

Tailored Coils – A New Process to Further Expand Tailored Applications

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TWB Company L.L.C.



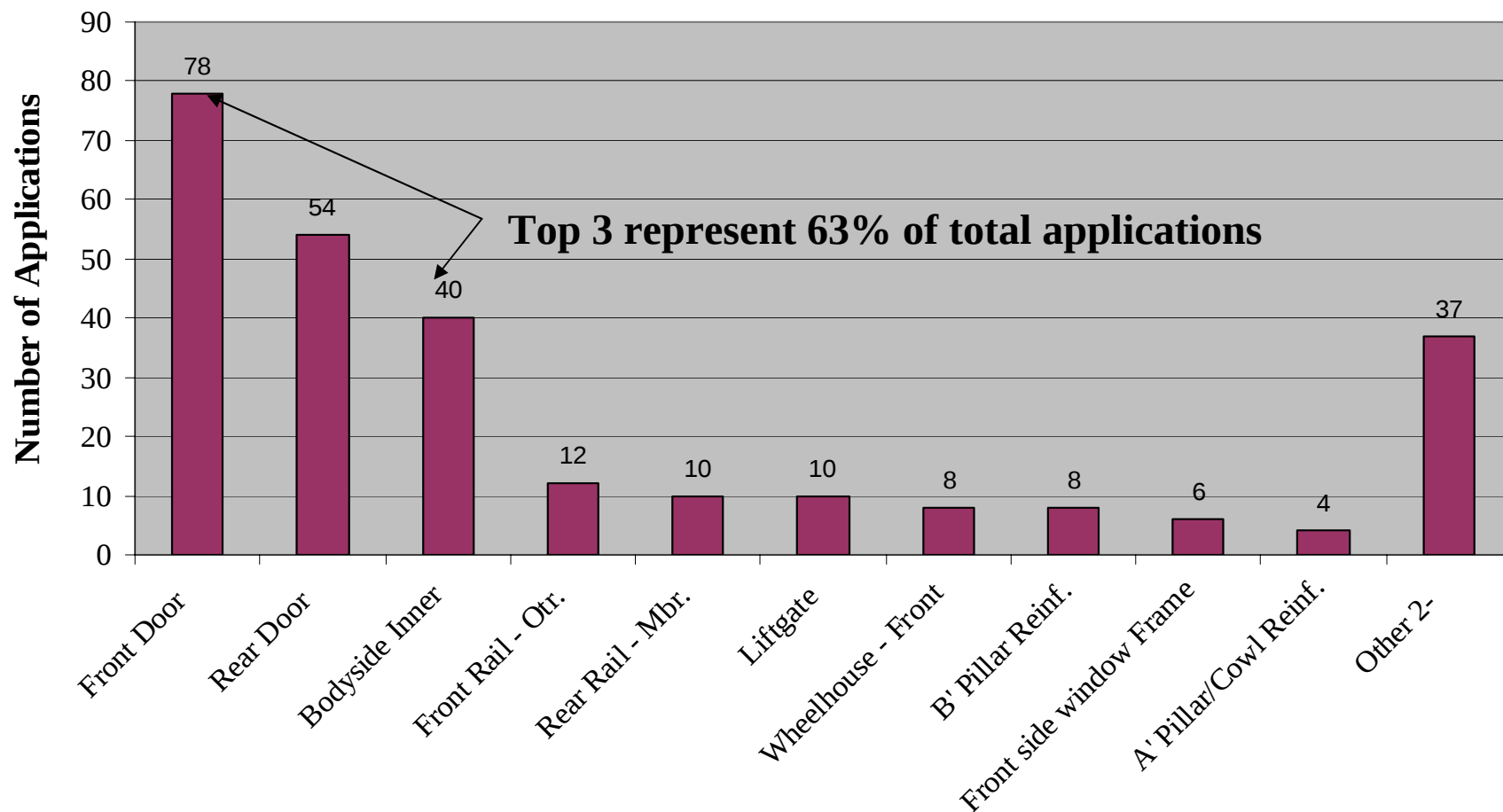
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- A large, faded, light blue image of a car headlight serves as the background for the slide.
- **Automotive Market Drivers**
 - **Process Introduction**
 - Definition
 - Capability
 - Benefits
 - **Process Flexibility**
 - Multi-Strip
 - Forms of Delivery
 - Materials
 - **Quality Assurance**
 - **Process Impact to Customer**
 - Automotive Applications
 - Roll Forming and Stamping
 - **Prototype Applications**

Customer Concerns

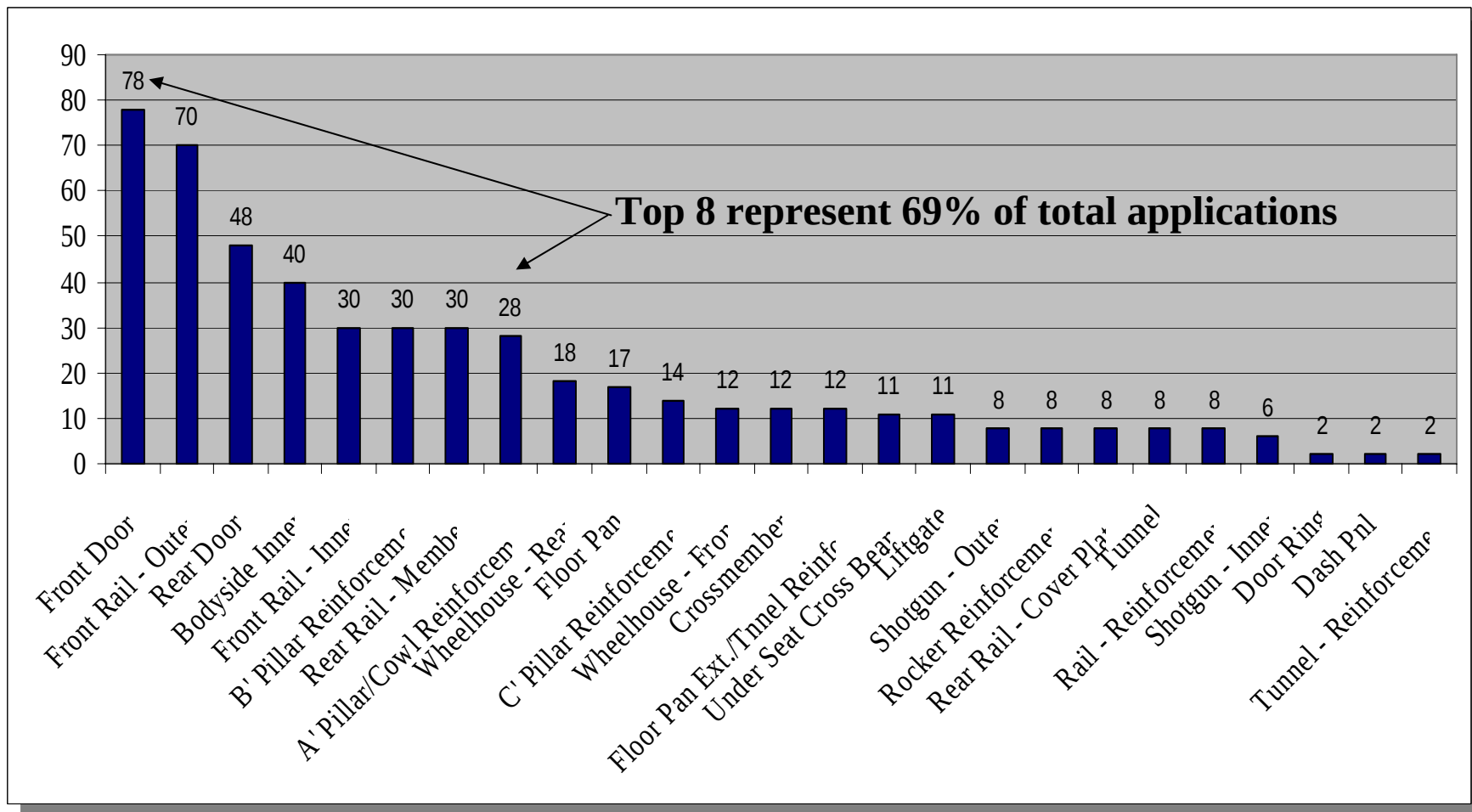
- Increase in Fuel Costs
- Increase in CAFE
- Reduce Manufacturing Costs
- Increase Occupant Safety Requirements
- Improve Vehicle Dynamics

Tailored Solutions Provide

- Weight Reduction
- Improved Fuel Economy
- Reduced Emissions
- Improved Crash Worthiness
- Reduced Investment
- Reduced Variable Cost

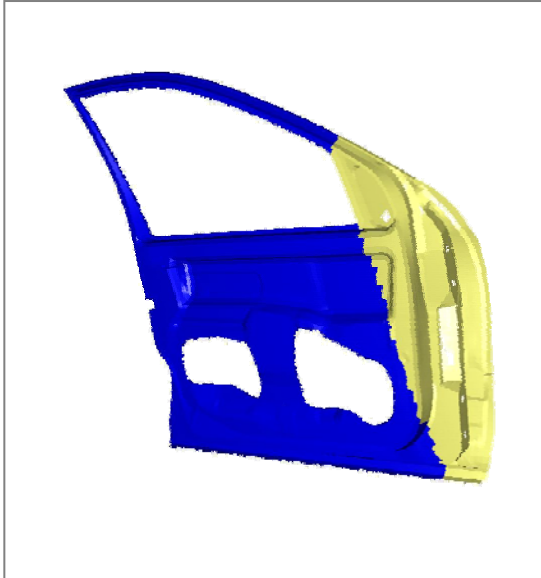


EUROPEAN AND ASIAN APPLICATIONS



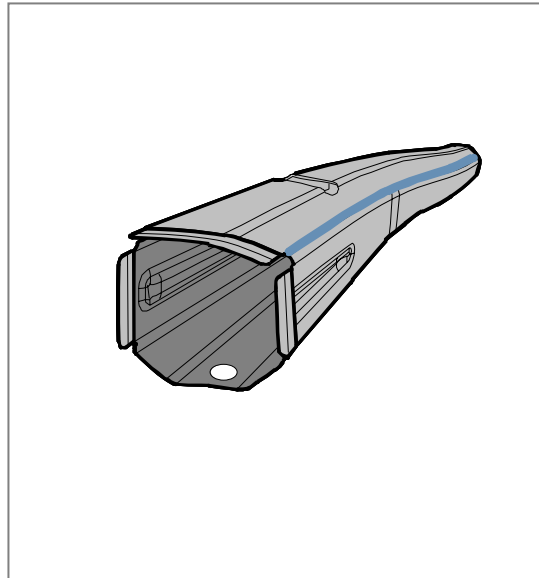
EVOLUTION OF TAILORED PRODUCTS

Transfer Press Applications



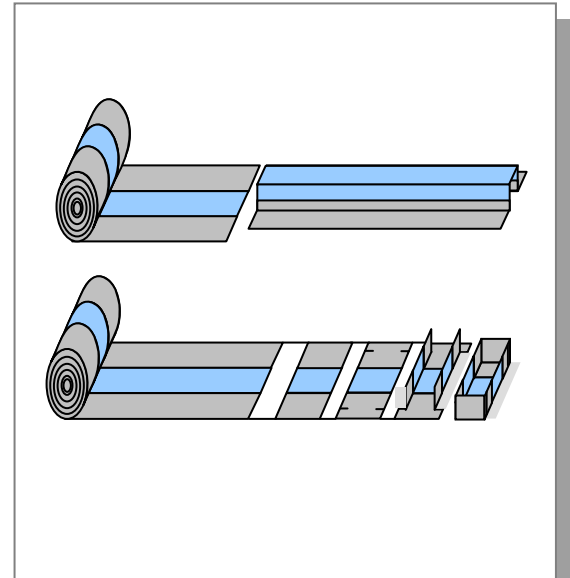
Tailor Welded Blanks

Hydroform Applications



Tailor Welded Tubes

Prog Die & Roll Form Parts



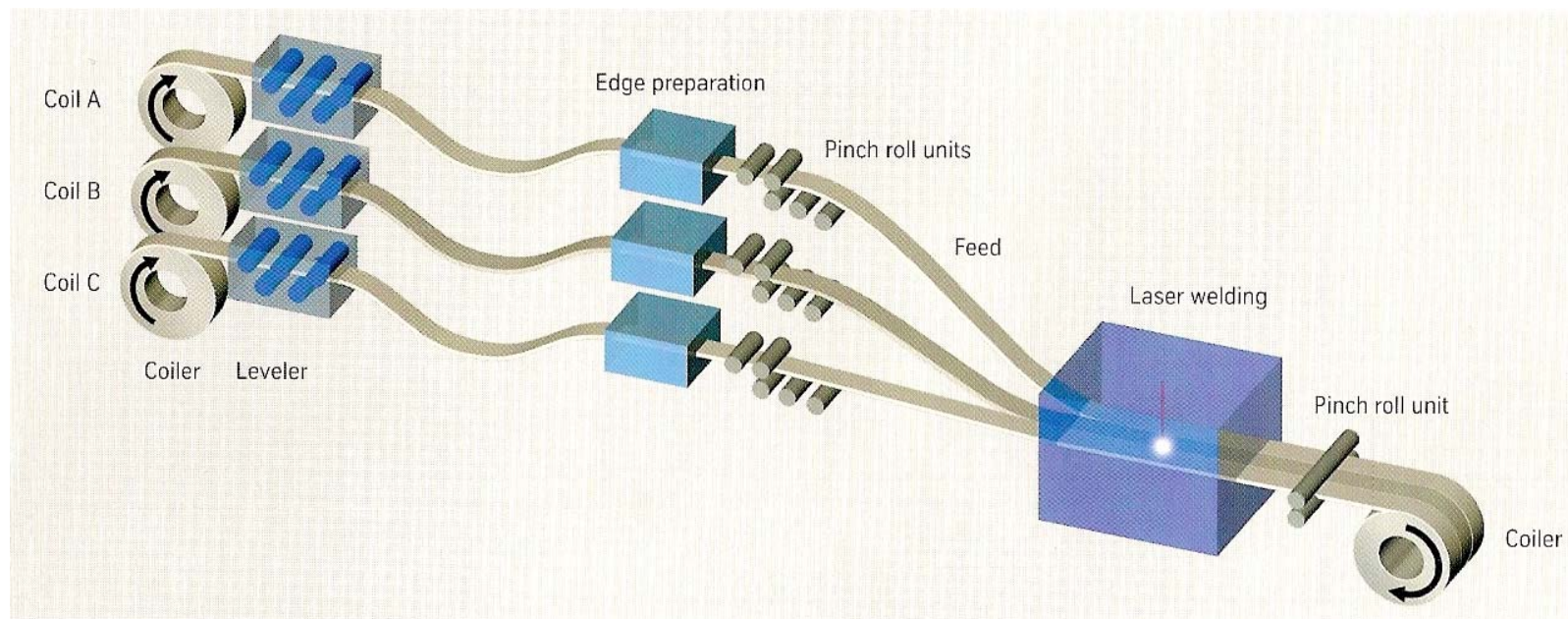
Tailor Welded Coils

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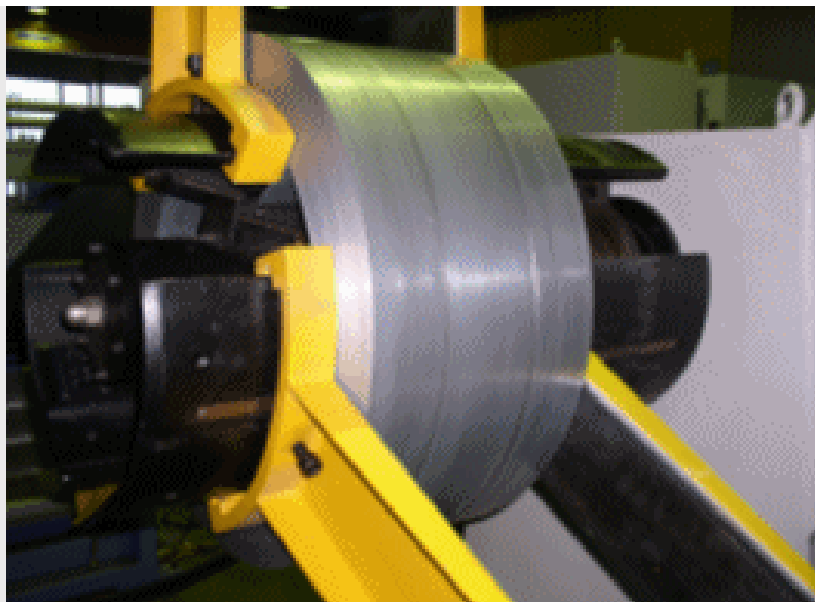


- Two or more COILS of steel that are continuously laser welded.
- Laser welding direction is parallel to the rolling direction
- Material combinations may vary in any combination of gage, grade, and/or coating.
- Material delivered in coil for progressive die and roll form applications





Tailored Coil



Process Advantages

- Enables Roll Forming & Progressive Die Applications
- Mass Reduction
- Investment Reduction
 - Tooling
 - Fixtures
 - Containers/Racks
- Variable Cost Reduction
 - Stamping
 - Assembly
 - Logistics
- Reduced Dimensional Variation
- Fit and Finish Improvements

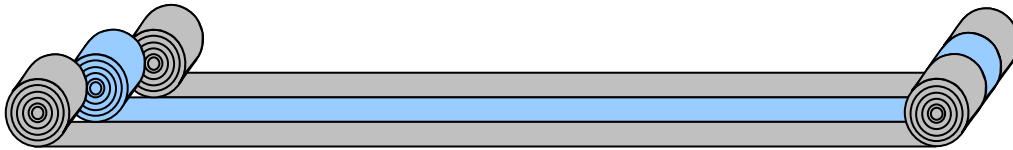
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- A faded background image showing a close-up of a car's wheel and suspension components.
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Tailored Coil

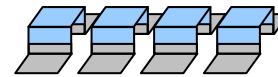
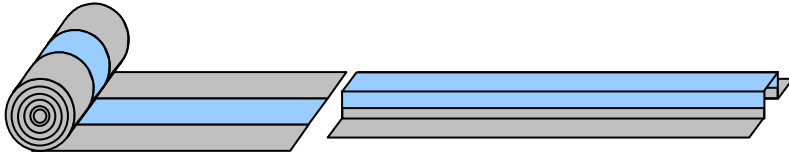


Line Capability

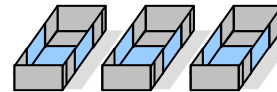
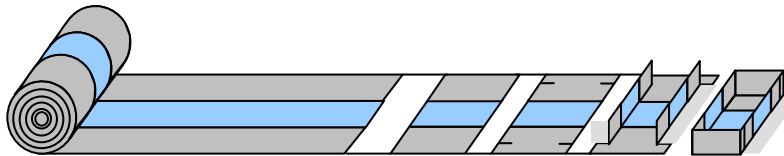
- 2 or 3 coil capability
- Multiple steel grades
 - Mild Steel
 - HSLA
 - Dual Phase
 - Stainless
- Current Coil
 - Width - 50mm to 1200mm
 - Thickness - 0.6 mm to 3.0 mm



Coil to Coil



Coil to Roll Form



Coil to Progressive Die

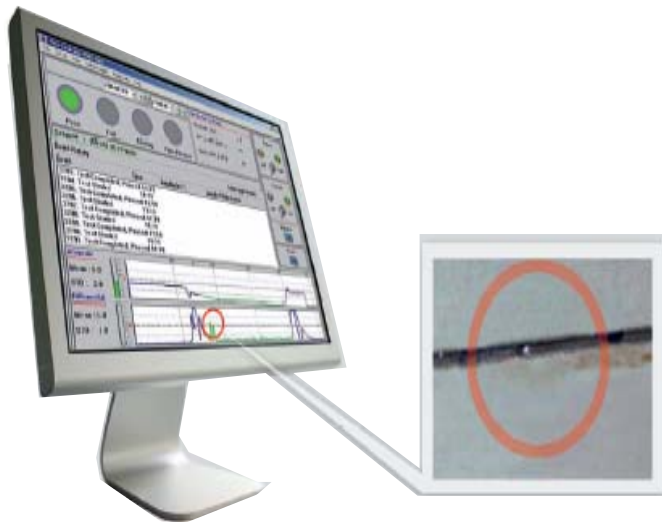


Material	IF	HSLA 350	DX 56	DP Stainless 600	DP Stainless 800	DP Stainless 1000	STAINLESS STEEL
IF	X	X	X				X
HSLA	X	X	X				X
DX 56	X	X	X				X
DP Stainless 600				X	X	X	
DP Stainless 800				X	X	X	
DP Stainless 1000				X	X	X	
STAINLESS STEEL	X	X	X				X



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Integrated Systems Output

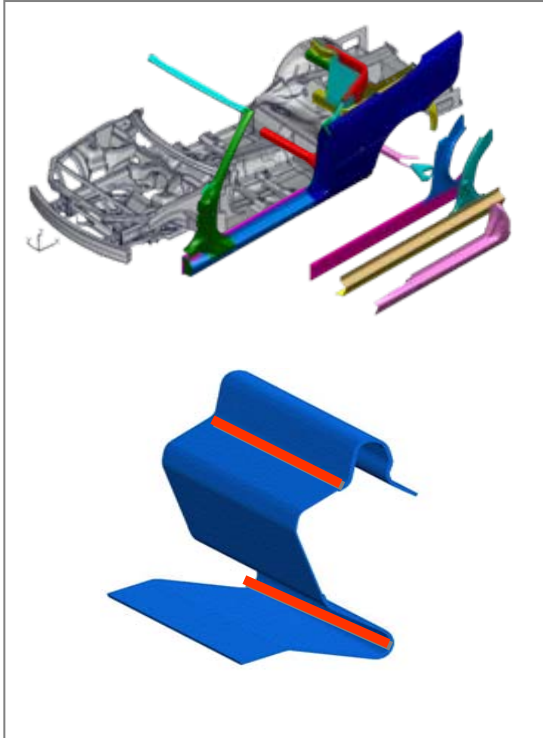


Coil Mapping

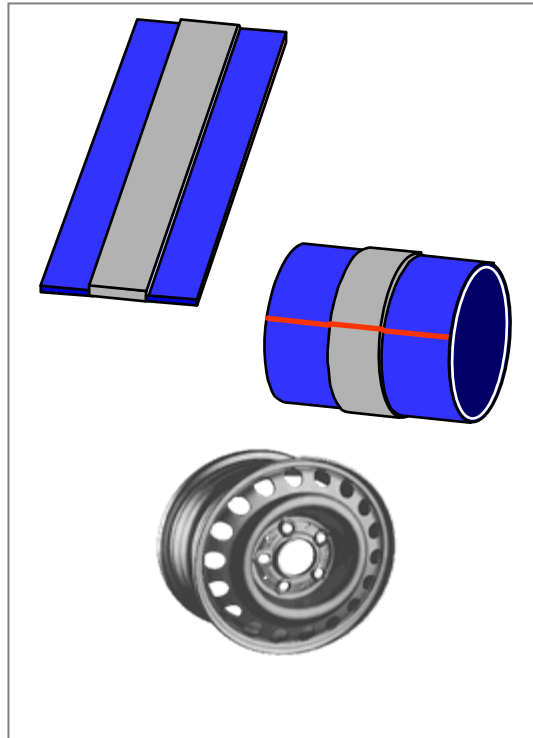


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- A faded, light blue background image of a car wheel, showing the spokes and the tire, positioned behind the agenda list.
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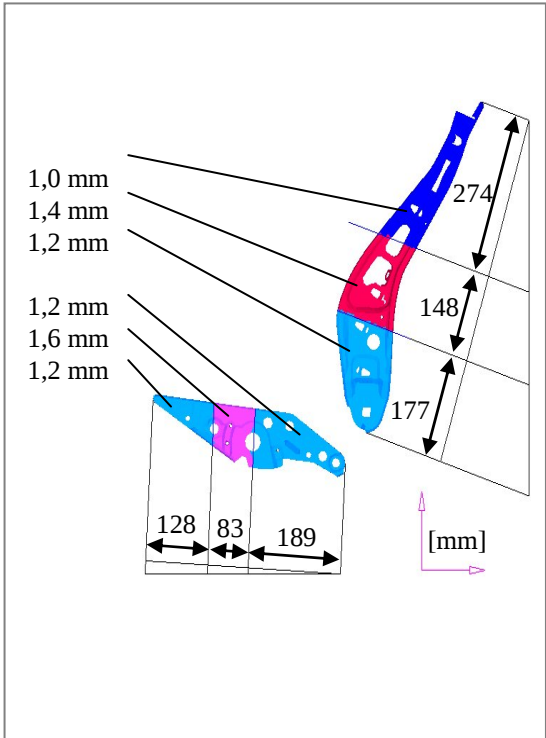
Roll Form Rocker Panel

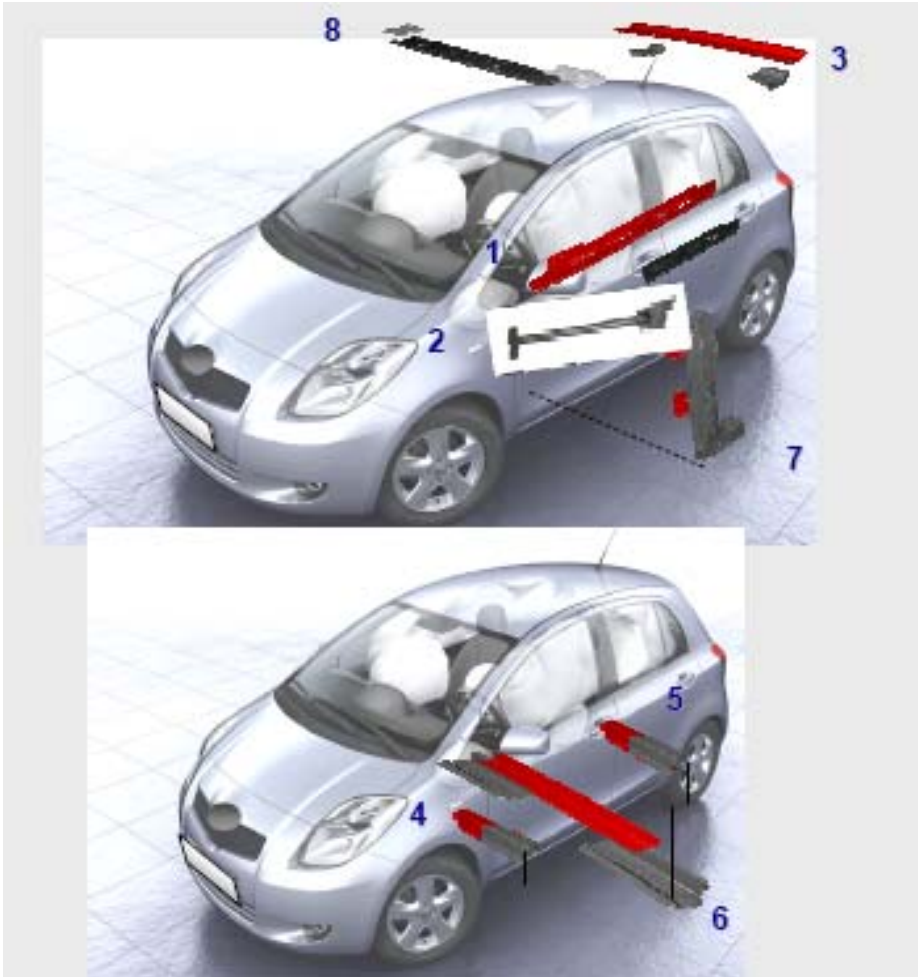


Steel Wheels



Stamped Seat Supports





1. Door Belt Reinforcement
2. Reinforcement - Side Intrusion
3. Liftgate Reinforcement w/Hinge Supports
4. Front Seat Cross Member
5. Rear Seat Cross Member
6. Floor Cross Member – Below Floor Panel
7. Pillar Reinforcement w/Hinge Supports
8. Roof Cross Member



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SIDE RAIL PROGRESSIVE DIE APPLICATION

2 Coil Example



t=1.0mm

w=324.5

t=0.7mm

w=324.5

3 Coil Example



t=0.7mm

w=200mm

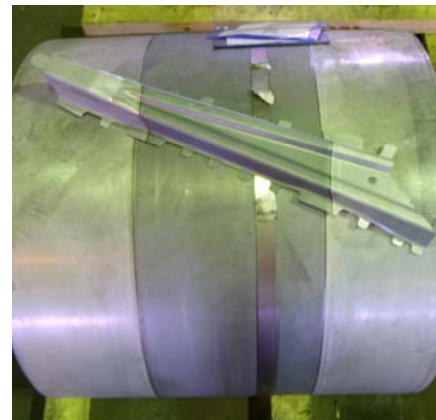
t=1.0mm

w=269mm

t=0.7mm

w=180mm

3 Coil Example



t=1.0mm

w=200mm

t=0.7mm

w=269mm

t=1.0mm

w=180mm

ROOF BOW PROGRESSIVE DIE APPLICATION

1st application – Width of 1100 mm

Continuously welding coil lengths over 250 meters

Progressive die trials – very successful

3 welded coils processed – no forming issues

Cycle time – comparable to normal coil



Tailored coils provide engineered solutions for progressive die and roll form applications:

- Weight Reduction
- Improve Fuel Economy
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