

GREAT DESIGNS IN  
**STEEL**

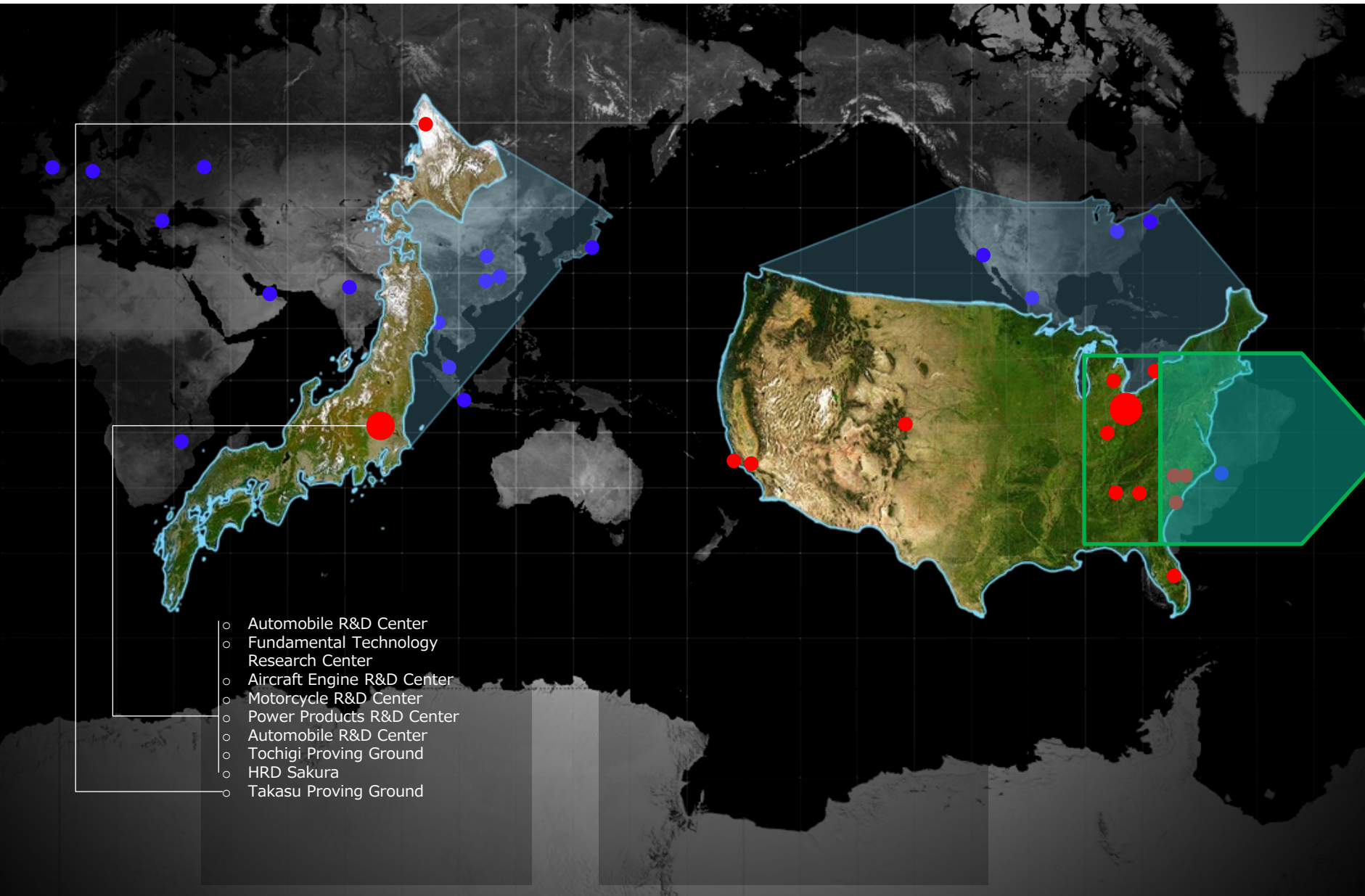
TWENTY YEARS

## 2022 Honda Civic

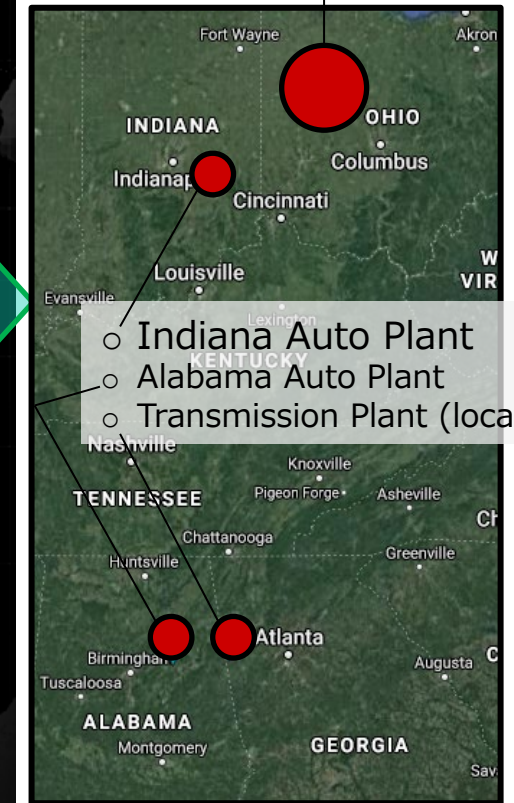
Jill Fuel

Honda Development and Manufacturing of America – Indiana Auto Plant

# Honda Global Presence and US Operations



- North American Auto Development Center
- Manufacturing Management Center
- Marysville Auto Plant
- Performance Manufacturing Center
- East Liberty Auto Plant
- Anna Engine Plant
- Transmission Plant (located in Ohio)



# Honda Development and Manufacturing of America



**Civic Hatchback**



**CR-V**



**Insight**

<b>Location</b>	Greensburg, Ind.
<b>Started production</b>	October 2008
<b>Plant size</b>	2.5 million sq ft
<b>Capital investment</b>	\$1.3 billion
<b>Employment</b>	2,600 associates
<b>Annual capacity</b>	250,000 vehicles
<b>Products</b>	Civic Hatchback CR-V Insight





# Civic Family of Vehicles

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Sedan



Hatchback



Si



Type R



# History and Future of Hatchback

**1st.** 1972



**2nd.** 1979



**3rd.** 1983



**4th.** 1987



**5th.** 1991



**6th.** 1995



**7th.** 2000



**8th.** 2005



**9th.** 2011



**10th.** 2015



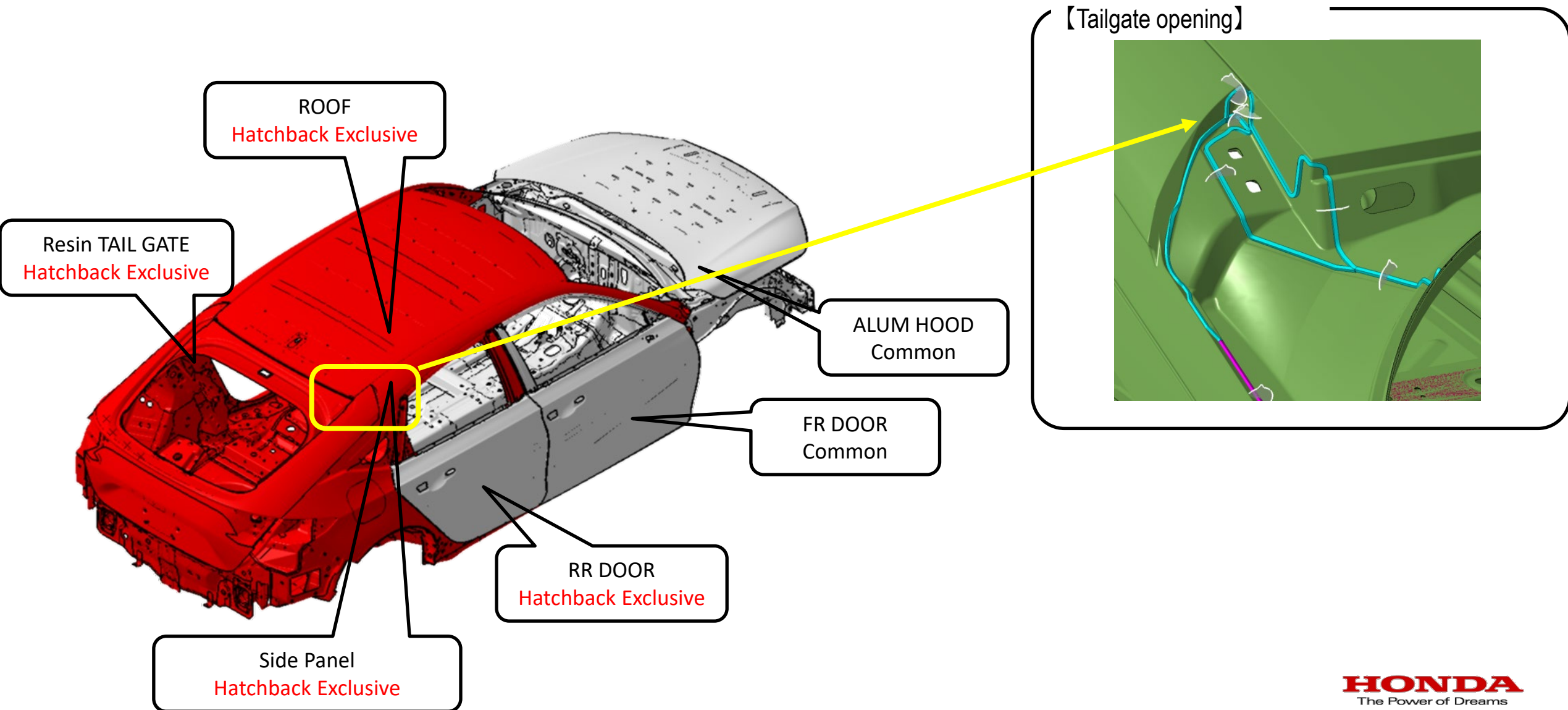
**11th.** 2021



**HONDA**  
The Power of Dreams



# Variation between Sedan and Hatchback

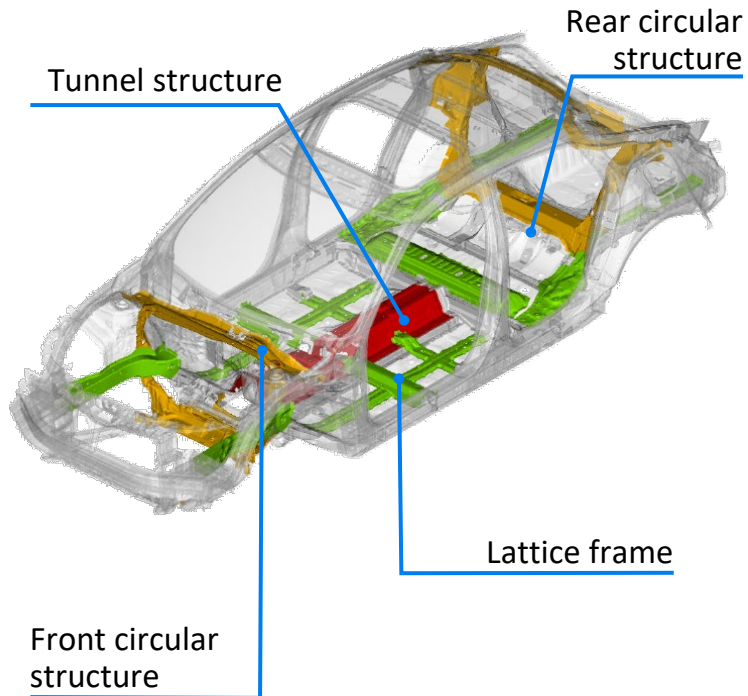


# Civic Structural Improvements

**19% improvement in torsional rigidity and  
17% increase in stiffness to rear suspension mount points**

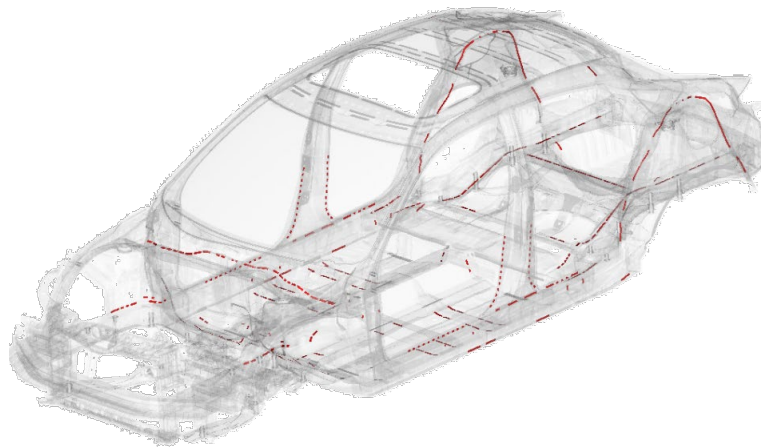
## Structural enhancements

**Rigidity improvements  
in various areas**



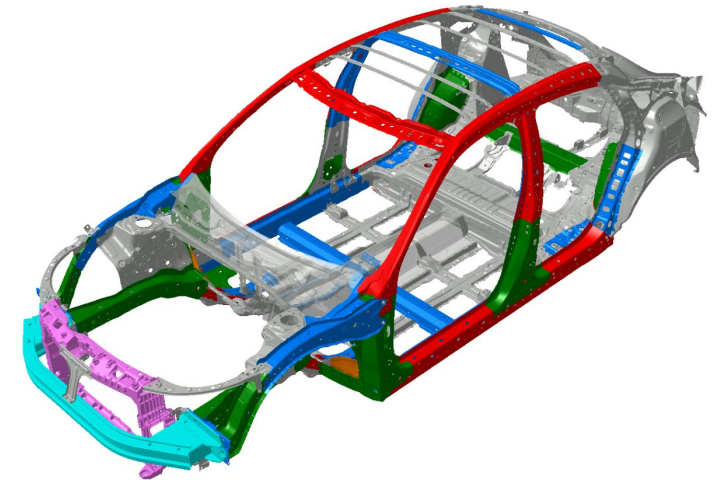
## Advanced adhesives

**10 times more structural adhesive applied  
to critical areas**



## Lightweight metals

**Aluminum and high-tensile  
material applied throughout**



# Civic Structural Improvements

Enhanced Advanced Compatibility Engineering™ (ACE™) body structure will meet future regulations

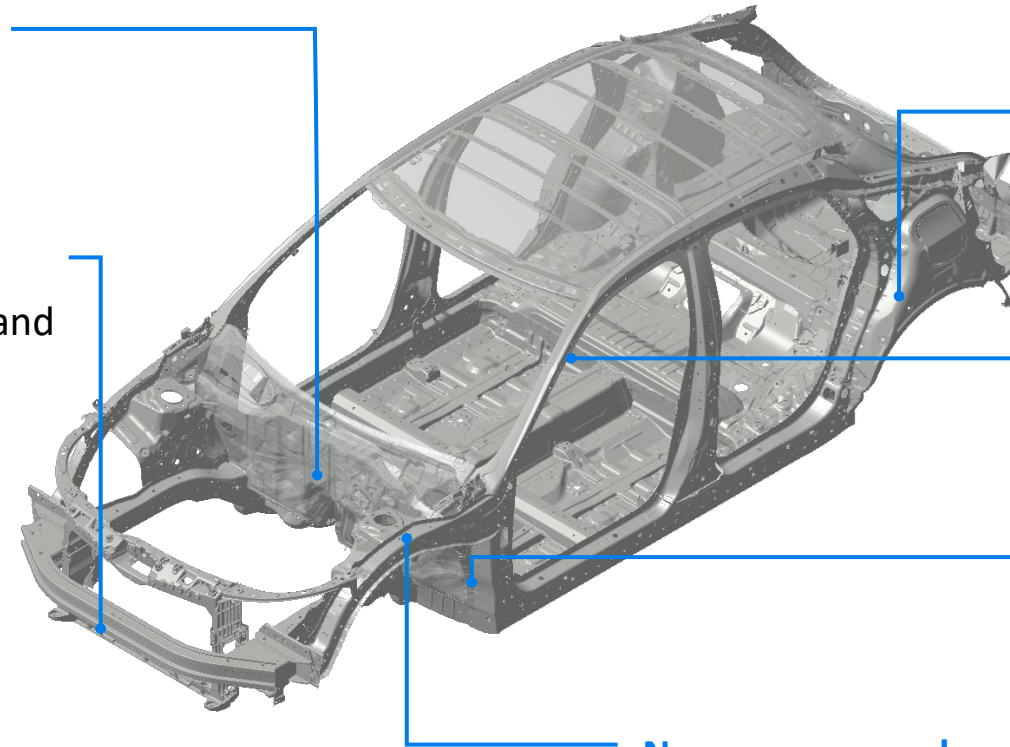
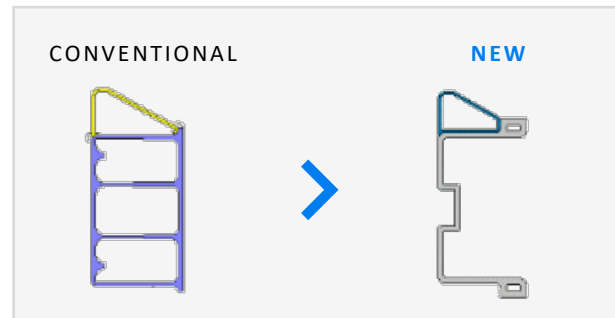
## IMPROVED CRASH COMPATIBILITY WITH LARGER VEHICLES

### New dashboard cross member

Reduces deformation of feet area during collision

### New cross section bumper beam

Minimizes collapse during collision, and allows for a short overhang



### Wheel arch stiffener added

Reduces deformation in side collisions

### New upper pillar design

Reduces cabin deformation

### Reinforced side frame end

Reduces deformation

### New upper member design

Improves energy absorption



# Civic Pedestrian Safety

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Designed to mitigate pedestrian injuries

Head protection enhanced  
with embossed hood

Shock absorption  
for thigh area

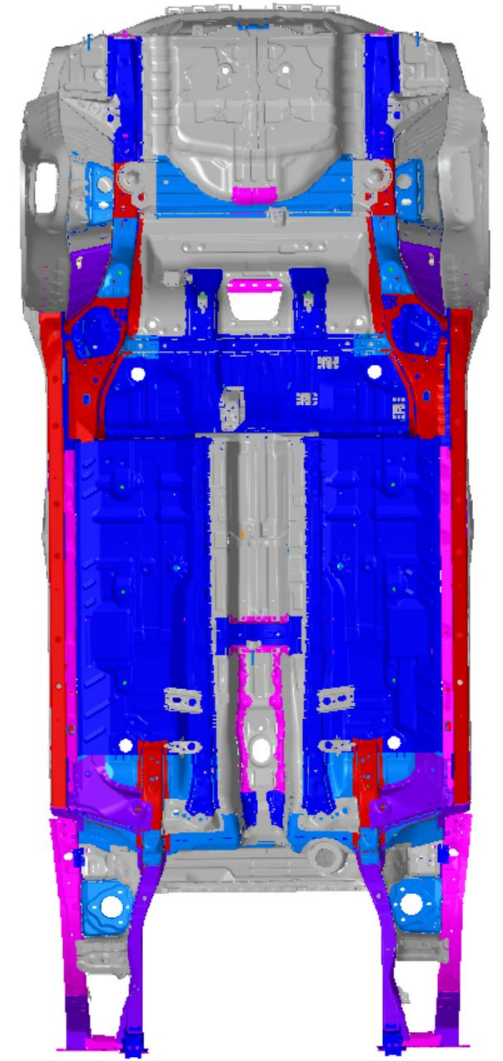
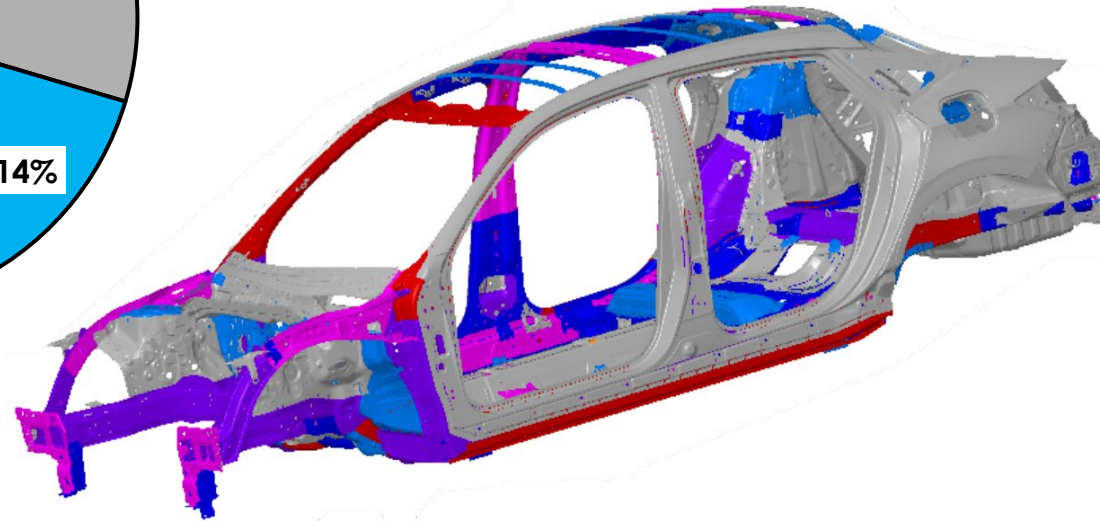
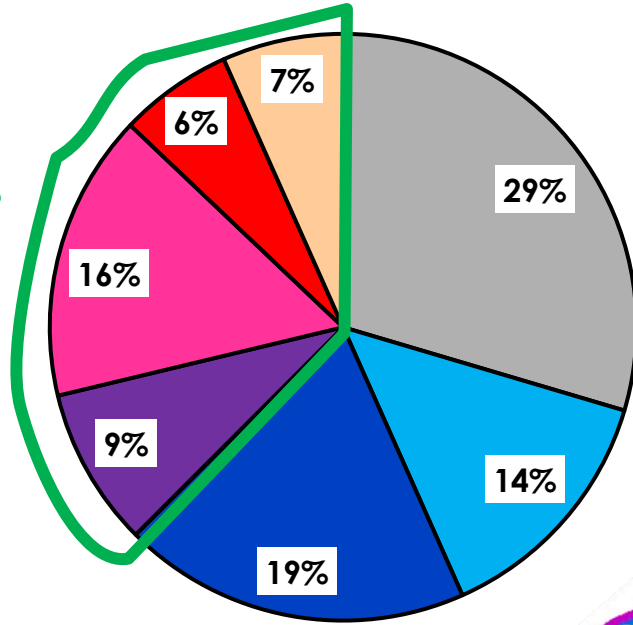
Shock absorption for  
lower leg and knee area



# 2022 Honda Civic Body Structure

Parts %

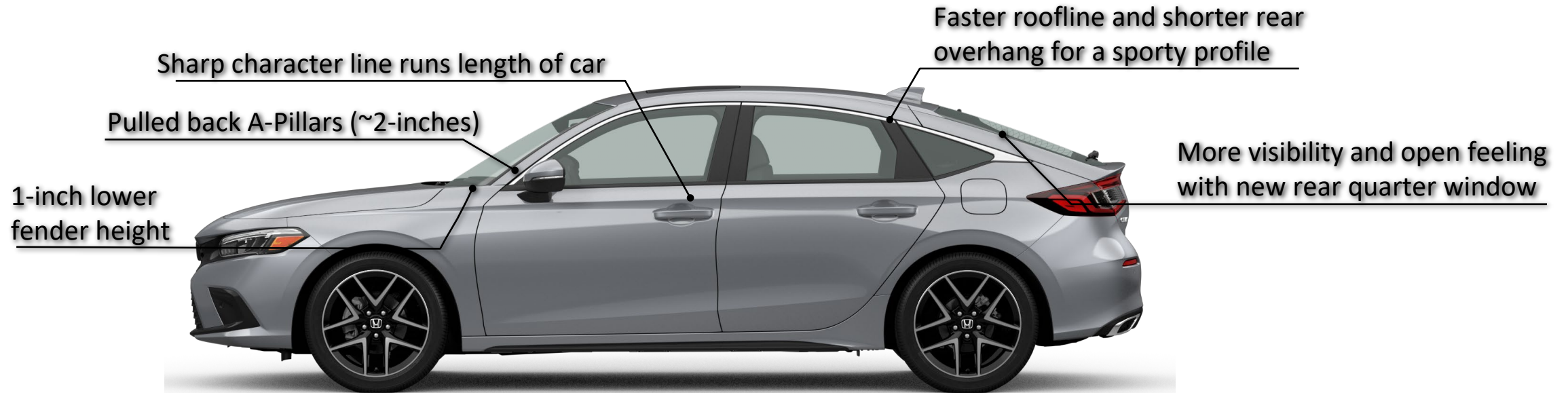
High Strength Steel Areas



- Galvannealed Commercial Steel
- High Carbon Alloy Steel
- Tensile Strength Dual Phase Steel (Hot Rolled)
- High Strength with Excellent Formability (Hot Rolled)
- Advanced High Strength Steel with Formability (Cold Rolled)
- Very High Strength Steel (Cold Rolled)
- Ultra High Strength Steel (Hot Rolled)

# 11<sup>th</sup> Generation Civic Characteristics

Length: 179.8-inches  
Width: 70.9-inches  
Height: 55.7-inches





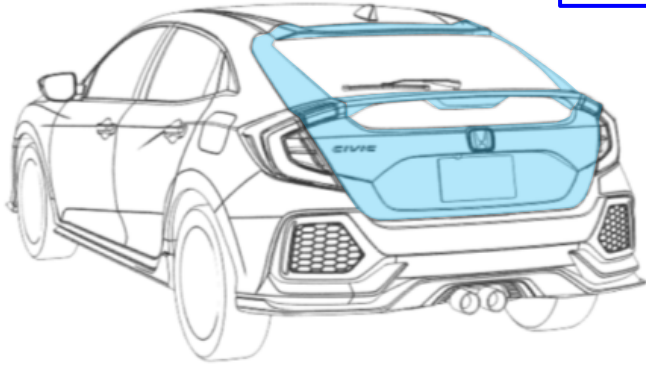
# 11<sup>th</sup> Generation Civic Manufacturing Changepoints



# 11<sup>th</sup> Generation Civic Hatchback Tailgate

## ■ Purpose

**Balance between weight reduction and attractive styling**



### Weight Reduction by 20%

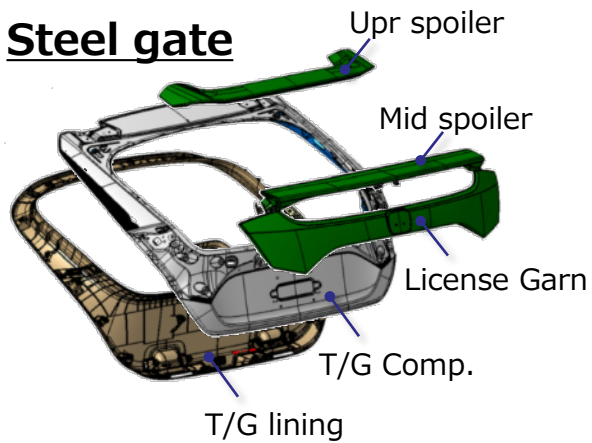
- Fuel efficiency/CO2 impact
- Improved handling with lowering the center of gravity

### Design Quality

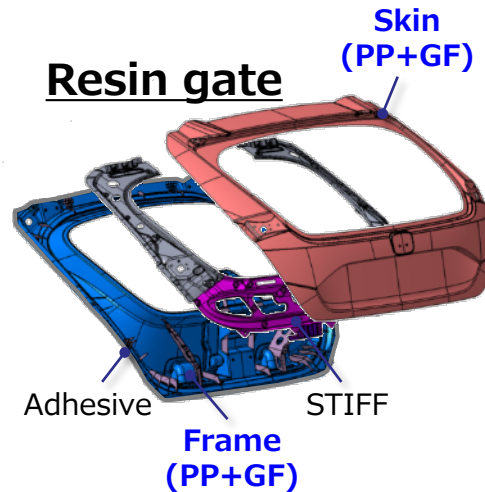
- Actualization of attractive styling by forming
- Seamless design with integrated parts

## ■ Achievement method

### Steel gate



### Resin gate



# 11<sup>th</sup> Generation Civic Characteristics

Strong shoulders and widened rear track emphasize stability

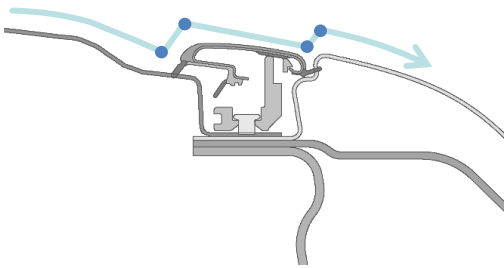
Hemmed rear wheel arches

Laser brazing technology

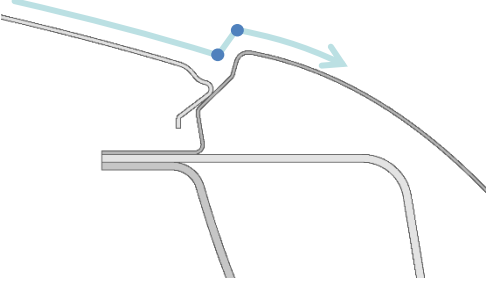


Wide, planted stance  
Wider Track: +0.5-inch

Previous Civic  
Molding



2022 Civic  
Laser Brazing

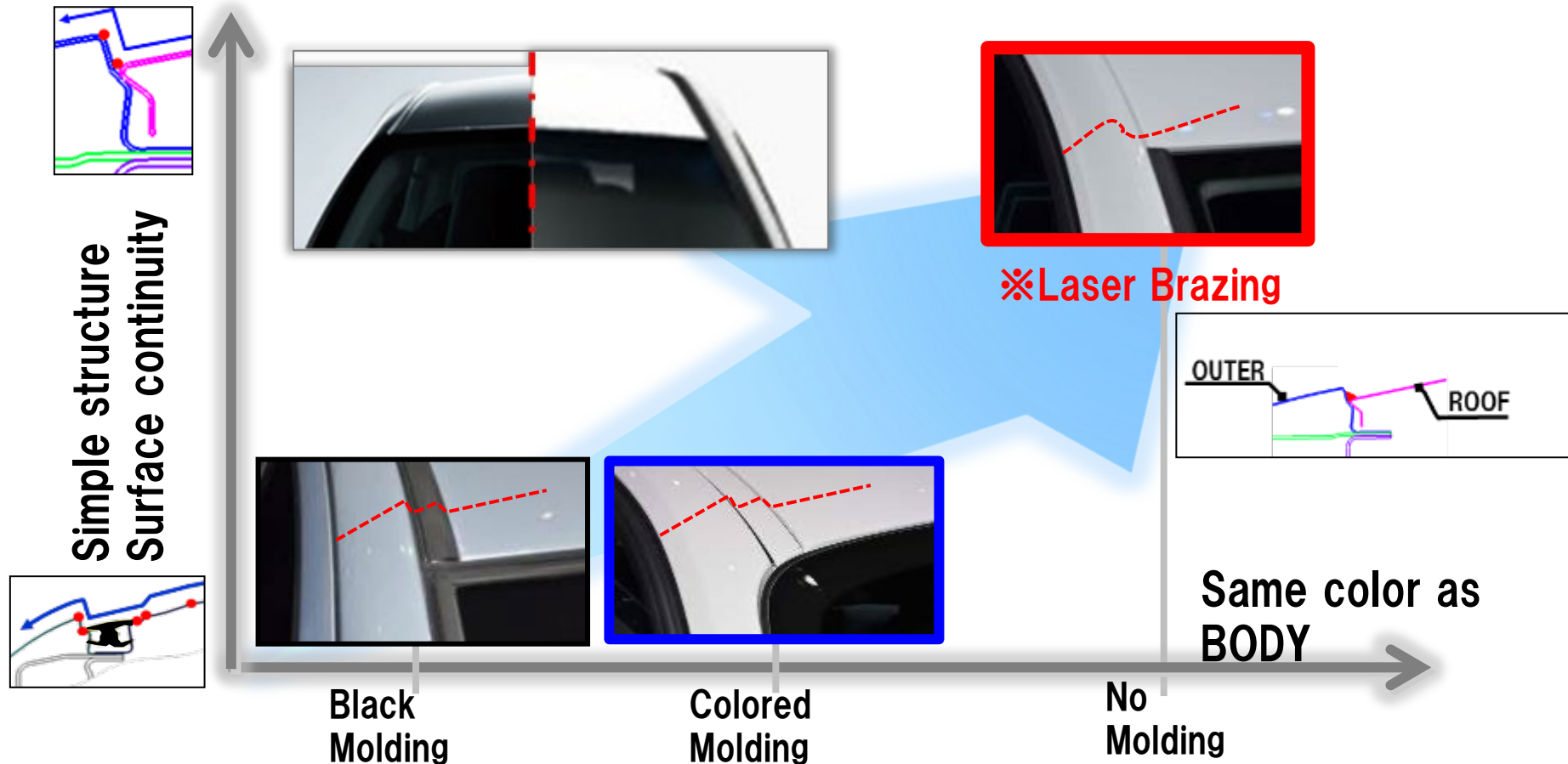




# 2022 Honda Civic Technology – Laser Braze Roof

## Background – Sleek Cabin Design

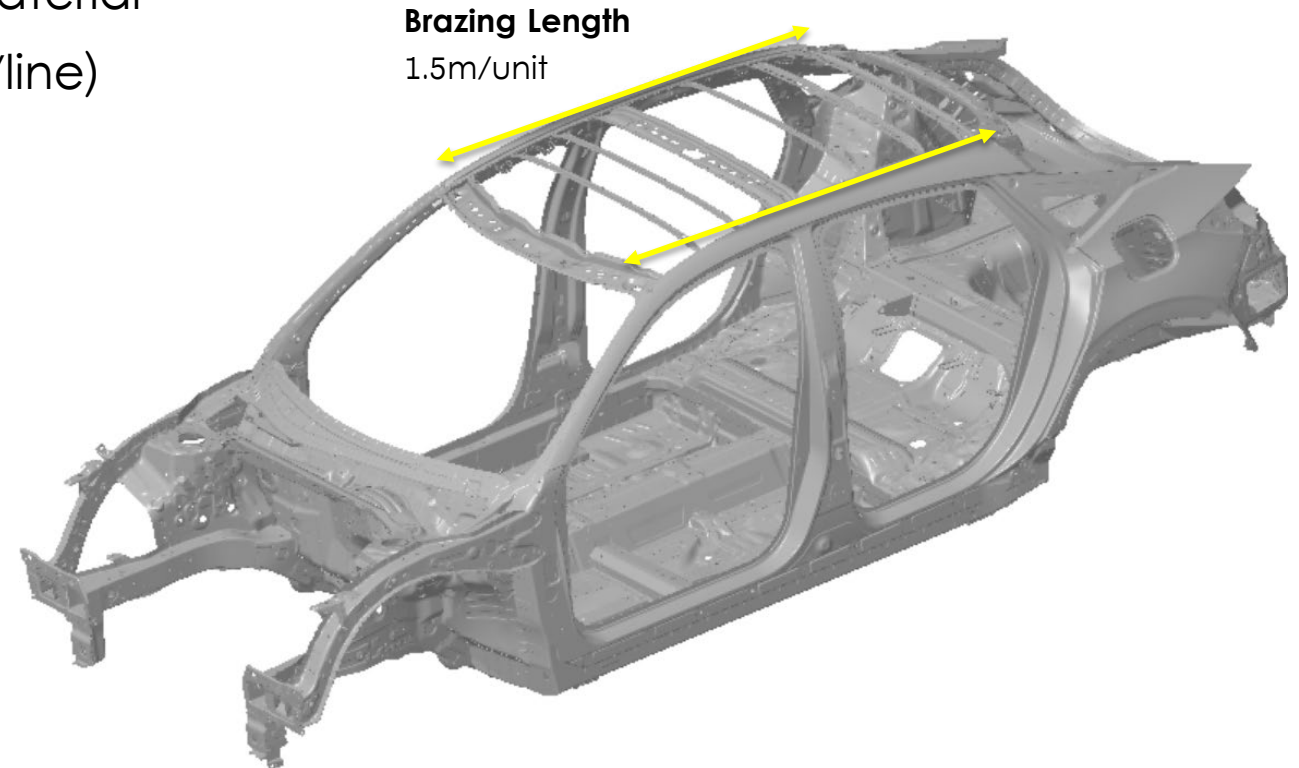
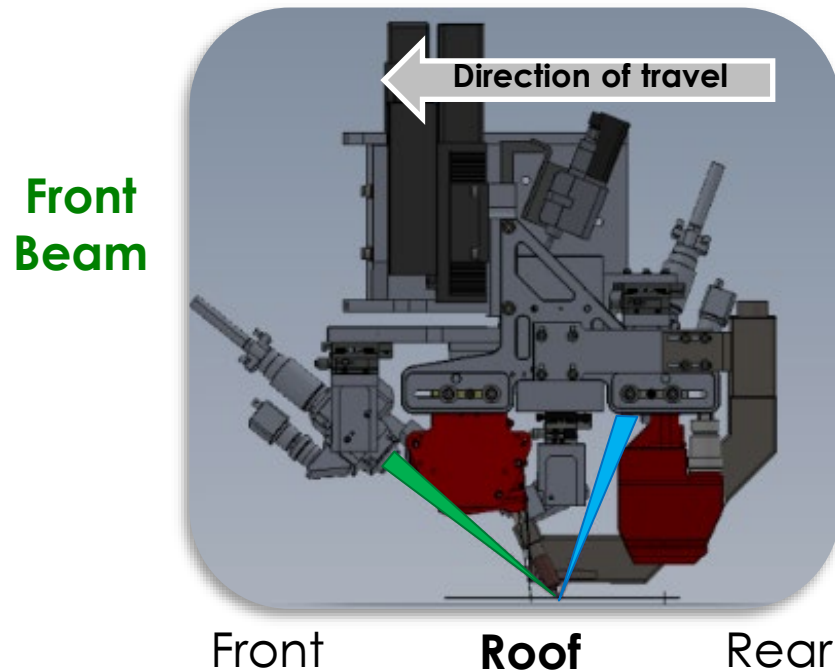
- ◆ Marketability improvement of Roof Molding area
  - Unify color of Roof Molding and BODY (Continuity)
  - Simplify Roof Molding structure/Continuity of design surface



# 2022 Honda Civic Technology – Laser Braze Roof

## Manufacturing Efficiency

- Honda-original 2-beam laser tool
  - **Front Beam:** Preheating to remove GA layer (cleans)
  - **Rear Beam:** Braze with Cu alloy filler material
- **Process time:** 44.5 seconds/unit (1000 UPD/line)

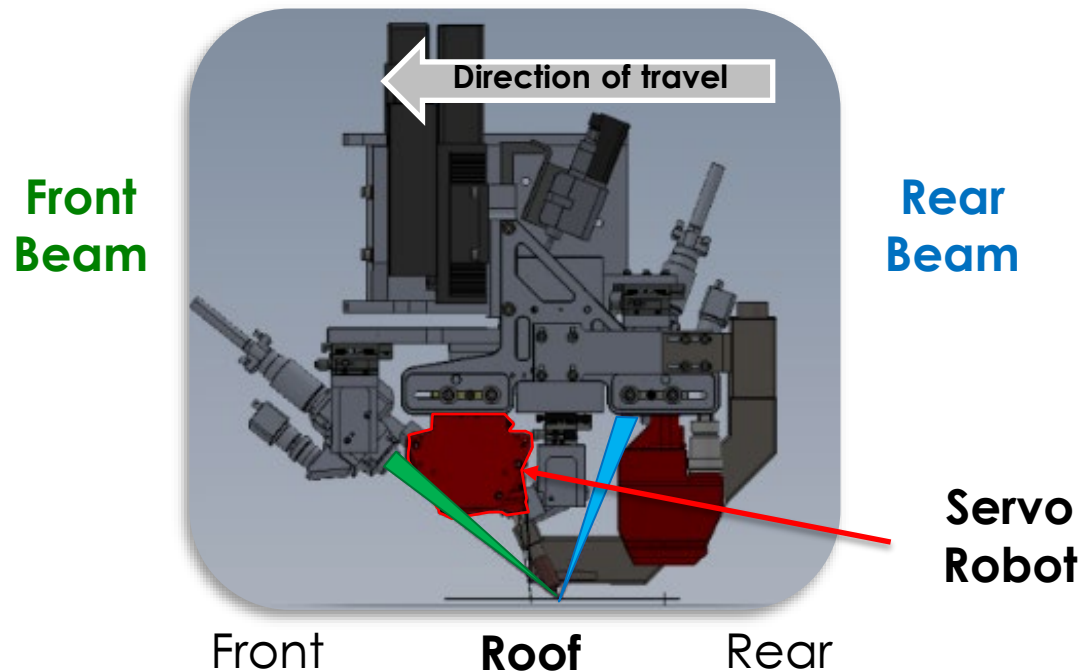


# 2022 Honda Civic Technology – Laser Braze Roof

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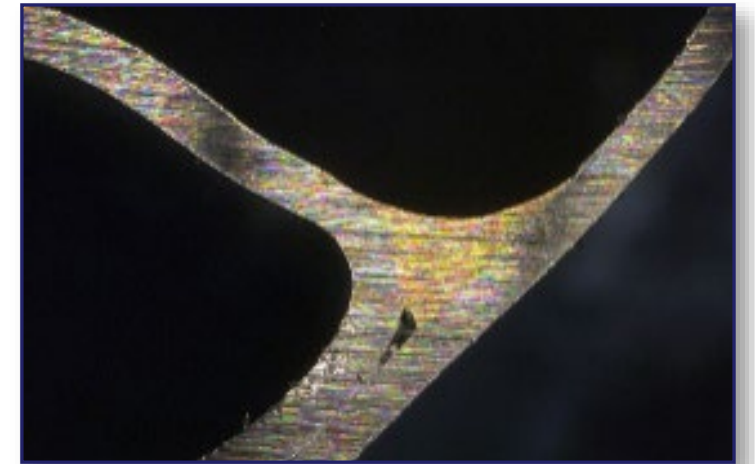
## Quality

- Seam tracking system with **Servo Robot**
- Welding heat control
- 2 pass polishing
- No pre-cleaning of flanges
- Smooth condition for customer



## Durability

**Structural braze** improves body rigidity





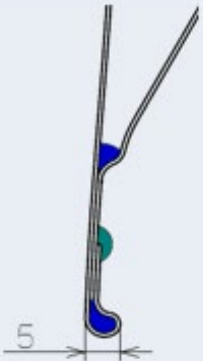
# 2022 Honda Civic Technology – Laser Braze Roof





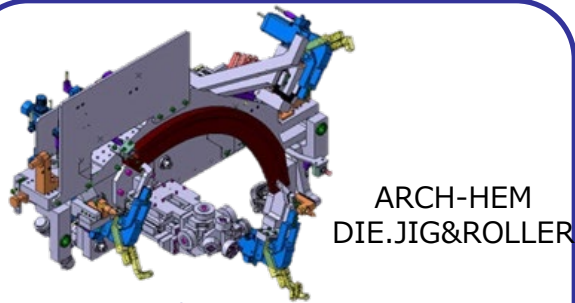
# 2022 Honda Civic Technology – Wheel Arch Hemming

HEM

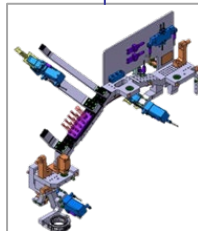


Crimping + adhesive

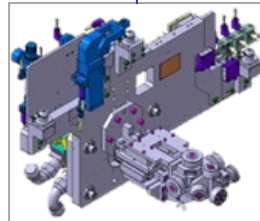
TOOL



ARCH-HEM  
DIE, JIG & ROLLER

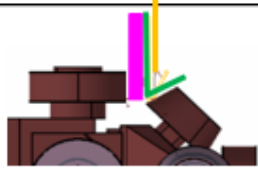
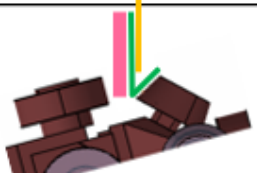
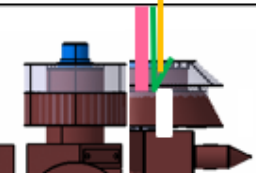

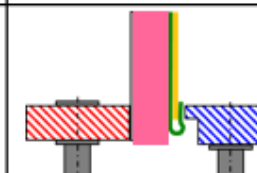


ARCH-HEM  
DIE, JIG



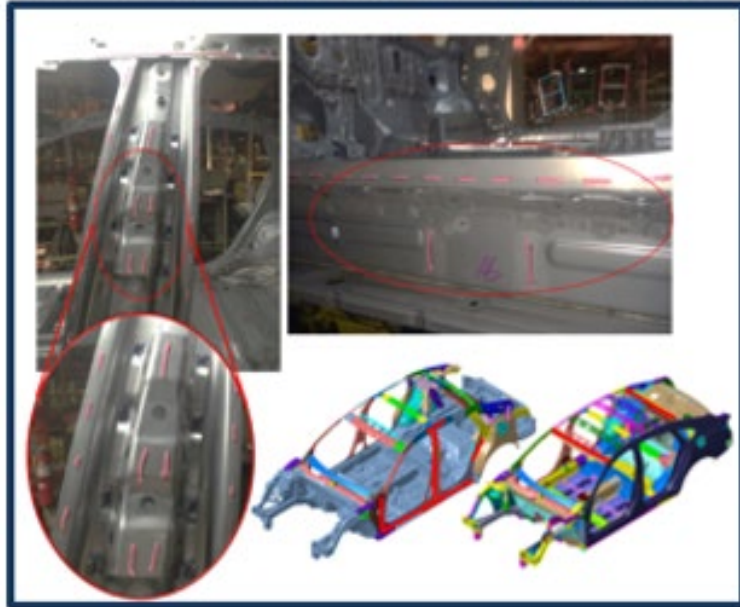
ARCH-HEM  
ROLLER



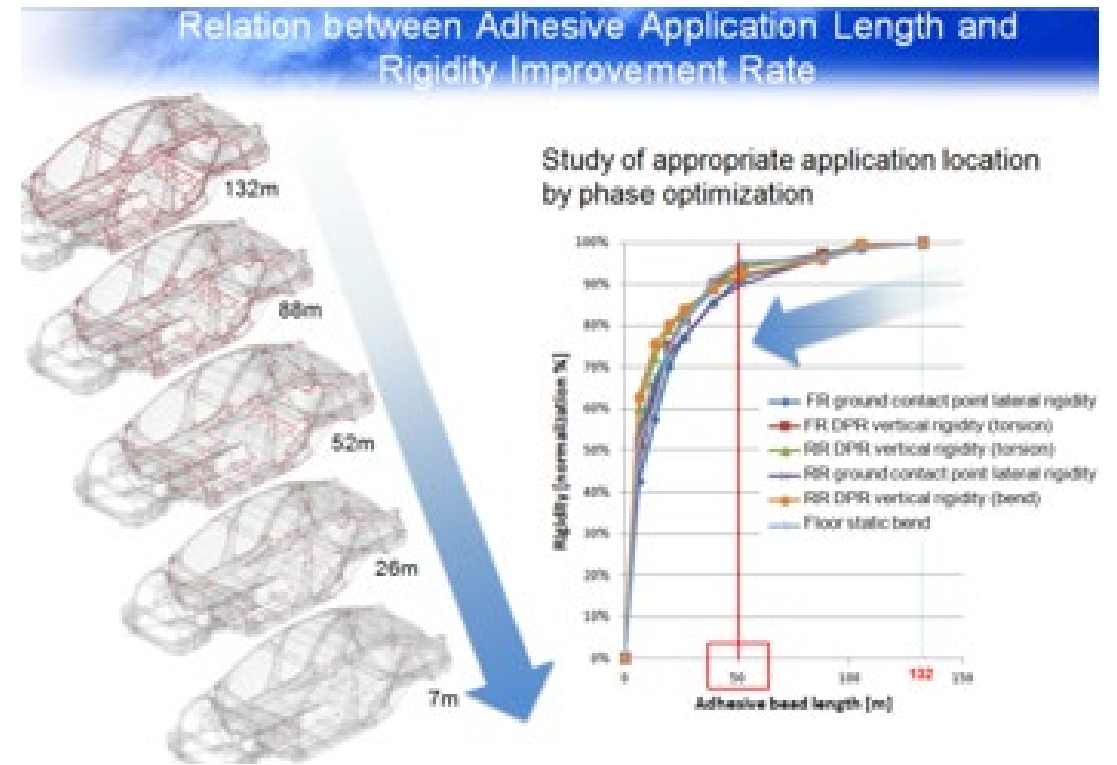
Forming runner	Bending angle				
	One pass	Two passes	Three passes	Four passes	Five passes
Five passes	 $90 \Rightarrow 60$	 $60 \Rightarrow 45$	 $45 \Rightarrow 30$	 $30 \Rightarrow U$	 $U \Rightarrow \text{roped}$

# High Performance Adhesive

## General Material Properties



- Increased Rigidity with Optimal Adhesive Application
- Applications in Stitch or Continuous Bead





# Civic Safety

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# 2022 CIVIC



NORTH AMERICAN  
CAR OF THE YEAR

**HONDA**  
The Power of Dreams

**HONDA**  
The Power of Dreams

# FOR MORE INFORMATION



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