

SERVICE OVERVIEW: **ENGINEERING**

Competence field: Mobility-Engineering

Competence field: Mobility-Engineering

ENGINEERING

Range of services
Feasibility Analysis
Drawing systems
Method planning

Forming simulation
Design
Systems

IDEAS SHAPE PRODUCTS

Klaus-Dieter Leis
August 2019

Our work begins with your visionary product idea. In this development stage, our experts dedicate themselves to planning the process and concept. We turn ideas into reality.

RANGE OF SERVICES

OVERVIEW

Our range of services encompasses the skin and visible parts, structural parts for e.g. BIW, platform, chassis and axles, transfer (mechanically or manual) and progressive, cold forming, sheet metal of any thickness (from soft to high strength) and aluminum.



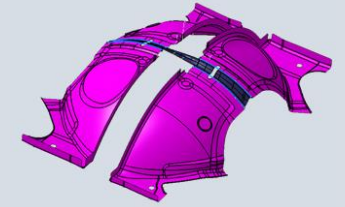
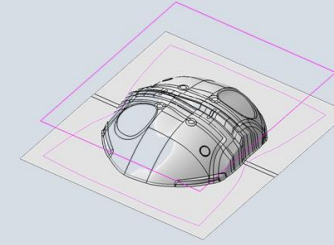
01

FEASIBILITY ANALYSIS

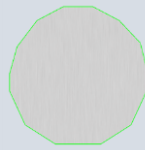
SERVICES

To begin with, we develop rough methods and manufacturing concepts. We test feasibility and, if necessary, develop any necessary changes to the component. The next step is to concentrate on identifying the material utilization, blank development and nesting, press study, production time optimization, the representation of investing costs and change management.

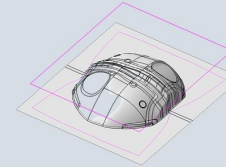
PRODUCTION TIME OPTIMIZATION



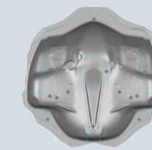
CREATION OF MANUFACTURING CONCEPTS



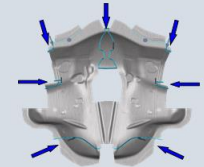
OP 10
Blank cutting



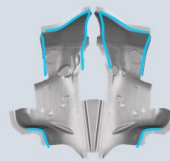
OP 20
4-fold manufacturing



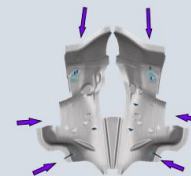
OP 30
Cutting and punching



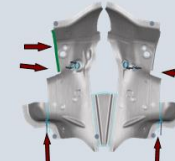
OP 40
Cutting



OP 50
Finish moulding and calibration



OP 60
Punching with cam



OP 70
Reshaping, cutting, punching, double part separation



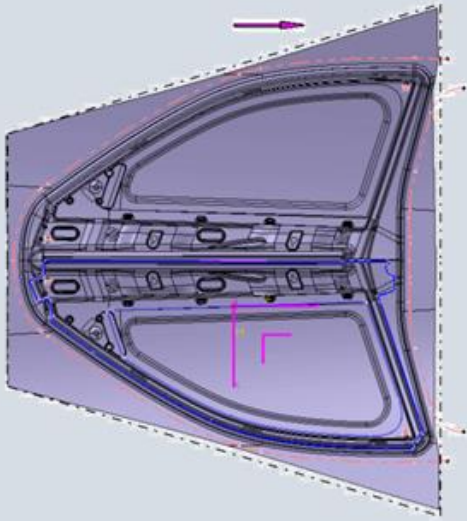
DRAWING SYSTEMS

SERVICES

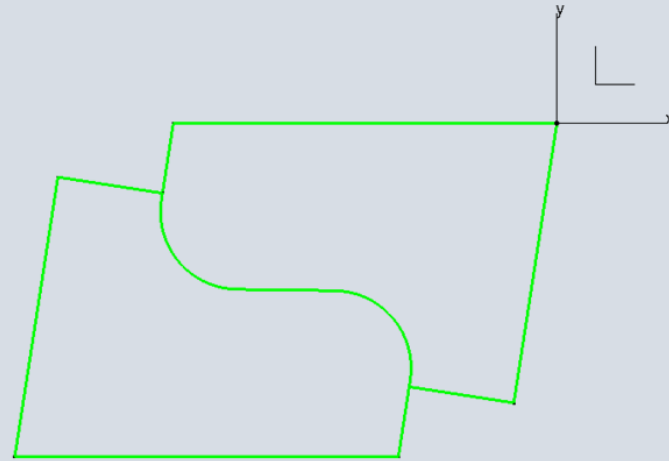
We develop drawing systems and variations, and we optimize and develop the blank accordingly, as well as nest them for you. That is how we achieve optimum material usage.

02

DRAWING SYSTEM DEVELOPMENT



NESTING OF THE BLANK



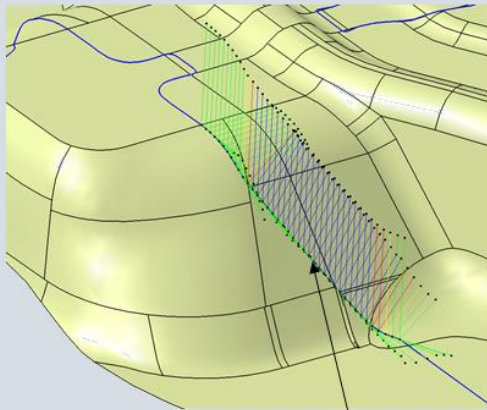
03

METHOD PLANNING

SERVICES

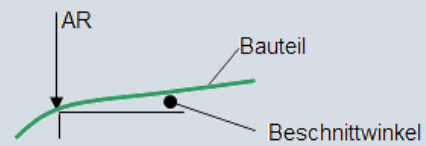
Method planning encompasses designing CAD method plans (2D and 3D) as well strip layouts for progressive dies. We also perform CAD iteration and installation space examinations, as well as cutting analyses.

TRIMMING ANALYSIS



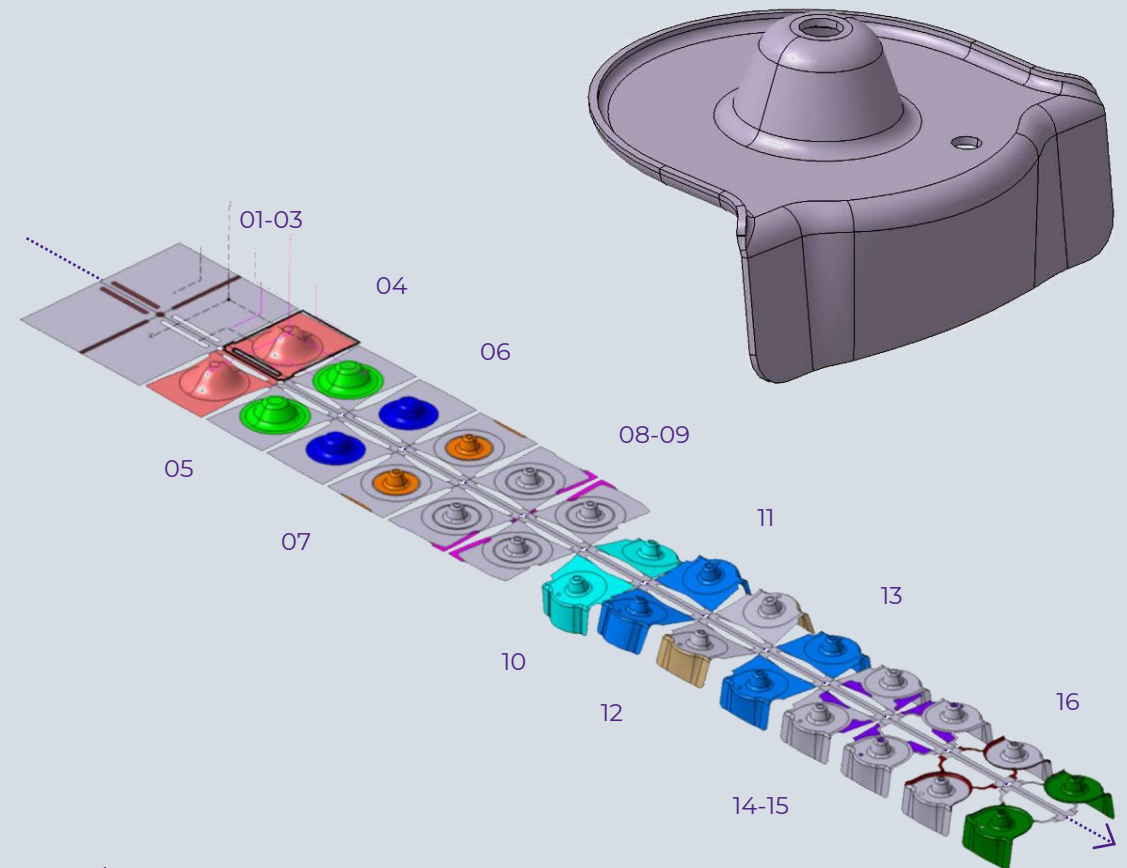
max. 26.4°

Trimming angle on the drawn part (OP20)



Legend:
green till 10°, yellow till 15°, red till 20°, blue over 20°, blunt or pointed

CREATION OF THE STRIP LAYOUTS FOR PROGRESSIVE DIES



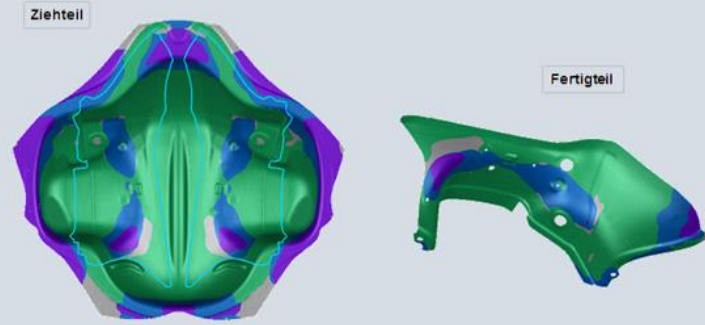
Legend:
01-03 Blank cutting; 04 forming; 05 forming; 06 forming, 07 forming and trimming; 08-09 trimming; 10 placing aside; 11 folding; postforming; 13 folding; 14-15 trimming + punching; 16 lifting; 17 cutting

FORMING SIMULATION

SERVICES

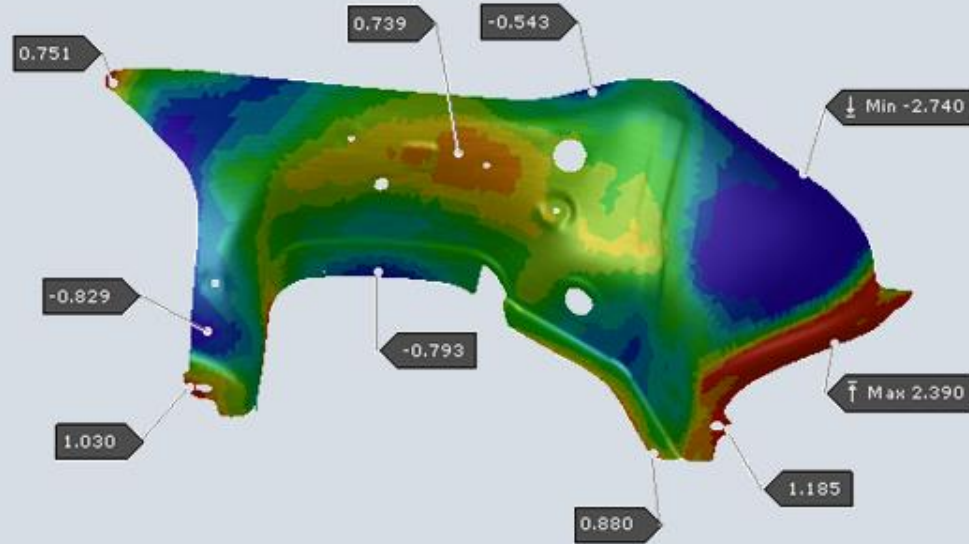
This is where we analyze all forming operations include the springback of your part design. We also make improvements to the series process in order to save even more material and optimize the cycle time.

04



ANALYZE OF ALL FORMING OPERATIONS

SPRINGBACK ANALYSE



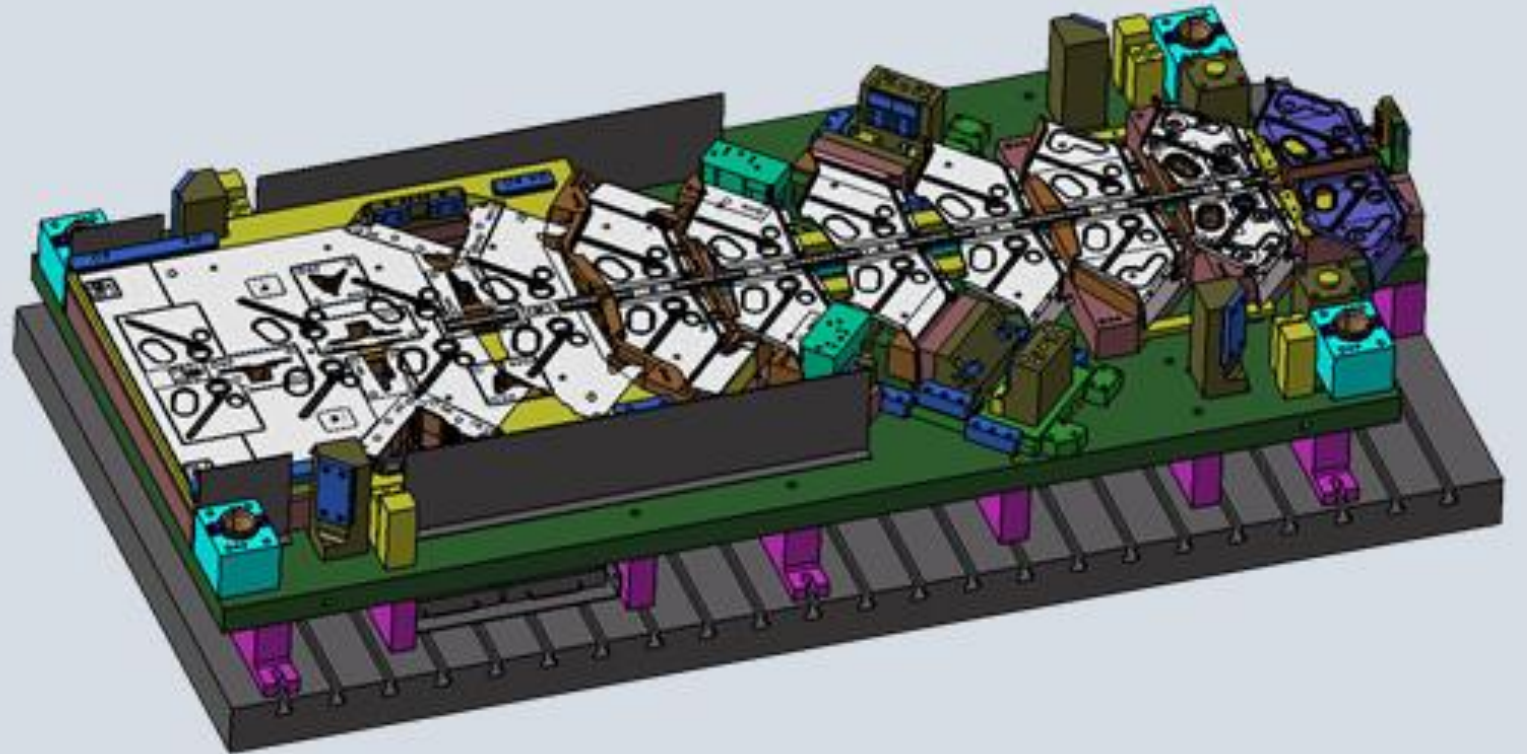
05

DESIGN

SERVICES

We supervise the design process. This includes detailed design reviews according to customer guidelines and implementing change management.

**DESIGN REVIEW ACCORDING TO CUSTOMER
GUIDELINES**



SYSTEMS

SERVICES

We use CATIA V5 and AutoForm for the design and manufacturing process. Both of these programs are among the preferred software solutions in the automotive industry, and are used by numerous automobile- & material manufacturers and suppliers.

06

CONTACT

IPMA Projectmanagement Monitoring & Assistance GmbH
D-38440 Wolfsburg | Tischlerstraße 3 | www.ipma-group.com

COPYRIGHT

The contents of this presentation are the intellectual property of IPMA Projectmanagement Monitoring & Assistance GmbH and are subject to the applicable copyright laws. Any unauthorized use or duplication as well as any transfer to third parties is not permitted or requires the agreement of IPMA.