



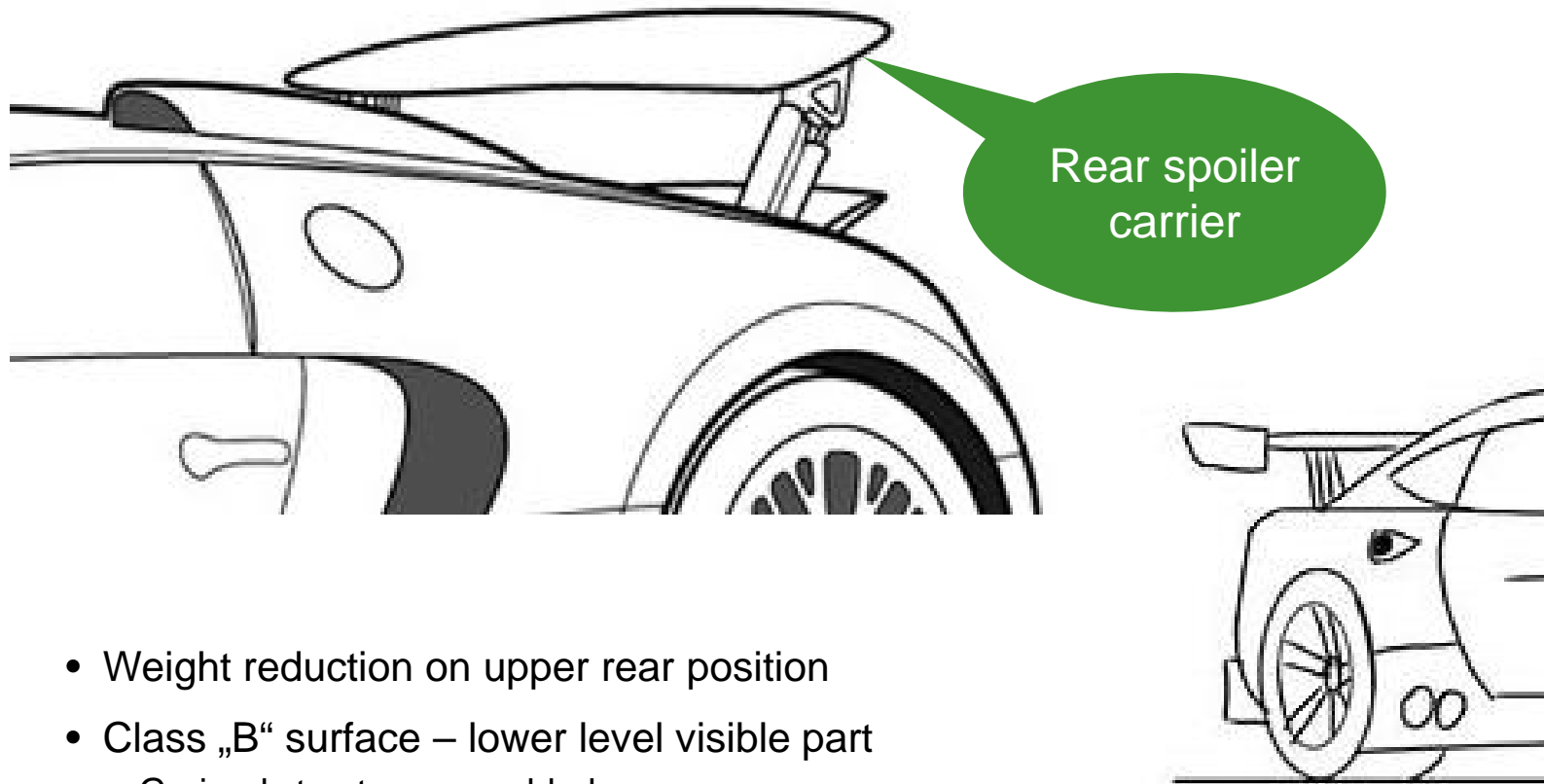
Microcellular Foaming Technology

5 i hca chj Y F YUf Gdc]`Yf Ai 7 Y` WUgY ghi Xm

Markus Betsche

Febr 26, 2018

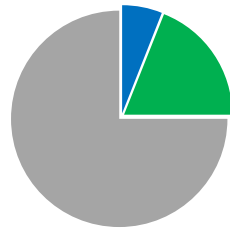
7 Ugy ghi Xm F YUf gdc]`Yf WUff]Yf



- Weight reduction on upper rear position
- Class „B“ surface – lower level visible part
 - Grained structure as molded

5 i hca chj Y FYUf Gdc]Yf

A UYfIU. PA 6 GF 35



■ Density ■ Design

- Weight reduction by applied design + foaming
- Free of sink marks and reduced warpage
- Less clamp force requirement
- Improved appearance with adjusted resin

Ai 7 Y`ü 5W]Yj Ya Ybh

Total Weight Reduction

24%

Cycle time reduction

14%

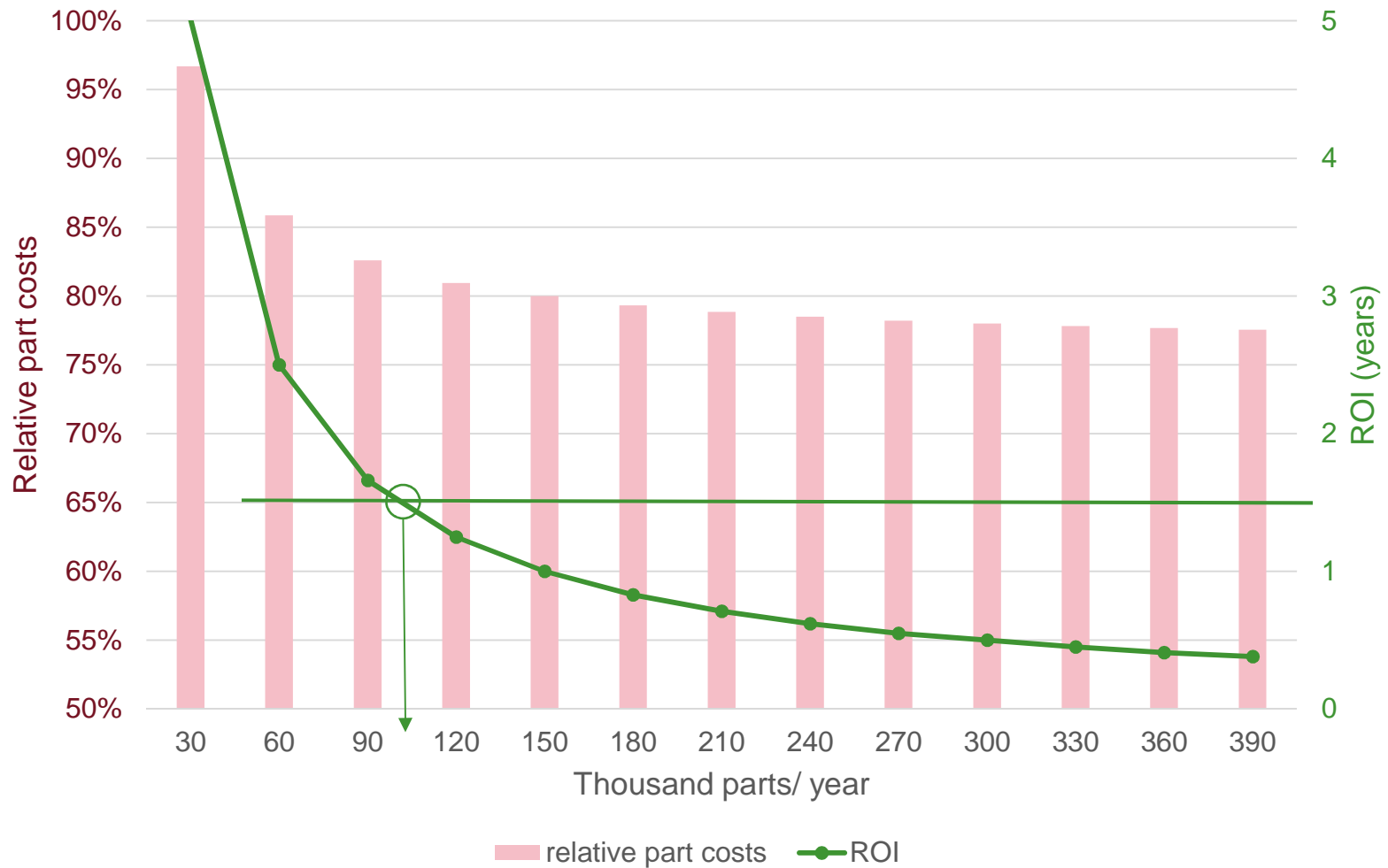
Clamping force reduction

23%

MuCell case study details

- Shot weight MuCell 1000 g
- Part dimensions (LxWxH) ca.1150 x 200 x 40 mm
- Wanddicke MuCell ca. 1,8 mm
- PA 6 GF 35 3,2 €/kg
- Machine size 1000 t
- MuCell cycle time ca. 45 s
- Mold design 1 cavity
- Mold filling cascade
- Total MuCell investment 200.000 €
- MuCell production capacity at 5600h 450.000 parts/ year

Part costs & ROI over parts per year case study MuCell spoiler



SummUry

Case study - rear spoiler carrier

- Investment payback at 100.000 parts produced/ year
 - ROI in 1,5 years at only 25% machine load!
 - Savings in second year ca. 65.000 €
 - Savings in third year ca. 130.000 €
 - **Total savings in 3 years ca. 200.000 €**

- Investment payback at 400.000 part/year (100% load)
 - ROI in 4 month at 100% machine load!
 - Savings in first year ca. 400.000 €
 - Savings in second year ca. 600.000 €
 - Savings in third year ca. 600.000 €
 - **Total savings in 3 years ca. 1.600.000 €**