

RecAL Digital Product Passport: Enhancing Traceability and Transparency in the **Al**uminum Supply Chain

A DLT-Backed Solution for EU Circular Economy Compliance

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Insights into
Digital Product Passports
& EU Research



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Why Blockchain + DPP

Key Benefits for Aluminum Industry



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Ethical Sourcing

- Track origin of bauxite
- Certify conflict-free & ESG-compliant materials
- Supplier accountability on-chain



Carbon Footprint & Green Labels

- Record energy mix (e.g., hydro vs. coal)
- Automate green certifications (e.g., CBAM-ready)
- Trace full lifecycle emissions



Circular Economy

- Unique IDs for recycled Al
- Track alloy type & scrap reuse history
- Enable smart buy-back programs



Anti-Counterfeiting & Quality Assurance

- Embed certifications & test reports
- Use IoT for secure shipping tracking
- Trigger real-time recalls via smart contracts

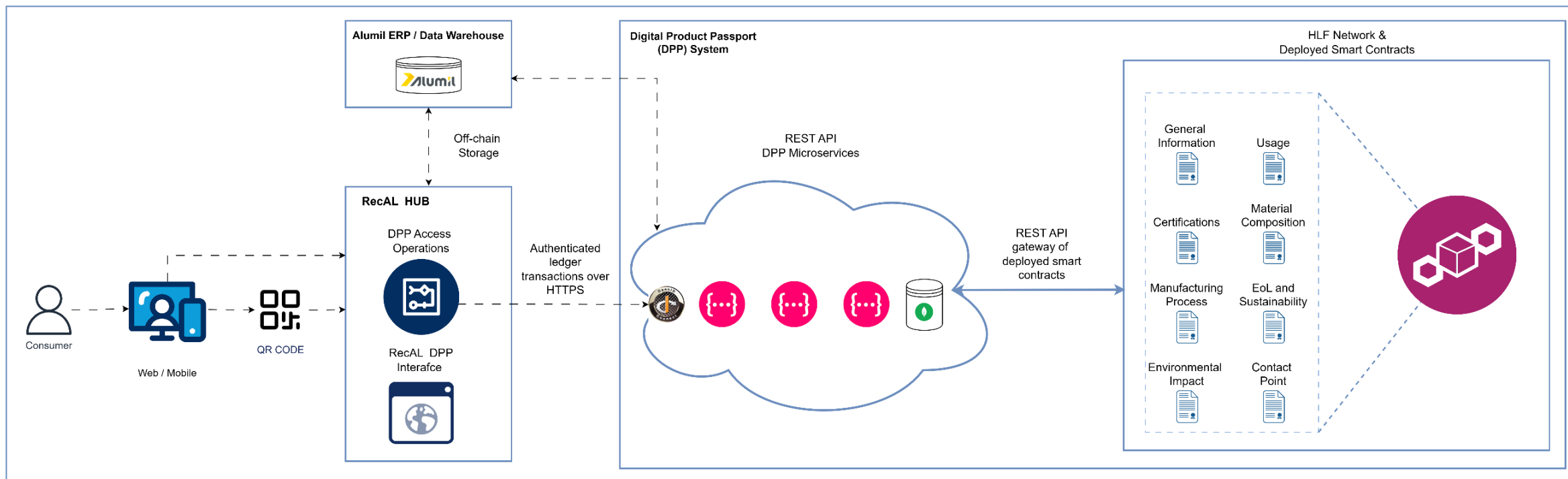


Simplified Compliance & Trade

- Auto-generate docs: origin, safety, CBAM
- Unified access for all supply chain actors
- Conflict mineral compliance by design



System Architecture



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Key Features

Core DPP Capabilities,
from Compliance to Value
Creation



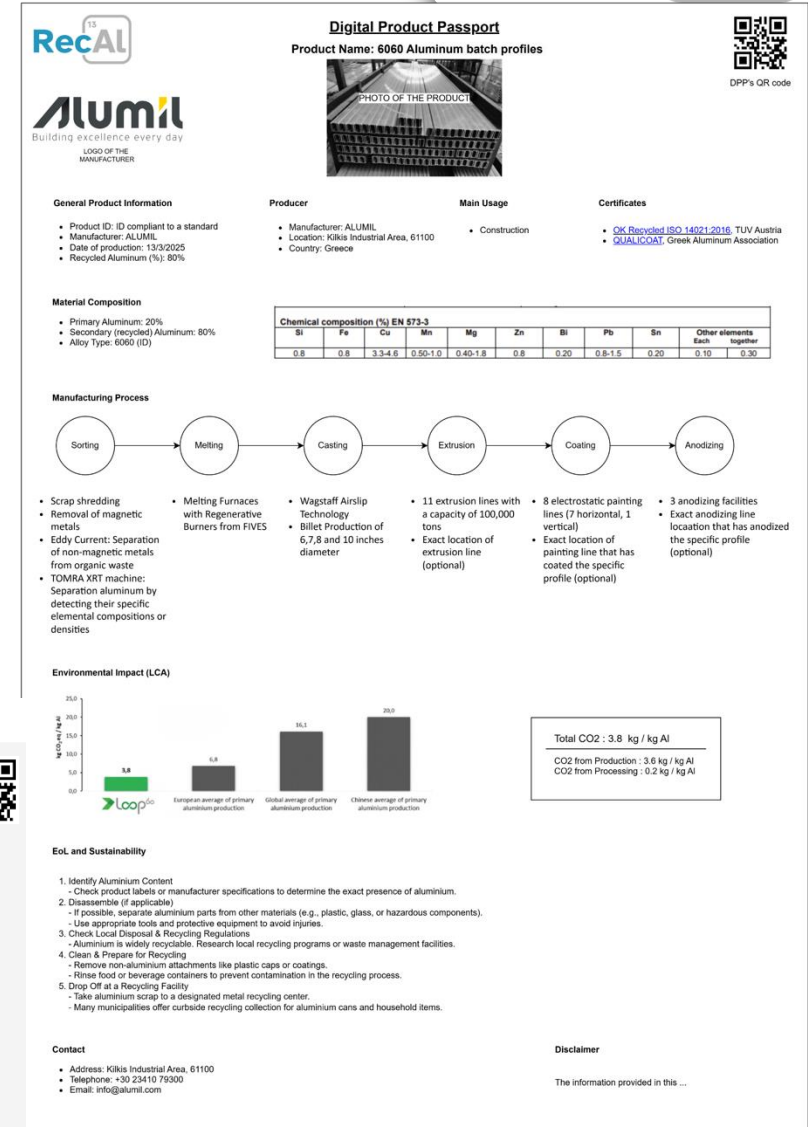
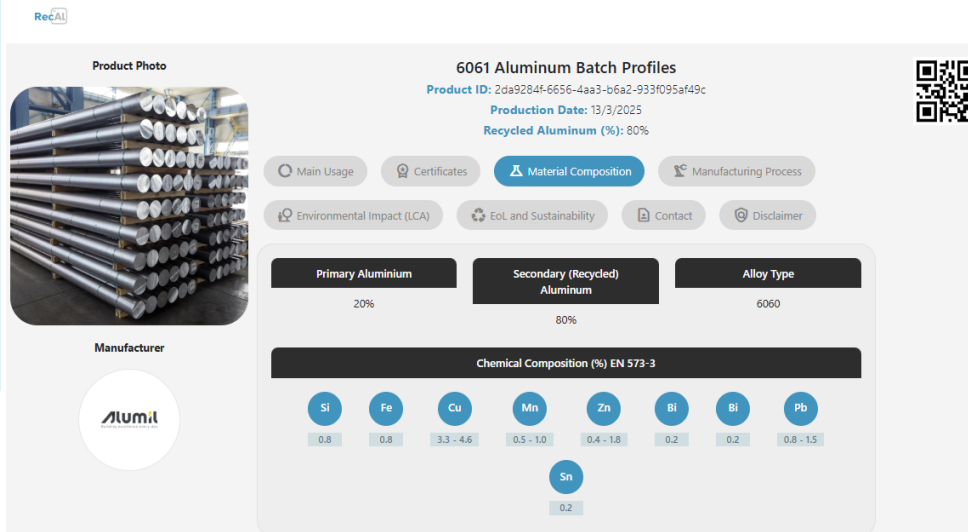
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 **Material Traceability:**
Primary/secondary
aluminum %

 **Carbon Tracking:**
Production vs. post-
processing emissions.

 **Automated Compliance:**
ESPR benchmarks via
smart contracts.

 **EoL Management:**
Recyclability metrics.



Benefits

Why This Matters



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For Industry:

Fraud prevention, streamlined reporting, ESG compliance



For EU and Policymakers:

ESPR alignment, circular economy goals



For Consumers:

Trust via transparent sustainability data

