

# Shoulder to shoulder across borders: Light Vehicle 2025 Demonstrators

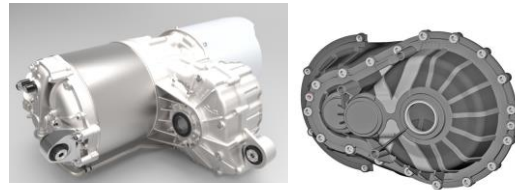
1



**# Body module**  
e.g. bonnet, door

Demo Leader:  
Jean-Pierre Heijster, Automotive NL

2



**# e-Powertrain module**  
e.g. gearbox housing

Demo Leader:  
Ioanna Koutla, Université de Liège

3



**# Suspension module**  
e.g. AM-consolidated parts

Demo Leader:  
Jan Stroobants, Flanders Make

4



**# Hydrogen tanks**  
For fuel cells

Demo Leader:  
Dr. Michael Effing, AMAC

✓ **We have chosen four demonstrators**

**Project Partners**

**Co-Financers**



Ministerie van Economische Zaken

provincie limburg



Provincie Noord-Brabant



Wallonie

# Anti-roll bar. Why?

- Passive adaptive anti-roll bar with variable (progressive) stiffness, offering comfort and performance at the same time
- Advanced lightweight anti-roll bar solution
- Capabilities for engineering & production in Euregio Meuse-Rhine

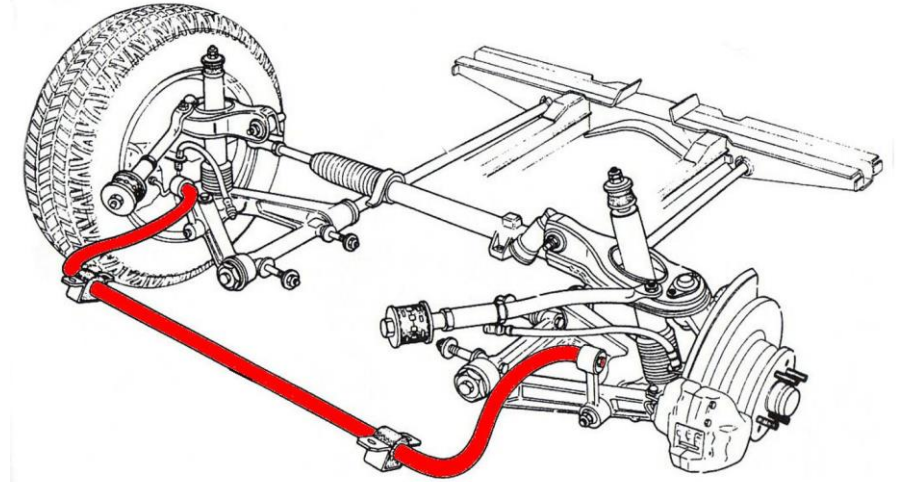
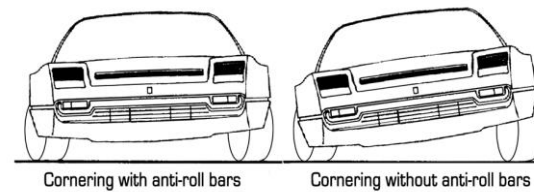


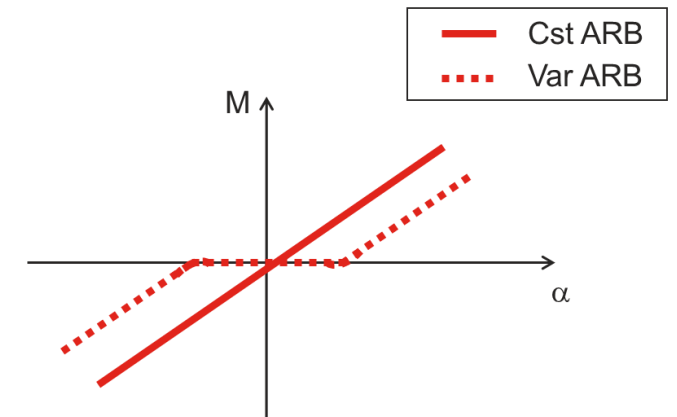
Image via Evan Mason/Wikimedia, showing a front suspension setup with the anti-roll bar marked in red



Cornering with anti-roll bars

Cornering without anti-roll bars

Image via 308restoration.com



# Application example

## Characteristics:

- Audi A6 anti-roll bar
- Current material: steel
- Current weight: 2,85 kg
- New material:  
composite (glass fiber + epoxy resin)
- New weight: 2,35 kg



Image via [autoexpress.co.uk](https://www.autoexpress.co.uk)



# Objective of the Demo Project

- Design & optimization of anti-roll bar
- Simulation, virtual prototyping
- Physical prototyping
- Supply chain validation
- Feasibility of prepregs, composites and forming process
- Validate connection with vehicle body and other suspension components

# Partners



DRiV  
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Emilie Boulay  
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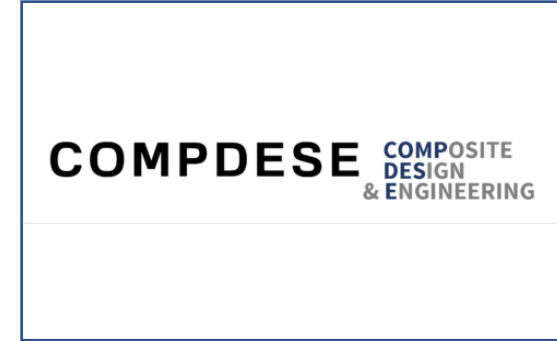
Main Responsibility:  
Requirements & testing



Flanders Make  
[www.flandersmake.be](http://www.flandersmake.be)

Jan Stroobants  
[jan.stroobants@flandersmake.be](mailto:jan.stroobants@flandersmake.be)

Main Responsibility:  
Engineering & testing



CompDesE UG (haftungsbeschränkt)  
[www.compdesese.com](http://www.compdesese.com)

Adam Kot  
[adam.kot@compdesese.de](mailto:adam.kot@compdesese.de)

Main Responsibility:  
Engineering & manufacturing

# Partners and External Service Providers

Design  
&  
Engineering

Raw  
Materials

Tooling  
&  
Equipment

Tier 1  
&  
Tier 2

OEM

Testing  
&  
Validation

Prototyping  
&  
Assembly

**CompDesE  
(DE)**

**Flanders  
Make (BE)**

**KU Leuven –  
MTM (BE)**

**ULiège (BE)**

**TetraVision  
(BE)**

**Altair Inc (US)**

**AGY (USA)**

**Lange+Ritter  
GmbH (DE)**

**ITA GmbH (DE)**

**FRT bvba (BE)**

**Janssenswillen  
Metaalbewerking  
(BE)**

**DRiV (BE)**

**Flanders  
Make (BE)**

**DRiV (BE)**

**Delorge  
Automotive  
(BE)**

**CARBON-  
EXPRESS  
GmbH (DE)**

**ITA GmbH  
(DE)**

**Flanders  
Make (BE)**

# Scope of the project

- Converting the central straight section of the anti-roll bar to a composite version
- Material selection: fiber & resin
- Composite lay-up design
- Design to fit in existing packaging space
- Prototyping
- Tooling design & conception of test setups
- Validation on different levels
  - Component stiffness behaviour, strength & durability
  - Component mounted on vehicle: suspension behaviour & road testing



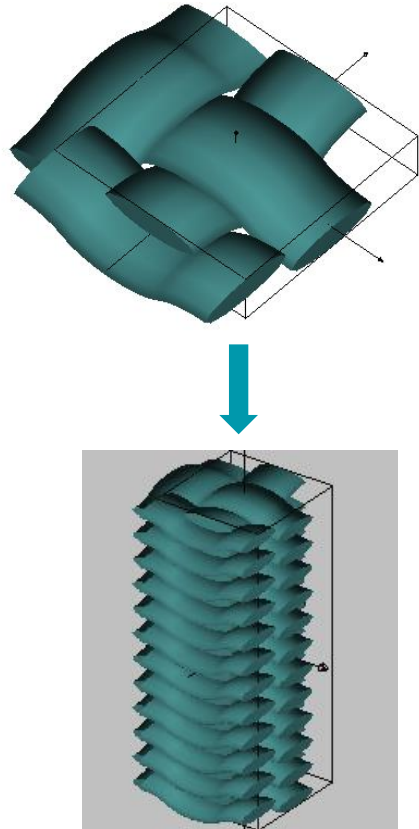
# Design & engineering

## Material modelling

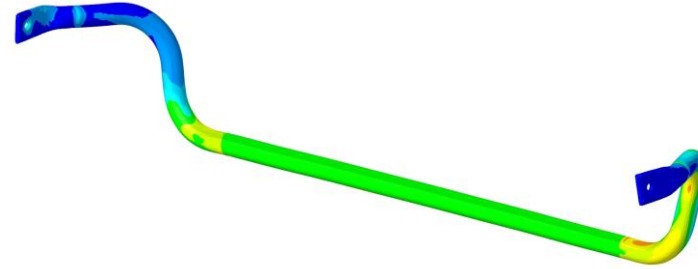


Braided GF structure

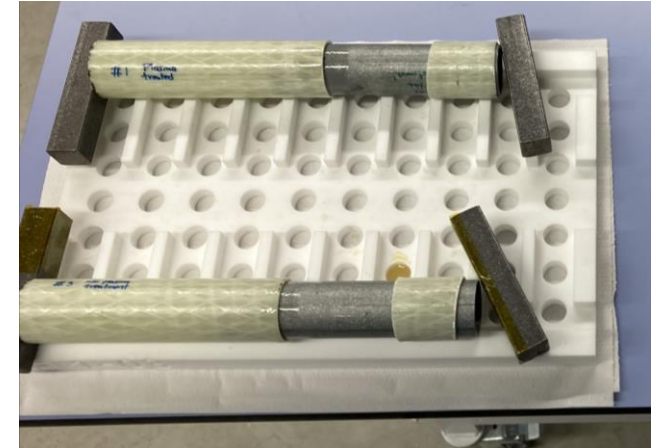
WiseTex



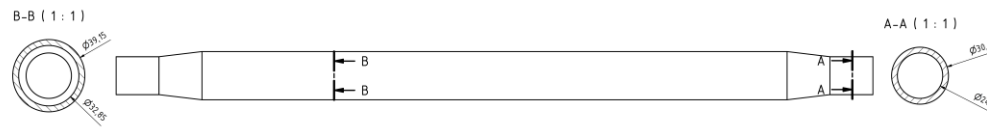
## Component modelling



## Adhesive selection & proto's



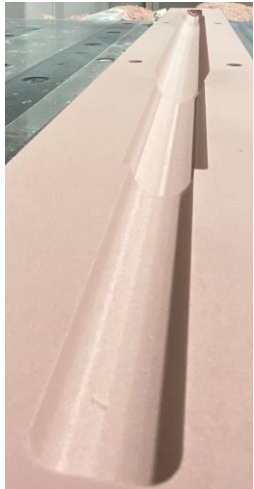
## Composite component design





# Prototyping & testing

## Composite production – central torsion section



1) Mold for wax core



2) Molded wax core



3) Overbraiding

4) Vacuum infused part

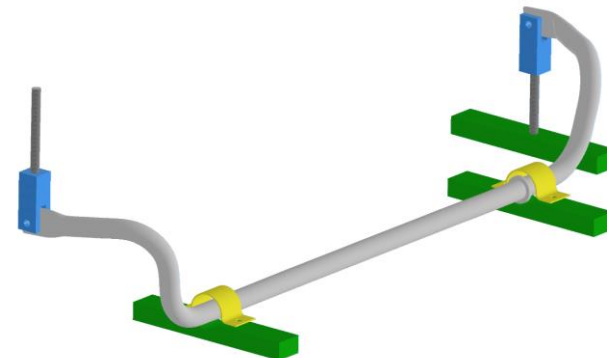


## Test setup A – central torsion section



First setup

## Test setup B – complete anti-roll bar



# Expected deliverables

## **Virtual prototype**

Simulations proving the progressive stiffness behaviour & component integrity

## **Physical prototype**

Progressive anti-roll bar that fits in existing Audi A6 test vehicle  
Designed and engineered for real life usage over normal life time

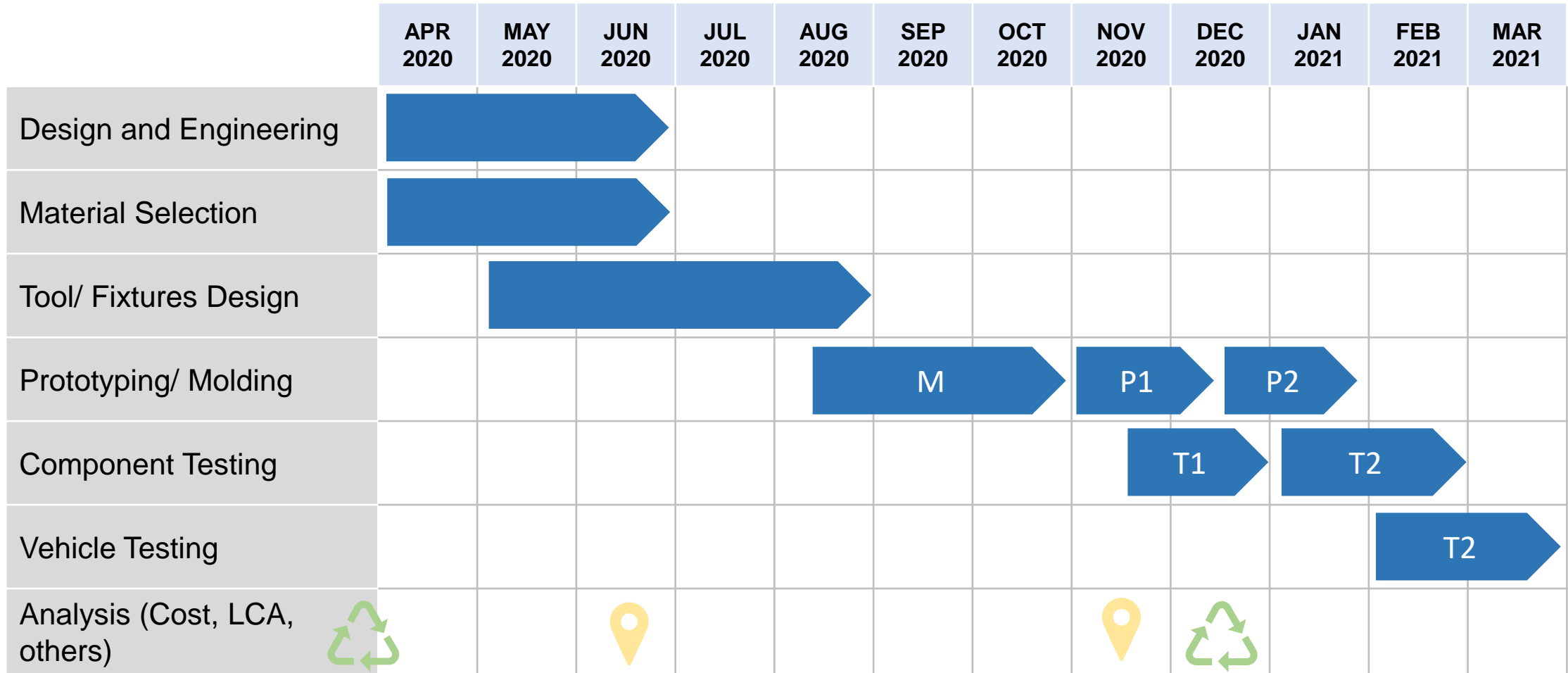
## **Validation tests**

Component level testing: stiffness & durability  
System level testing (in vehicle): handling characteristics

## **LCA study**

benchmarking current steel version vs prototype version

# Schedule



📍 COST

♻️ LCA