

Presshardening of integrated large components AP&T SkyLine®

GDIS

Great Design In Steel - Michigan 2026

Jan Larsson



Multi Part Integration

Recycling

Weight reduction

Electrification



**MORE THAN
160 PRESS-HARDENING LINE
INSTALLATIONS**



PRESS HARDENING – KEY TAKEAWAYS

- » *PH is **climate smart***

- » *Material saving alone will justify the process*

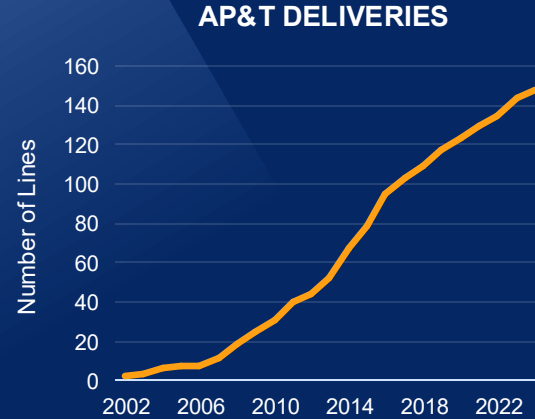
- » *Vehicle use cycle will multiply the effect*

- » *Conclusions valid for current energy infrastructure*

- » ***High formability** enables extensive **integration of components***

- » *The “no spring-back” feature enables very relevant **material savings***

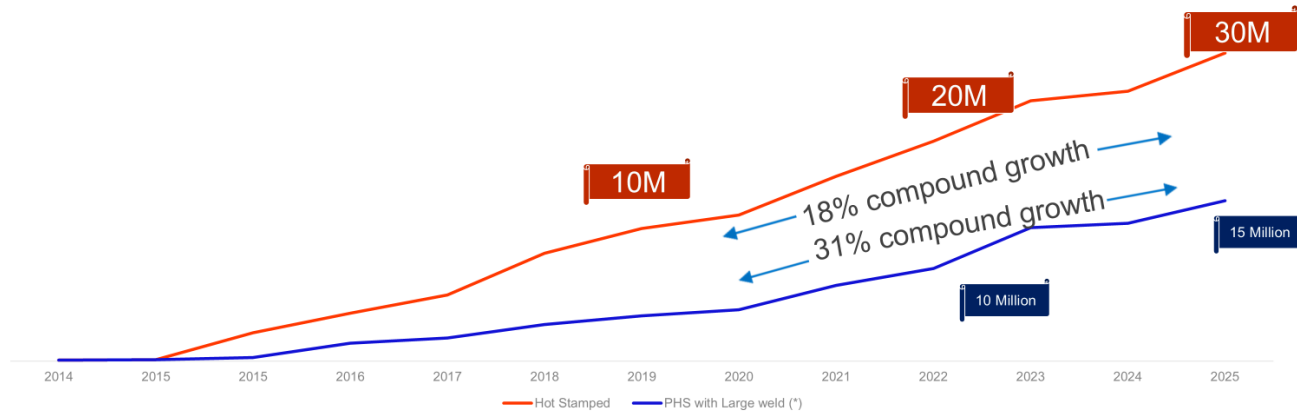
- » *The Large integrated components are used in **all types** of vehicles*



PRESS-HARDENING – A GLOBAL SUCCESS

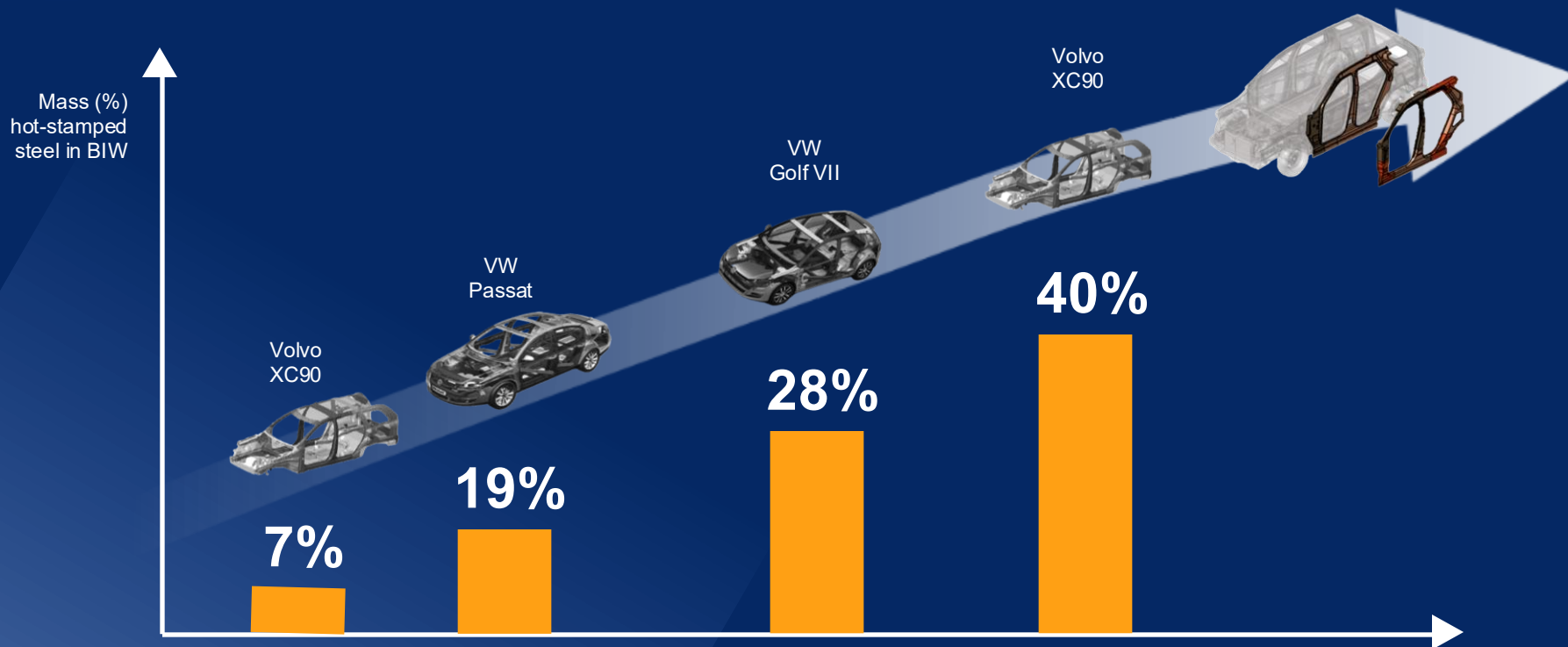
ArcelorMittal LWB PHS blanks expected to reach more than 30 Million in 2024

PHS and large welds LWB

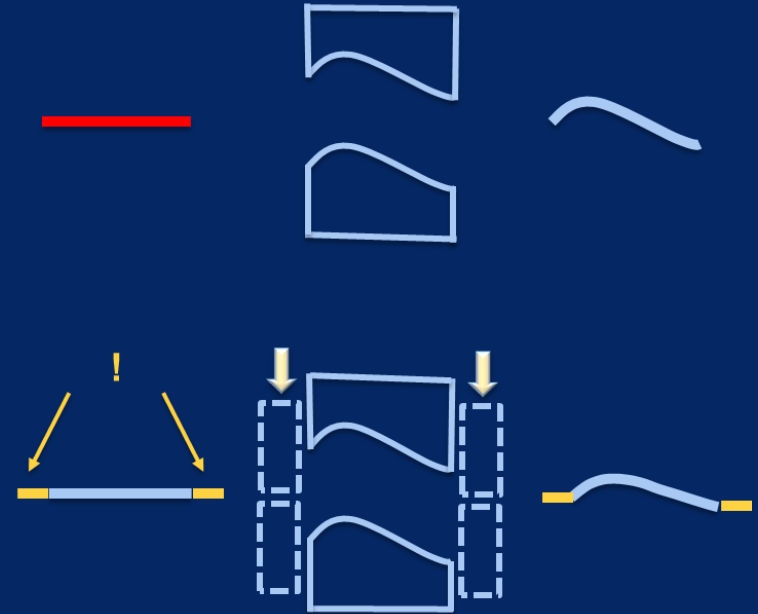
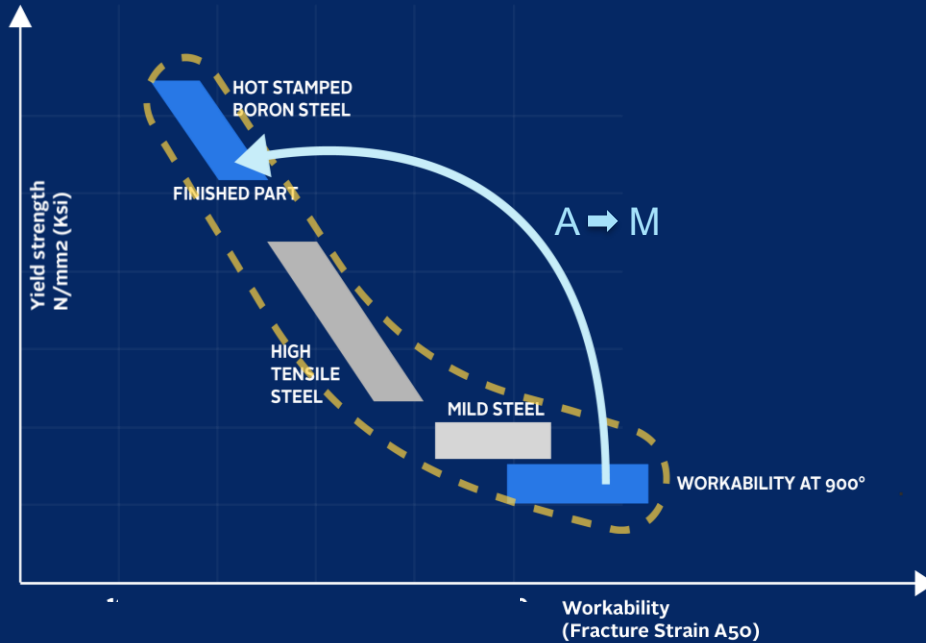


China adopting at approximately 2x growth rate

25+ YEARS OF EXPERIENCE IN PRESS HARDENING



PRESS-HARDENING – GLOBAL SUCCESS



CHANGES ON THE MARKET AND NEW REQUIREMENTS

- » Electrification
- » Multi-Part-Integration
- » Higher content of recycled material



ArcelorMittal Multi Part Integration™



CHANGES ON THE MARKET AND NEW REQUIREMENTS

➤ *Electrification*

- *Batteries need same type of crash protection as driver/passenger*
- *Weight of the vehicle matters*
- *The reason for the electrification is CO2 footprint*

➤ *Multi-Part-Integration*

- *Requires more formability*
- *More valuable to get rid of spring back*

➤ *Higher content of recycled material*

- *Bigger variation of alloying elements can be expected in the future*
- *More challenging to control and calibrate spring back*
- *Important to have "robust metallurgy"*

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The same requirements that has led to the “first wave” of PH implementations

PH is climate smart – AP&T LCA 2023 and various other analysis

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PH is an example of robust metallurgy, 100% Austenite while forming & 100% Martensite in finished component

CONCLUSIONS LIFE CYCLE ANALYSIS



Usibor® 1500 AS150 makes BIW more sustainable
Press hardening steel (PHS) can further improve CO₂eq performance

ArcelorMittal Sustainability
Department Study



Hot Stamping process
+0.043 kg CO₂eq/component

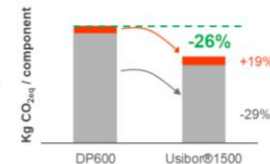
Reduced weight + increased material utilization rate
-0.921 kg CO₂eq/component

PHS solutions can be less CO₂ intensive than cold stamping solutions, despite a more CO₂ intensive process, thanks to maximum light weight + minimum engaged material.
 Usibor®1500 AS with XCarb® recycled and renewably produced substrate will further strongly improve the CO₂eq savings at the part level.

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Coated PHS history
February 20th 2023

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Life Cycle Assessment
dash panel cross member



ArcelorMittal

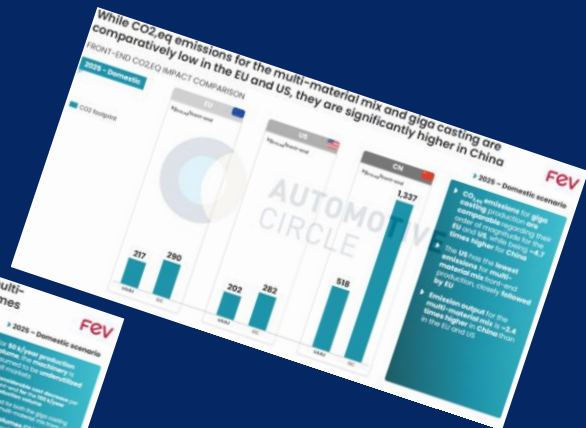
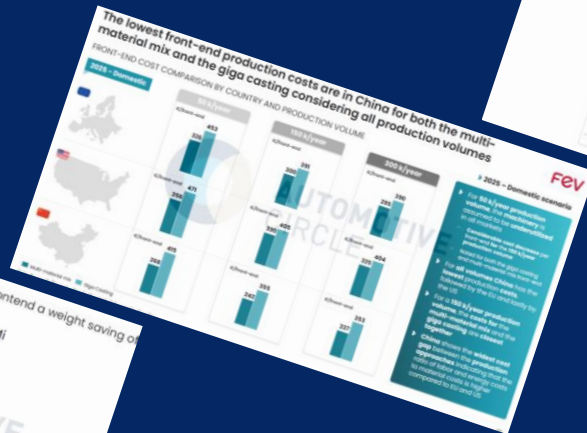
- » *Press-hardening is a climate efficient technology*
- » *Advantage compared to cold forming*
 - *Material saving alone will justify the process*
 - *Vehicle use cycle will multiply the impact*

APT
&

AP&T® MPI – Comparison HPDC, Weight / Cost / CO₂

Re-created after Citation: Car Body Parts – Materials and Forming Processes 2025

Christian Kurten, FEV, Dr. Hagen Wegner, FEV, Prof. Thilo Röth



**PRODUCTION LINE SOLUTIONS FOR
PRESS HARDENING
OF LARGE INTEGRATED
COMPONENTS**

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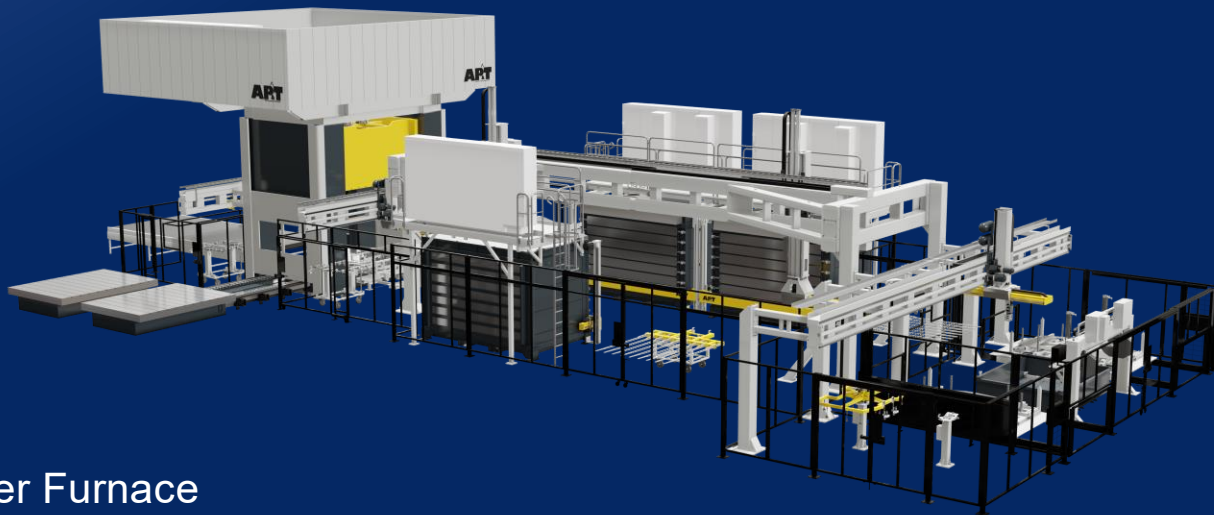


AP&T[®] SkyLines

Great lines for large parts



AP&T® SKYLINES – GREAT LINES FOR LARGE PARTS



- » AP&T Multi-Layer Furnace
- » AP&T® Servohydraulic Press
- » AP&T SpeedFeeder® (Automation)

AP&T® SKYLINES – GREAT LINES FOR LARGE PARTS

**ONE
RESPONSIBLE
PARTNER®**



AP&T® SKYLINES – MULTI-LAYER FURNACE

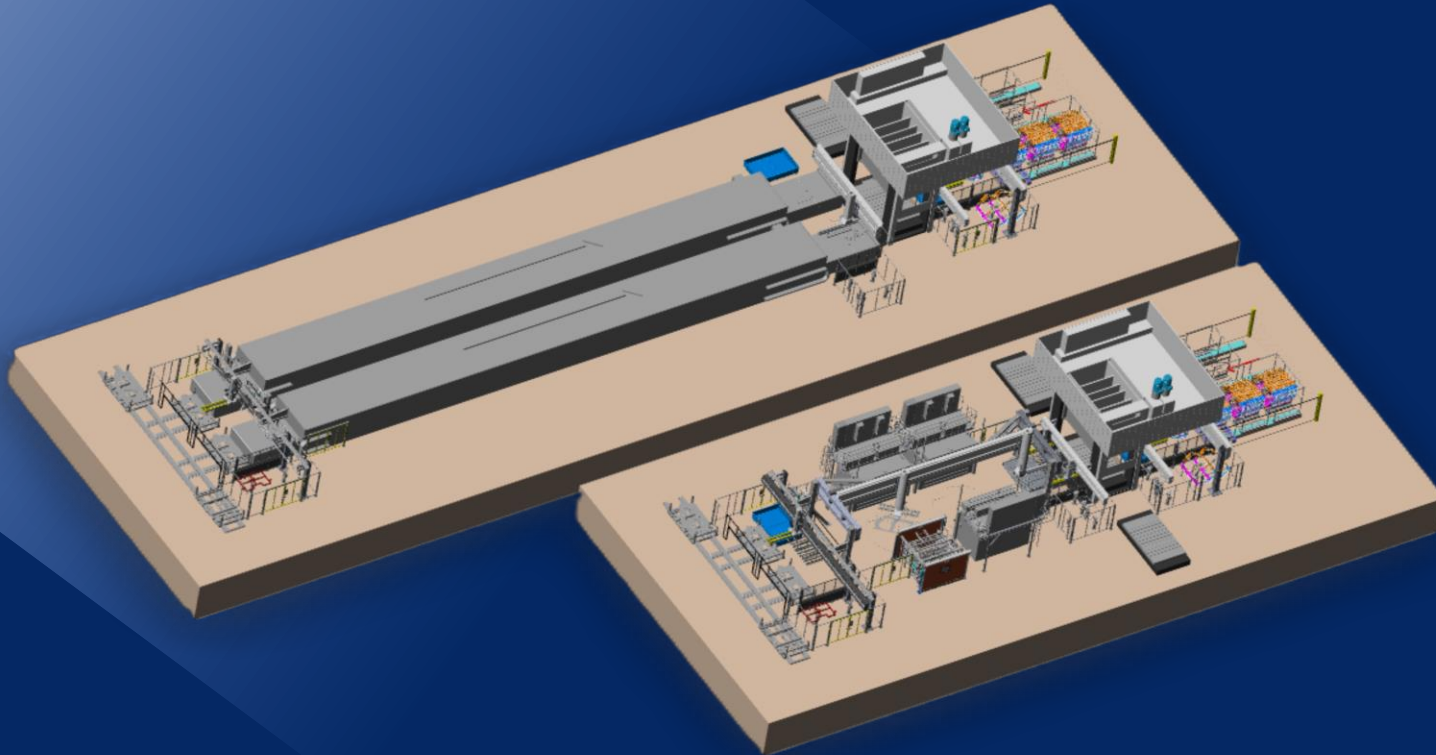
- » Space
- » Redundancy
- » Not sensitive AlSi build up
- » Energy
- » Scales well in width
- » Not sensitive to blank distortion



TEMPERBOX® – MULTI-LAYER FURNACE



AP&T® SKYLINES – MULTI-LAYER FURNACE SPACE SAVINGS



AP&T® SKYLINES – GREAT LINES FOR LARGE PARTS

MODULAR

**ENERGY
EFFICIENT**

**SPACE
EFFICIENT**



FLEXIBLE

REDUNDANT

SCALABLE



GDIS



aptgroup.com