Digital material passports
Global Forum on Steel Excess Capacity (GFSEC)

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Today's topics

- What are digital material passports
- Why they exist
- How it could help solve the excess steel problem
- How the technology works
- What the legislator can do
What are Digital Material Passports?

A Digital Material Passport (DMP) serves as a digital twin for material moving through a supply chain. It contains all relevant data regarding a material utilized in a product. This passport contains information like material properties, manufacturing details as well as its environmental footprint.
Digital supply chain

Tier 2

Tier 2

Tier 1

Operator
What problem does it solve

- Large amounts of documents that are printed, signed, scanned, emailed
- Difficult to determine products origin
- Counterfeit material
- High reliance on man power insuring compliance
- Potentially border crossing documentation
Types of counterfeit

- Fake products
- Country rebranding / hiding origin
- Fake documents
- Modified documents
What about excess material?

- Create an ecosystem that makes sure no steel can enter the supply chain unseen.
- But not all steel trade it visible to one party.
Border control and taxes

- Digitalize legal documents to cross a border
- Tax brackets
- Sanctions
- Conflict minerals
Sustainability aspect

- Carbon tracing
- Improving recyclability / reusability
- Easier to repair
- Reduction of paper / data storage
- Reduction of waste material
The enabling technology
Distributed ledger

- Store information irrefutably in time
- Mathematical proofs of the data
- Traceability of who added what, in what point in time
- Digital signatures
Cryptographic identification

Public Key

Private Key
Proof of origin

- Certificates can only be created by a qualified mill
- Instead of sending copies and certified copies, we transfer the ownership of the product
- Quantities cannot be changed by parties other than the original manufacturer
- End customers can verify independently if a certificate is real, unchanged and belongs to that product.
What can the legislators do?

- Legalize digital forms of documentation (other than PDF)
- Accept digital documentation at the border
- Enforce the use of digital material passports
Q&A