, undermining [EU](#) path to [#climateneutrality](#) & [#strategicautonomy](#).

🇪🇺 **European Metals** @Eurometaux · 23h

40 metals CEOs have warned EU leaders of the energy crisis's existential threat & urged emergency action.

As well as temporarily addressing sky-high gas prices, the EU must deliver a full support package to companies.

FT: [on.ft.com/3RobyM5](https://on.ft.com/3RobyM5)  
Letter: [bit.ly/3x4n1bz](https://bit.ly/3x4n1bz)

Industrial metals ✓ Added

## European metals sector warns of 'existential threat'

Executives urge emergency EU action to prevent deepening crisis in region's smelting industry



# Current affairs

tagesschau Sendung verpasst? ▶

Startseite ▶ Wirtschaft ▶ Weltwirtschaft ▶ Gefahr für Autohersteller: Industrie befürchtet Aluminium-Engpass

Gefahr für Autohersteller

### Industrie befürchtet Aluminium-Engpass

Stand: 22.10.2021 14:43 Uhr

Der deutschen Industrie geht das Magnesium aus: Vor allem die Autoindustrie ist bedroht, weil der Rohstoff für Aluminium-Legierungen benötigt wird. Experten warnen vor einem Produktions-Stopp.

### Unter Druck

## Energiekrise bedroht deutsche Aluminiumindustrie

23.08.2022 | Quelle: Pressemitteilung des Aluminium Deutschland e. V.



*Hilferuf! In Zeiten von rekordmäßigen Energiepreisen rocht in vielen Branchen allmählich die Wut hoch. Dafür rocht es in den Schmelztigeln – wie hier, bei der Aluminiumverarbeitung – immer weniger. Das hat Folgen für den Standort Deutschland, sagen Experten.*

(Bild: AD)

Der Strompreis hat jüngst ein neues Rekordniveau erreicht und stellt die stromintensiven Aluminiumhütten in Deutschland vor existentielle Herausforderungen. Die Produktion von Aluminium in Deutschland ist im zweiten Quartal 2022 auch schon sektorenweise gefallen, heißt es weiter. Mit einem Rückgang von 23 Prozent schrumpfte die Herstellung von Rohaluminium dabei besonders stark. Nach dem ersten Halbjahr 2022 belastet in diesem Bereich nun ein Minus von 21 Prozent die Branche, was rund 448.000 Tonnen Rohaluminium weniger bedeutet.

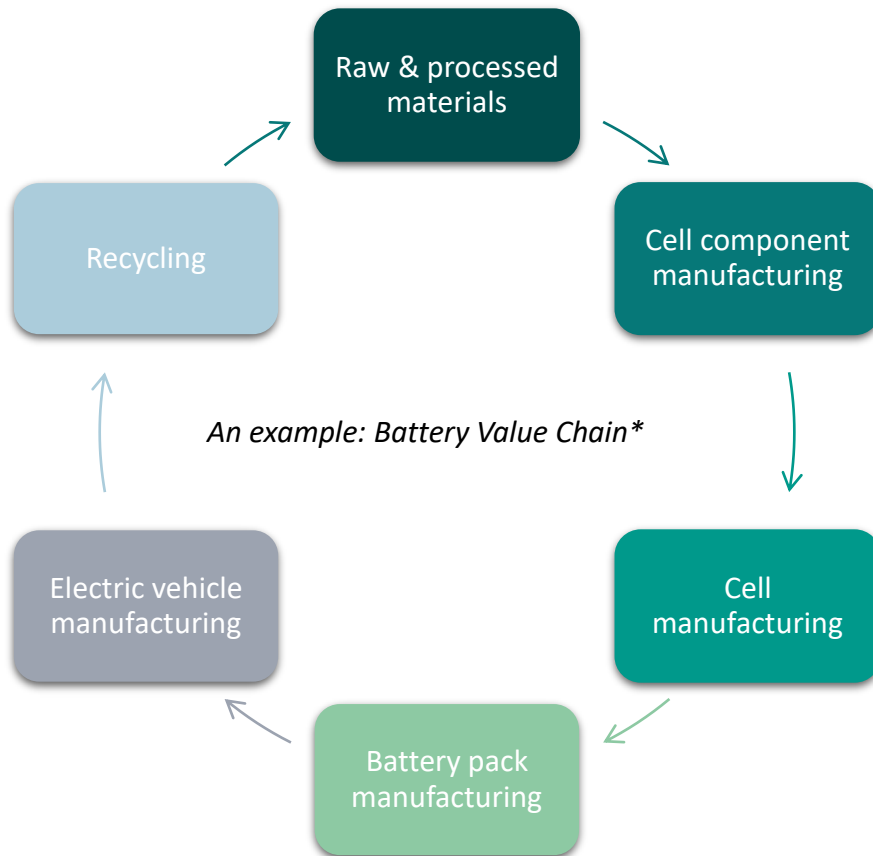


**Soluterials**

Save and innovate

# EC-Vision for industry in Europe in 2030

## Sustainable Strategic Value Chains



What are strategic value chains?

- *Group of interrelated economic actors operating in a strategic network.*

"Value chain" stands for a:

- *Series of interdependent economic activities that create value.*

\* Report of Strategic Forum for Important Projects of Common European Commission



Soluterials

Save and innovate

# Aluminium advantages

## Aluminium as an industrial material

Property	Pure Aluminium	Aluminium Alloy
Lightweight	●	●
Conductivity	●	—
Corrosion resistance	●	—
Strength	—	●
Creep resistance	—	—

- Thanks to lightweight, Al could help to reach the target 50% reduction in product weight
- Alloys are usually produced by melting the mixture of ingredients\*

\* <https://www.britannica.com/technology/alloy>  
Elwood Haynes, American industrialist, Elwood Haynes, (born Oct. 14, 1857, Portland, Ind., U.S.—died April 13, 1925, Kokomo, Ind.), American automobile pioneer who built one of the first automobiles





**Soluterials**

Save and innovate

# Aluminium recycling is infinite

True?

## FROM RECYCLABLE TO RECYCLING

Aluminium can be recycled again and again, almost infinitely, making it an incredibly sustainable material. With comprehensive global data and pioneering material flow analysis, the IAI can track scrap annually from source to consumer by product, quality, form and region.



# 95%

Recycling aluminium requires up to 95% less energy than production from ore, avoiding emissions, including greenhouse gases.

*\* World Aluminium, Aluminium Recycling, Fact Sheet*

The distinction between an alloying metal and an impurity is sometimes subtle

- In aluminium: silicon may be considered an impurity or a valuable component, depending on the application
  - Because silicon adds strength though it reduces corrosion resistance.

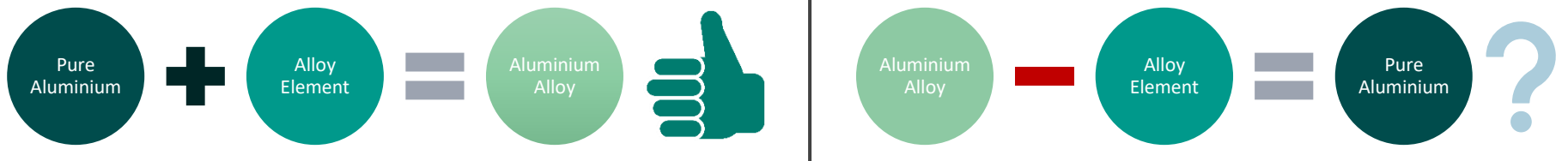


Soluterials

Save and innovate

# Aluminium recycling

= Downcycling?



- The elements contained in an alloy cannot be easily separated
- Separation is possible only with an extraordinarily high effort, but sorting is impossible
- Recycling can therefore only take place in the existing quality
- Cycle of downcycling begins





**Soluterials**

Save and innovate

A NEW APPROACH:  
POTENTIAL THROUGH  
OUT OF THE BOX THINKING.





Soluterials

Save and innovate

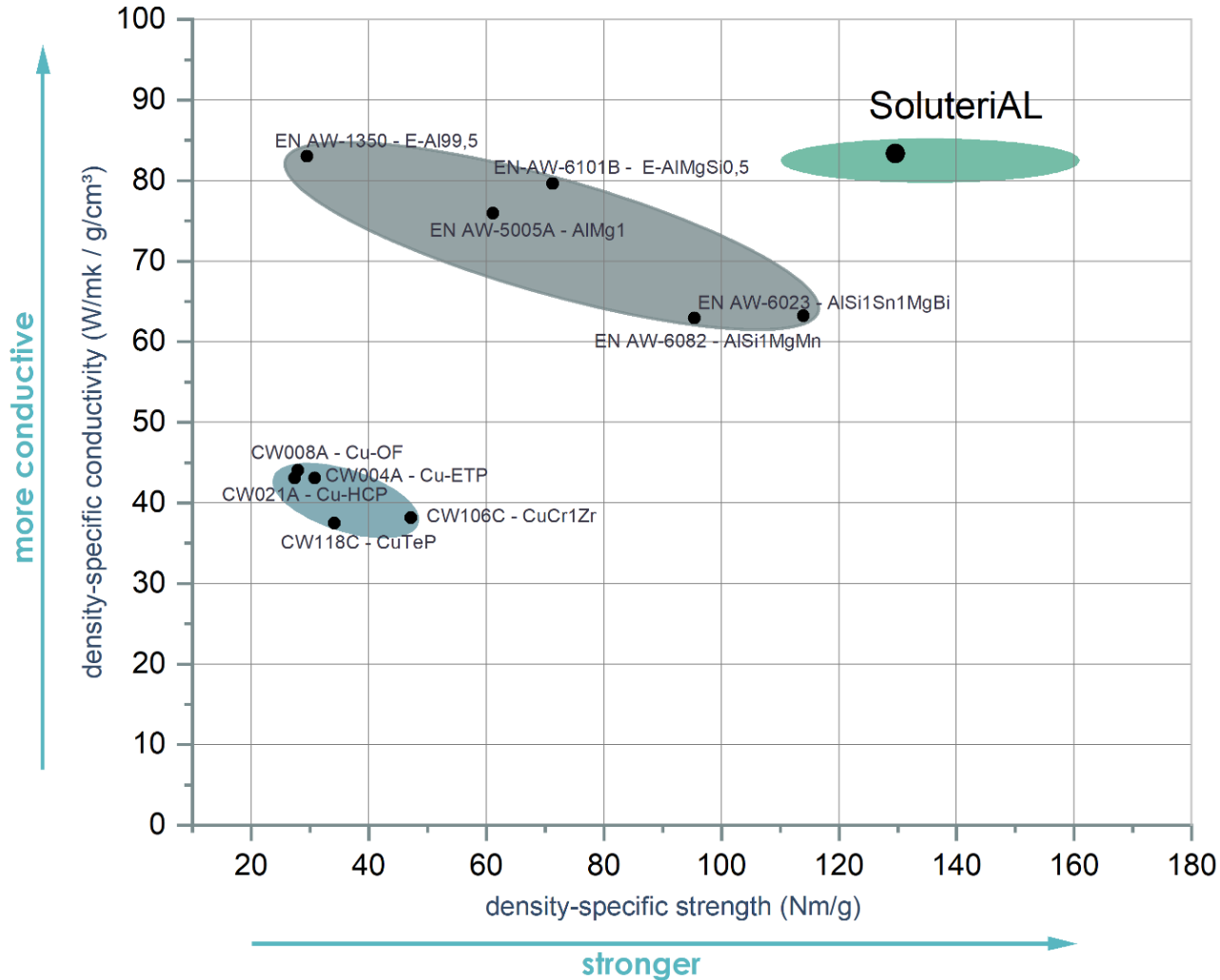
# SoluteriAl



**SoluteriAl** is the new and sustainable aluminium for out of the box thinking.



# SoluteriAl in direct comparison



Comparison with copper (alloys), pure aluminium and aluminium alloys



**Soluterials**

Save and innovate

## Summary advantages of SoluteriAl

Advantages of process-controlled nano structuring  
of the material design

### **HARMLESS**

no ingredients that are harmful to health  
or the environment

### **FULLY RECYCLABLE**

separation is not necessary

### **DECOUPLED MATERIAL DESIGN**

no variation of the material components  
necessary to achieve the property profile

### **1-STEP ONLY PROCESS DELIVERS FULL PROPERTY PROFILE RANGE**

no thermal and/or mechanical post-  
processing required

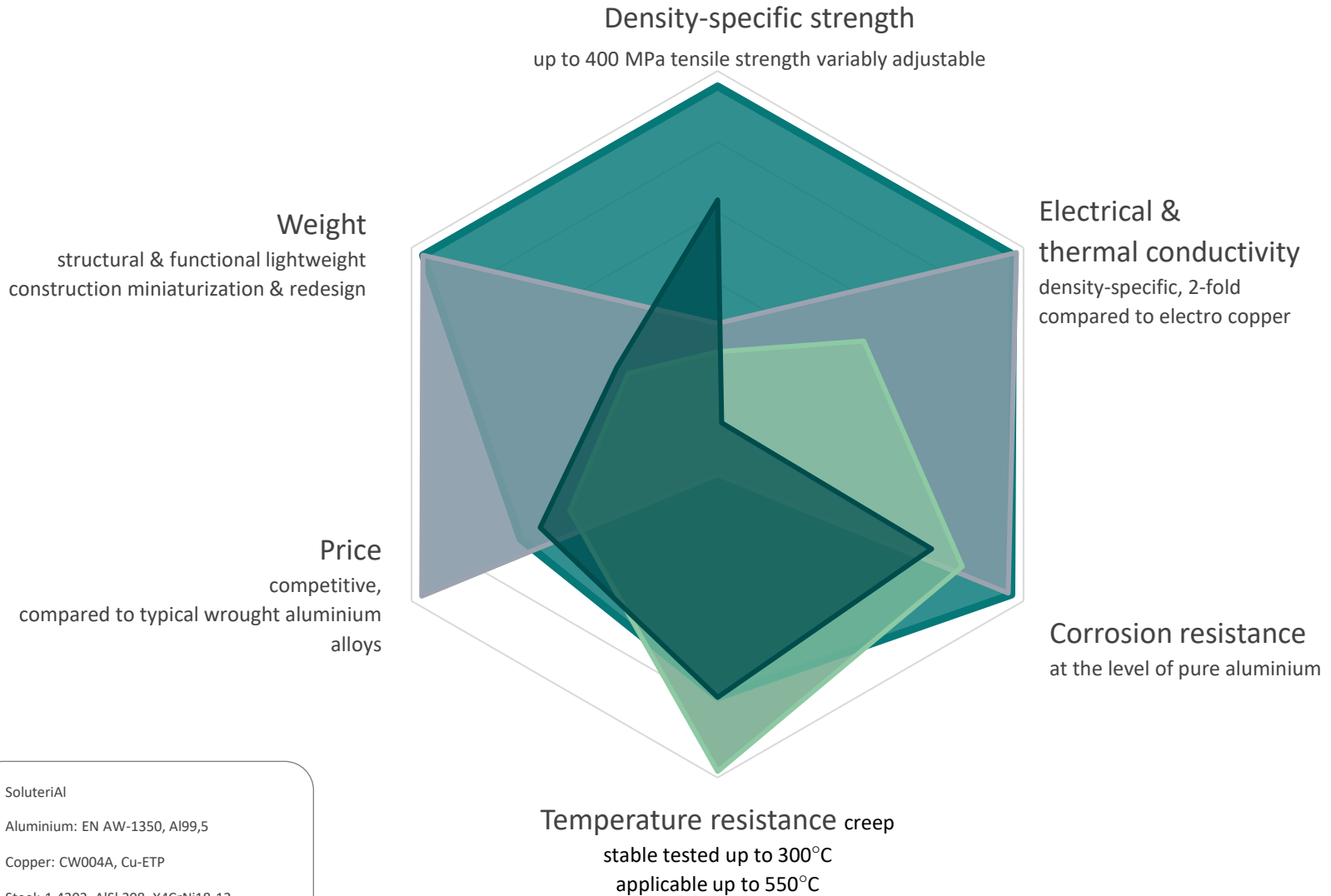




**SoluteriAI**

Save and innovate

# Performance SoluteriAI



- SoluteriAI
- Aluminium: EN AW-1350, Al99,5
- Copper: CW004A, Cu-ETP
- Steel: 1.4303, AISI 308, X4CrNi18-12



LET'S THINK  
»OUT OF THE BOX«.  
TOGETHER. FOR GOOD!



**Soluterials**

Save and innovate



Co-funded by  
the European Union

% Gründungszentrum Zukunft Lausitz,  
Güterzufuhrstraße 7  
03046 Cottbus

☎ +49 (0)1577 473 4701 (Alla Kasakewitsch)

✉ [ak@soluterials.de](mailto:ak@soluterials.de)





**Soluterials**

Save and innovate

## Meet our founding team



### **Dr. ALLA KASAKEWITSCH**

*Co-Founder, Managing Partner*

- CEO & CRO
- Technology & material development
- Raw material purchasing/ powder preparation
- Quality control & certifications

○ Dr. Ing: Powder Metallurgy & Composites



### **UWE ARLIC**

*Co-Founder, Managing Partner*

- CTO & CPO
- Process and manufacturing implementation
- Smart Materials Research

○ M. Sc.: Materials Engineering



### **CHRISTINA WALCH**

*Co-Founder, Managing Partner*

- CMO & CHRO (&CFO)
- Corporate Development
- Marketing
- Personal
- Controlling & Accounting / Taxes (external)

○ Dipl. Kffr. : Marketing, Production & Environmental Mgmt.