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11 February 2021

LightMe
Open Call Event

Łukasiewicz
Instytut Obróbki Plastycznej

European Commission

Horizon 2020
European Union funding
for Research & Innovation

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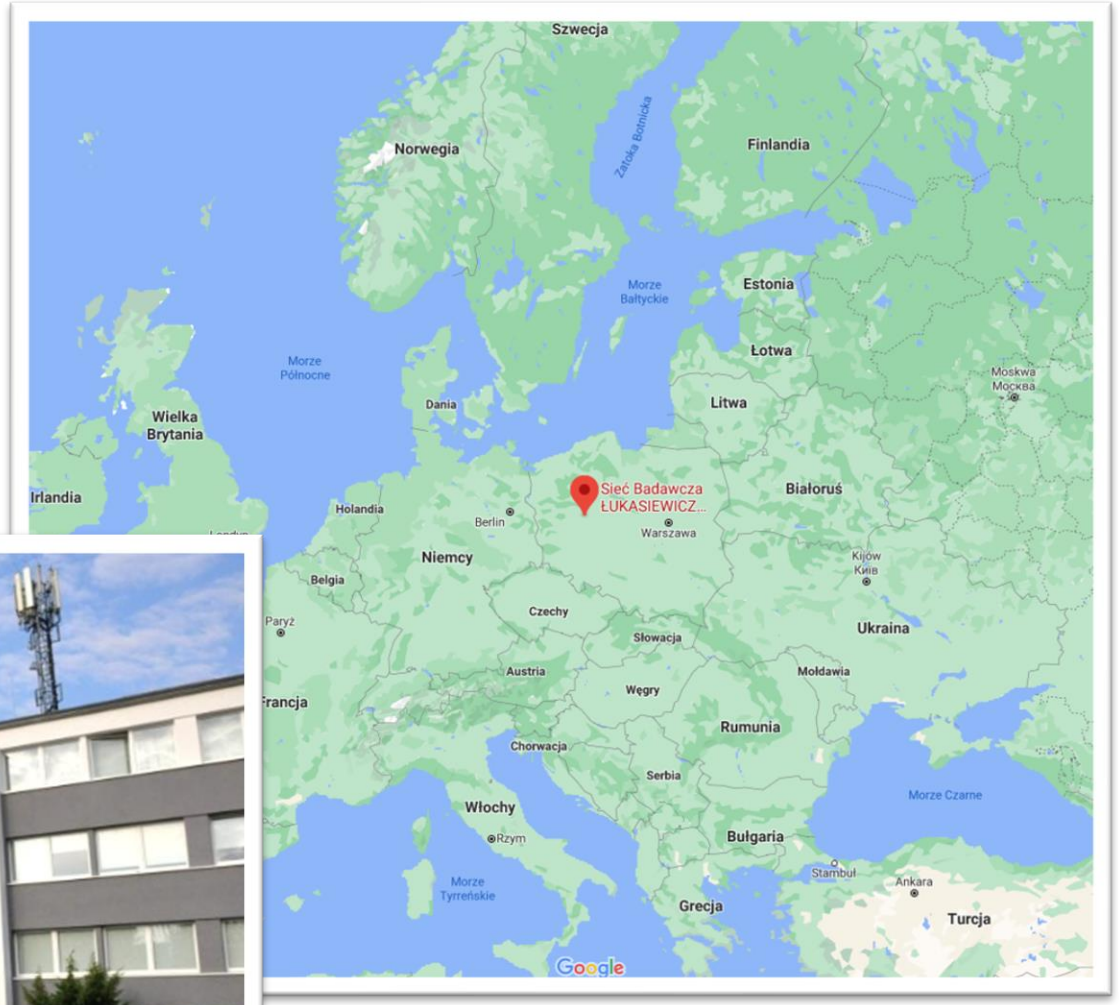


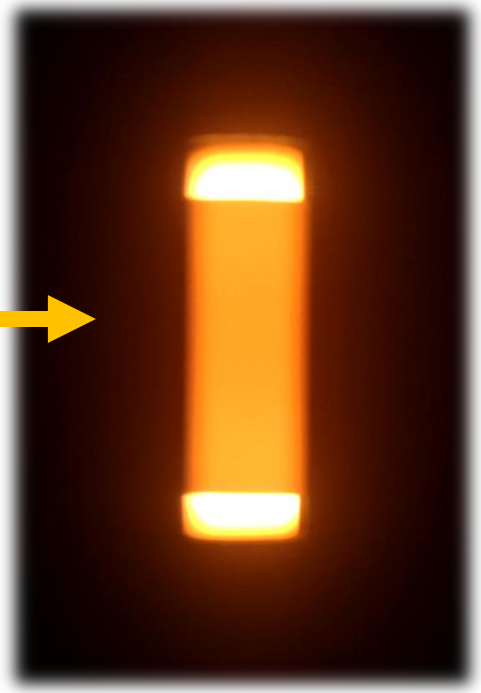
12 cities

32 research institutes

Europe's third largest research network
Several hundred world-class laboratories across Poland

Network research institutes

SPS-KOBO Pilot Line



Spark Plasma Sintering (SPS) HP D 25

Max. temperature	2200 ºC
Max. compacting force	250 kN
Max. Heating rate	400 ºC/min
Sintered disc diameter	80 mm
Sintered disc high	20 mm
Atmosphere	H_2, N_2, Ar, vacuum ($5 \cdot 10^{-2}$ mbar)

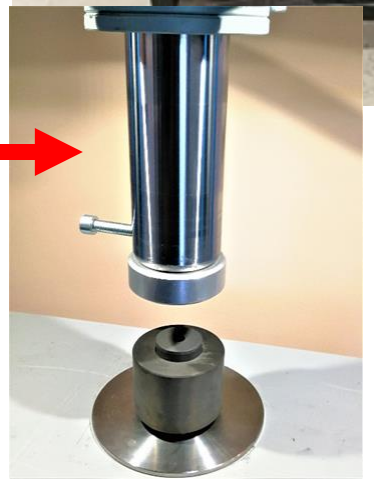
SPS-KOBO Pilot Line

Tools made of W360 hot-working steel

Tools made of 2334 high-strength graphite

Assembling module

Dissasembling module



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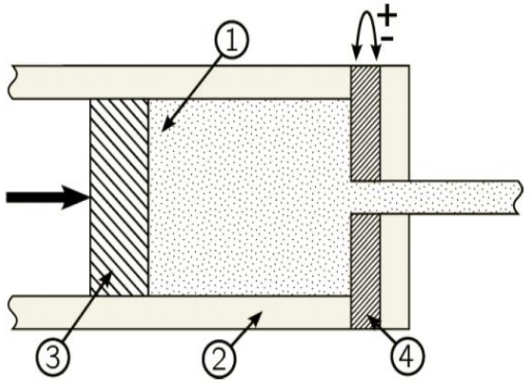
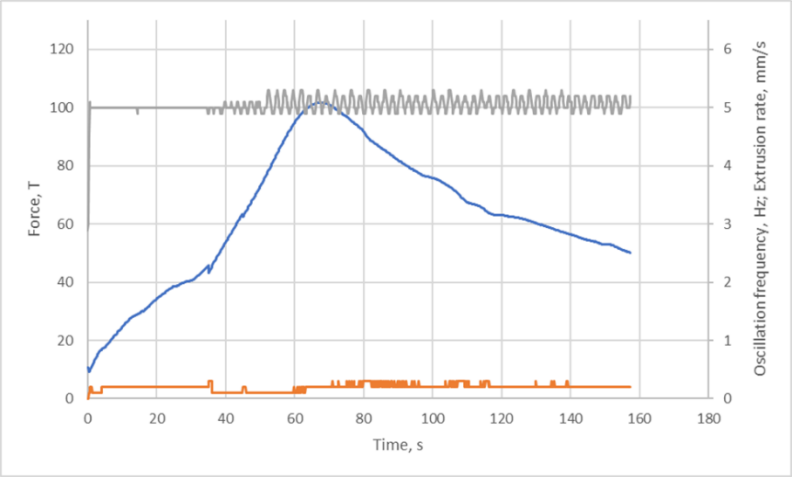
SPS-**KOBO** Pilot Line



The extruded metal ingot (1) is placed in a container (2) and extruded by a punch (3) through an oscillating die (4).

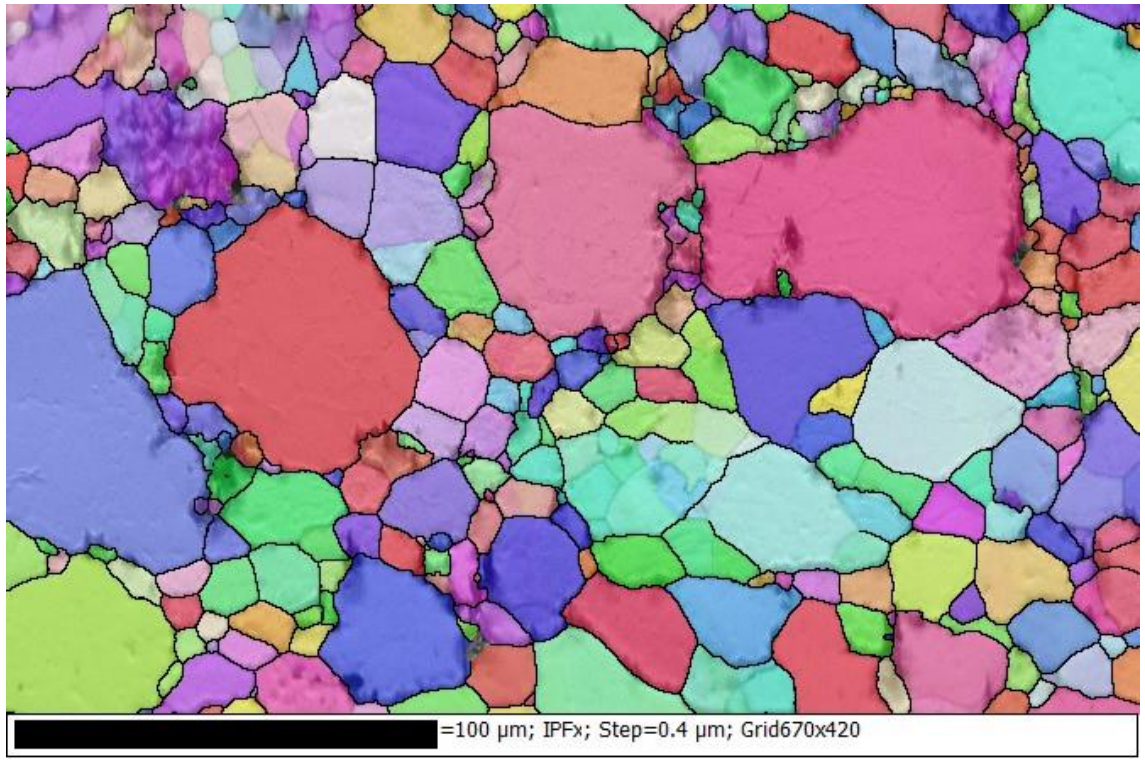


Die oscillation angle	± 8 °
Oscillation frequency	6 Hz
Extrusion ratio (Ø60 mm → Ø8 mm)	56

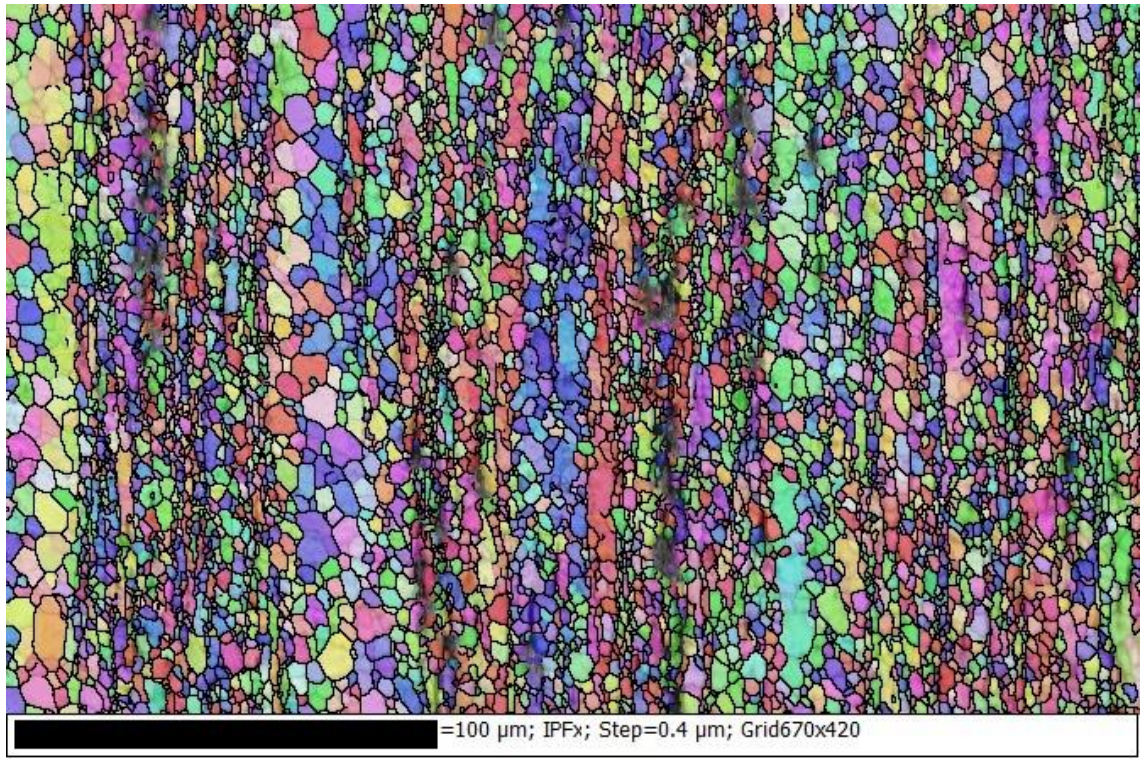
Results

Grain size ↓

Mechanical properties ↑



Microstructure of SPSed AA7075



Microstructure of SPSed and KOBO extruded AA7075

Test case preparatory

Processing route for Al-based composite profiles manufacturing

SPS → KOBO → Forging → Heat treatment

↓

Characterization

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Thank you for your attention

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European Commission

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