

SSAB – Powder Technology

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SSAB

1. SSAB in General

2. Powder Technology

Agenda

4: Applications

3. Material Offering

SSAB

1. SSAB in General

This is SSAB

1878

Founding year



HQ in Stockholm, Sweden



8.8 million tonnes
annual steelmaking capacity

2.7 BILLION
EUR

Operating result 2022 (adj)



15,000

Employees

SSAB Special Steels
SSAB Europe
SSAB Americas
Ruukki Construction
Tibnor

Divisions and subsidiaries

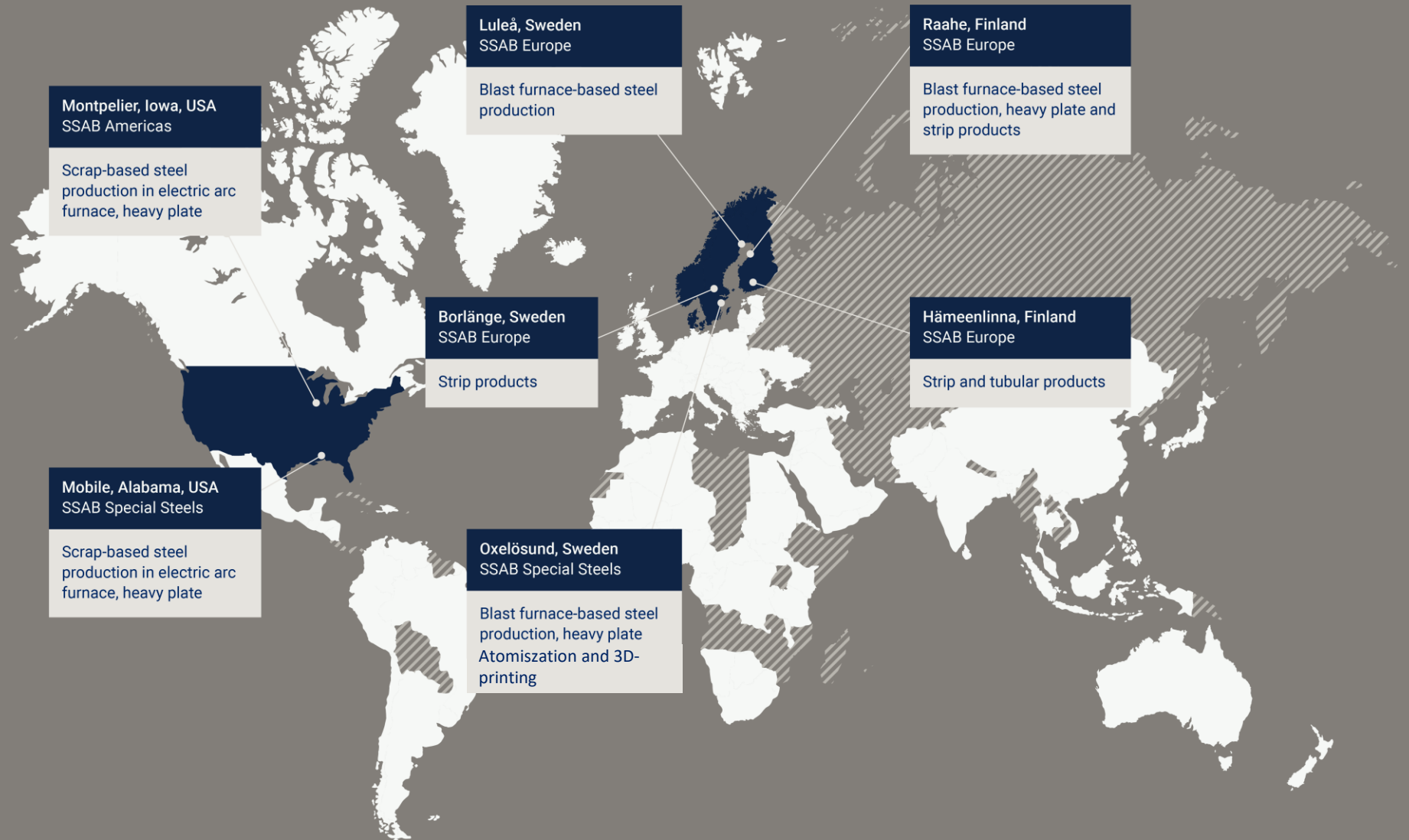
12 BILLION
EUR

Revenue 2022

2030

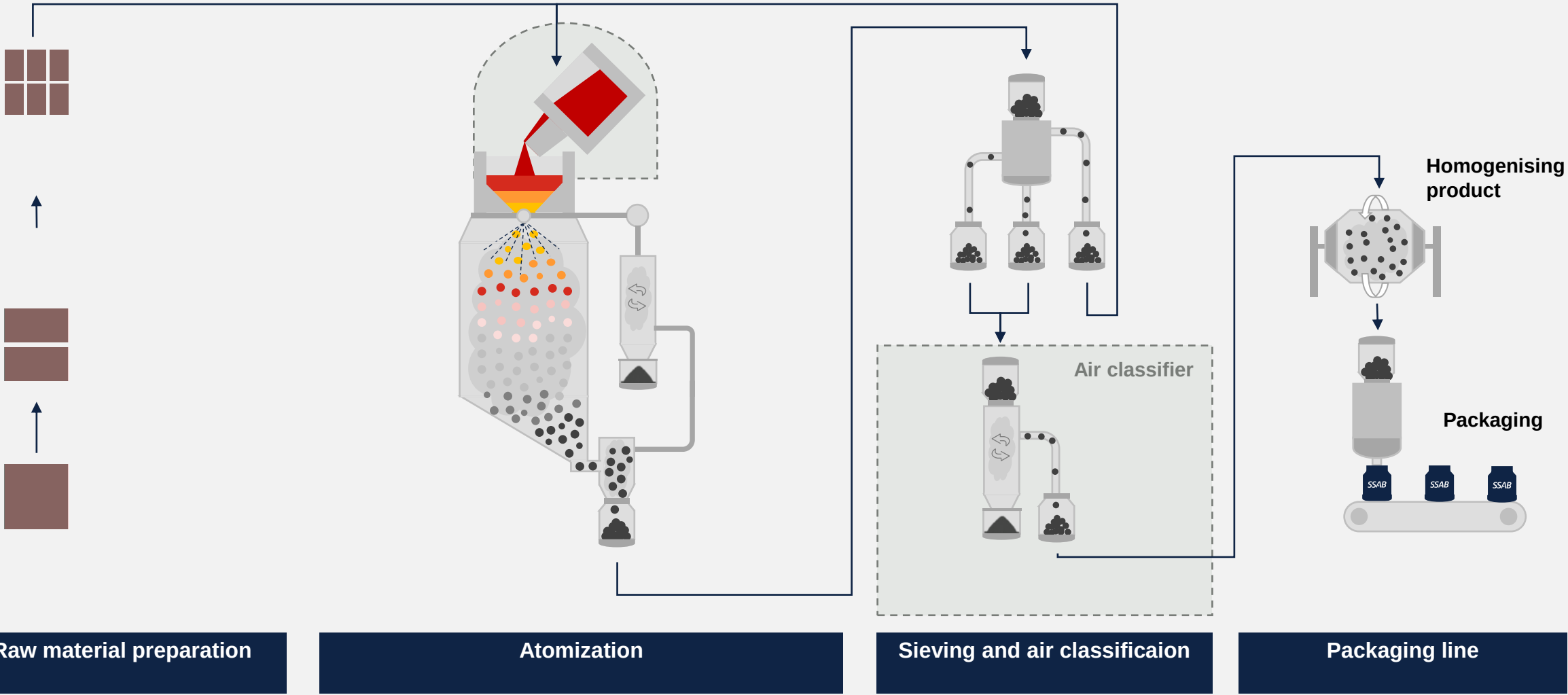
CO₂ emissions from own
operations largely eliminated

Steel mills in Sweden, Finland and USA



2. Powder Technology

Powder Technology



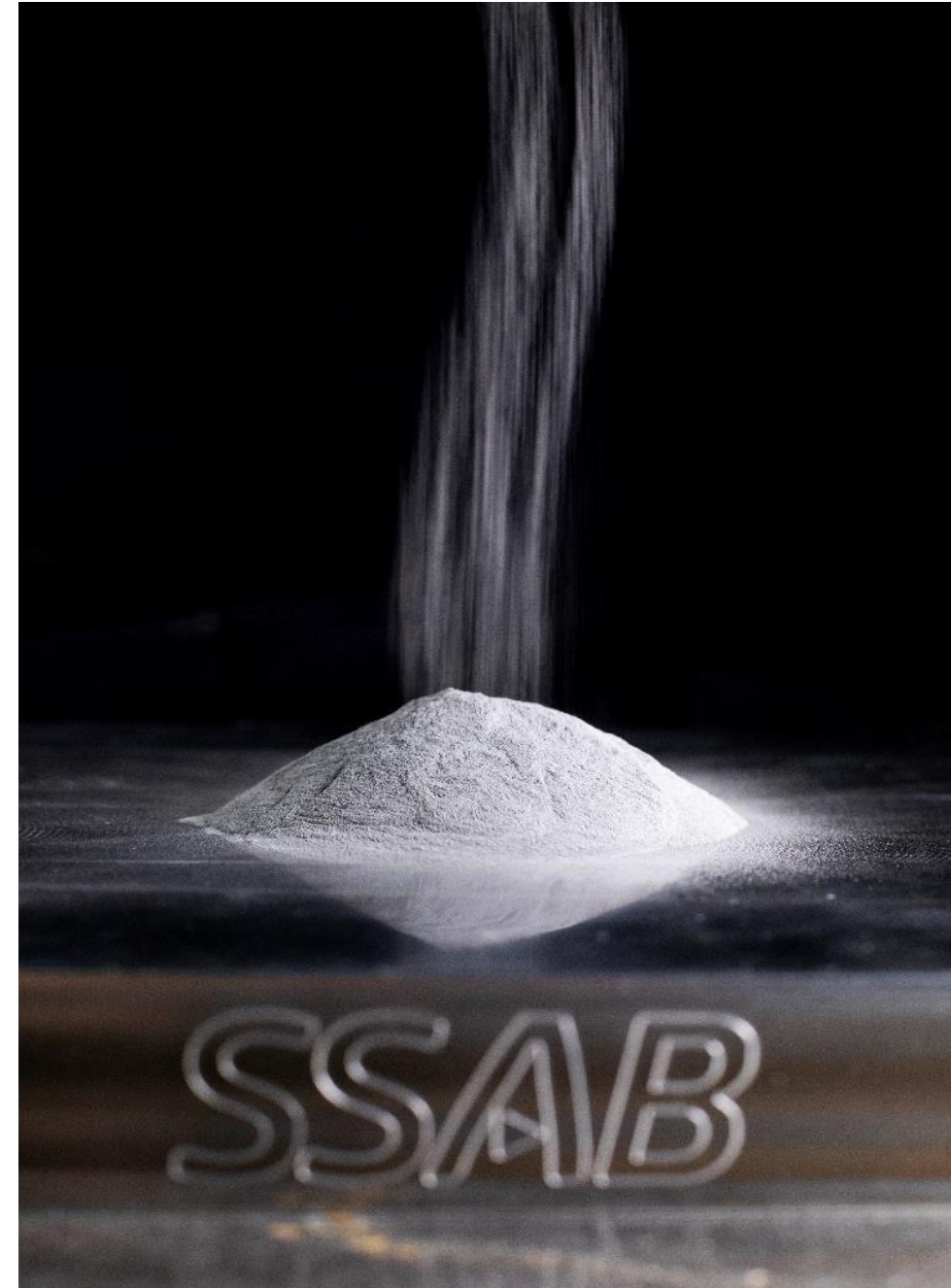
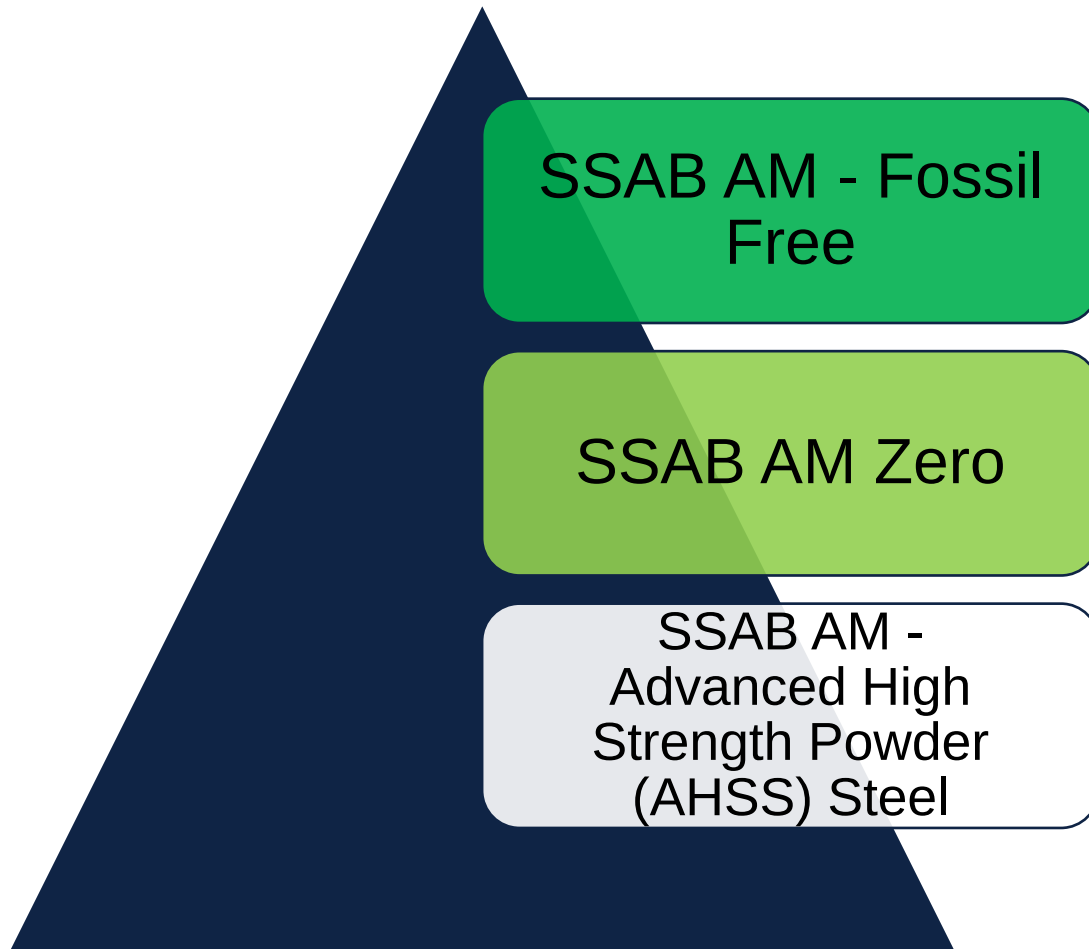


- ✓ Fossil-free electricity
- ✓ Fossil-free fuels
- ✓ Fossil-free internal transports
- Fossil-free sponge iron based on the HYBRIT® Technology
- ✓ Based on high-quality recycled steel



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Powder Products



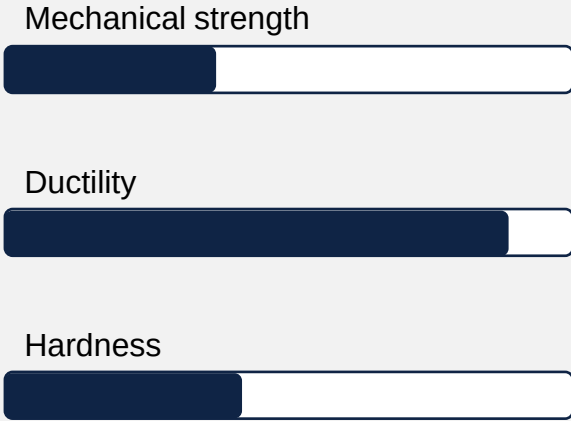
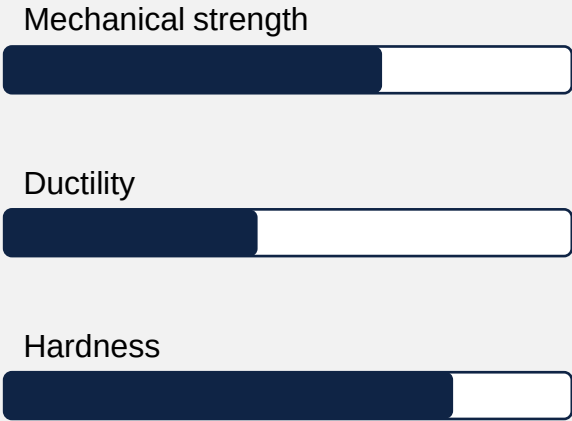
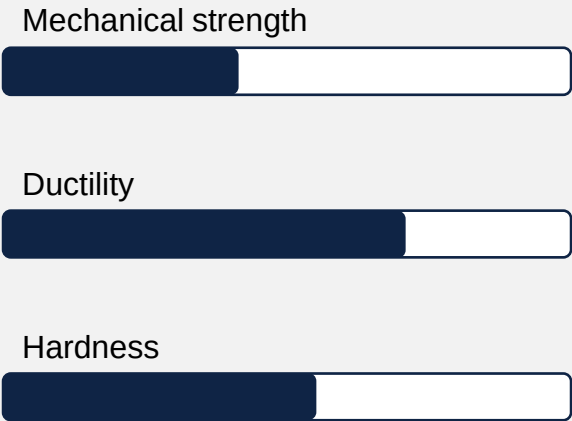
Additive manufacturing at SSAB

- Build envelope 280x 280 x 325 mm
- Single laser
- Material & process development
- Prototyping



3 Material Offering

Material Offering



AM Engineering

Chemical analysis

Fe	C	Si	Mn	Cr	Mo	V	(O,S,P)
Bal.	0,2	1,0	0,8	1,2	0,2	0,1	<200ppm

Particle size distribution

Product	
L-PBF	20-53 $\mu\text{m}^{1)}$
DED	53-125 $\mu\text{m}^{1)}$

¹⁾ Max 5% over and undersize
 Measured according to ISO 13322-2 (Dynamic image analysis)
 Other particle size distributions can be arranged upon agreement

SSAB AM Engineering is a gas atomized low-alloyed powder for additive manufacturing of high-strength engineering components. AM Engineering is in particular suited for L-PBF (Laser Powder Bed Fusion) and DED (Directed Energy Deposition).

Typical applications

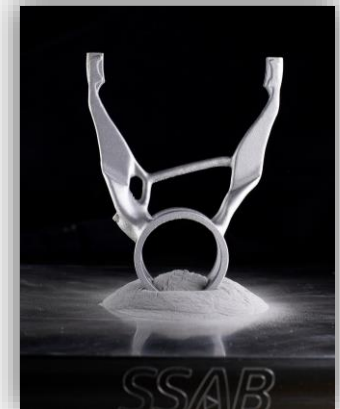
Engineering



Tooling



Automotive



TS2 - Development

Chemical analysis

Fe	C	Si	Mn	Cr	Ni	Mo	V	(O,S,P)
Bal.	0,3	1,0	0,8	1,3	0,7	0,8	0,14	<200ppm

Particle size distribution

Product	
L-PBF	20-53 $\mu\text{m}^{1)}$
DED	53-125 $\mu\text{m}^{1)}$

¹⁾ Max 5% over and undersize

Measured according to ISO 13322-2 (Dynamic image analysis)

Other particle size distributions can be arranged upon agreement

TS2 is a gas atomized low-alloyed powder for additive manufacturing of Tools and High-Performance engineering components. TS2 is suited for L-PBF (Laser Powder Bed Fusion) and DED (Directed Energy Deposition). TS2 is suited for surface modification such as Laser Hardening and Plasma Nitriding.

Typical applications

Cold forming

TS2 has shown excellent performance in cold forming when combined with surface modification, such as Laser hardening of Plasma Nitriding

Injection molding

TS2 works excellent in injection molding. The combination of high toughness and hardness makes it suitable for long series production.

AM Tough

SSAB AM Tough is a gas atomized low-alloyed powder for additive manufacturing of high toughness engineering and automotive components. AM Tough is in particular suited for L-PBF (Laser Powder Bed Fusion) and DED (Directed Energy Deposition).

Chemical analysis

Fe	C	Si	Mn	Nb	B	(O,S,P)
Bal.	0,3	0,4	1,4	0,03	0,003	<200ppm

Particle size distribution

Product	
L-PBF	20-53 μm^1
DED	53-125 μm^1

¹⁾ Max 5% over and undersize
Measured according to ISO 13322-2 (Dynamic image analysis)
Other particle size distributions can be arranged upon agreement

Typical applications

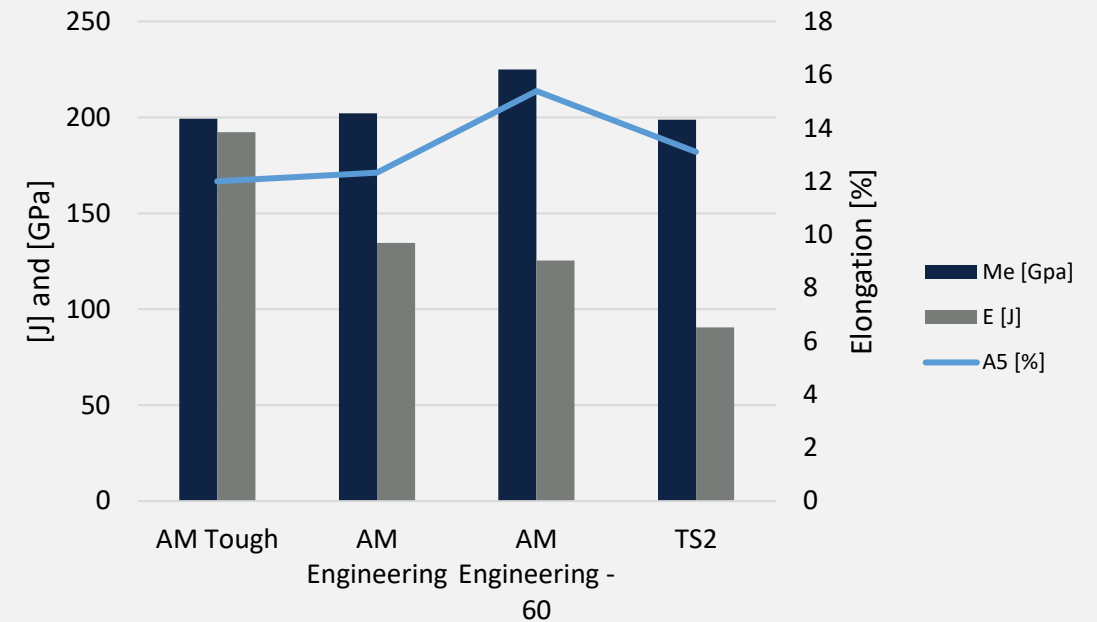
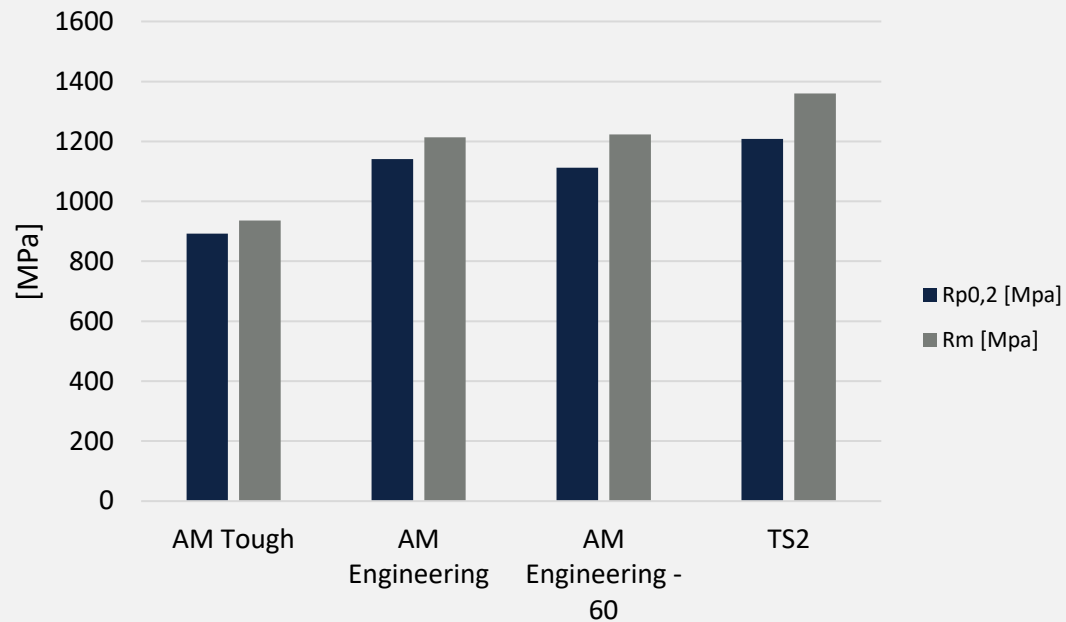
Engineering



Automotive



Material performance – L-PBF



- AM Engineering 30 and AM Engineering 60 are printed with 30μm and 60μm respectively
- All data are from samples build in z-orientation (standing samples)

- Samples are tested in room temperature
- No heat-treatment have been performed on the samples
 - As-build condition

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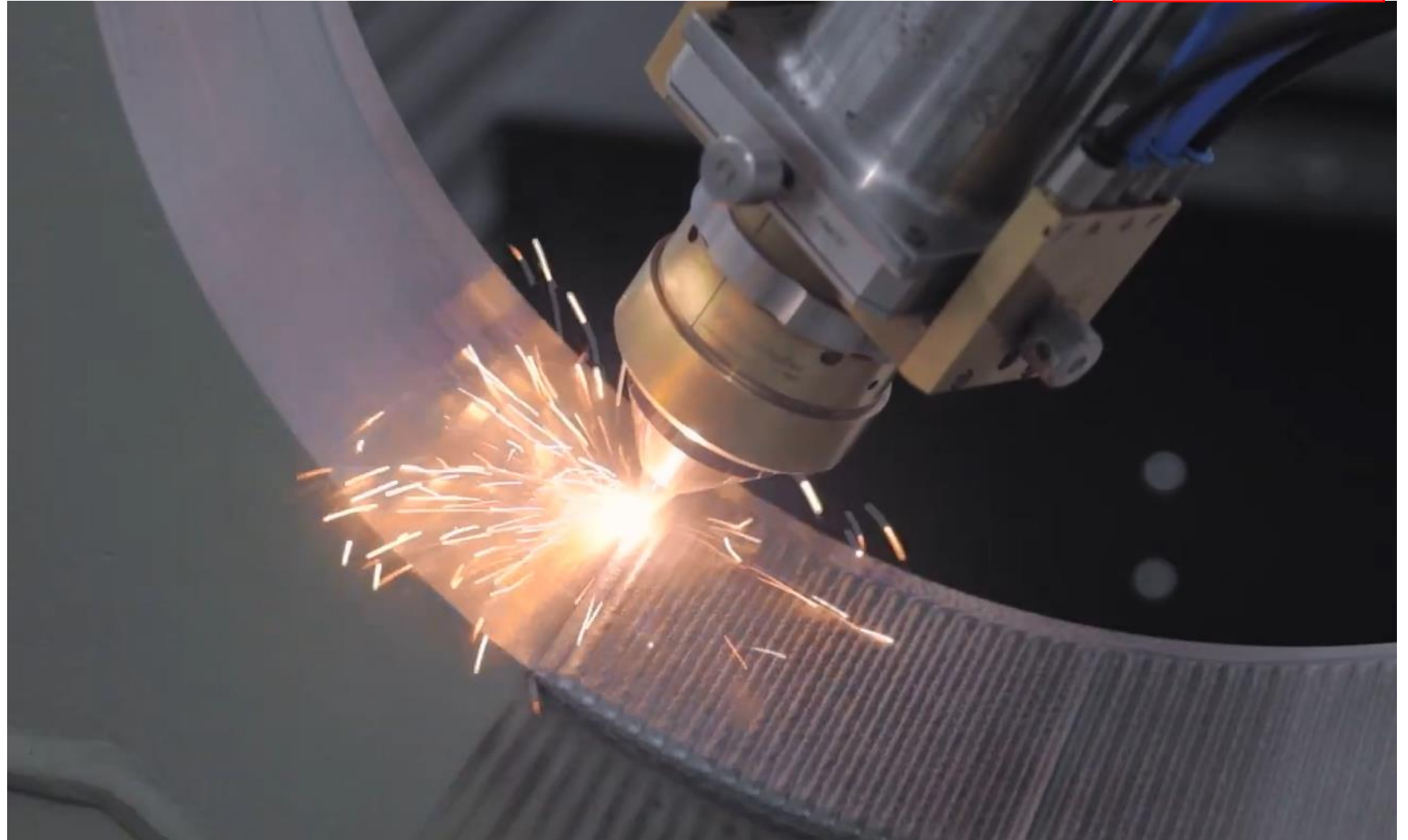
Applications

Tool for Borlänge operations

- **Spare part for coiling lie**
 - Tool used to secure the coils
- Tool made of 3D-printed TS2
 - Edges is laser hardened for hardness increase
- **Outcome**
 - At least 2,5X increase in Tool life



User cases – Repairs



Tulevaisuuden suunnitelmia

- Jauhevalmistusta ja jauheiden kehitystä on tehty Oxelösundissa muutama vuosi.
 - Tällä hetkellä pääpaino on markkinan luomisessa jauhepohjaiseen valmistukseen.
 - Tuotekehityksessä on uusia laatuja.
 - Volyymien noustessa investointi suurempaan laitokseen.
- Tällä hetkellä lankoja valmistetaan alihankinnassa tuotteeksi (Duroxite) ja täytteeksi (Hardox)
- Nykyisiä jauheita vastaavien lankojen valmistuksesta on käyty alustavia keskusteluja, mutta asiaa ei ole vielä edistetty.
- Jos yhteistyö kiinnostaa, niin ota yhteyttä:
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