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## Company Overview & Capability

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2024

## CONTACTS DASH CAE

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# COMPANY HISTORY & OVERVIEW

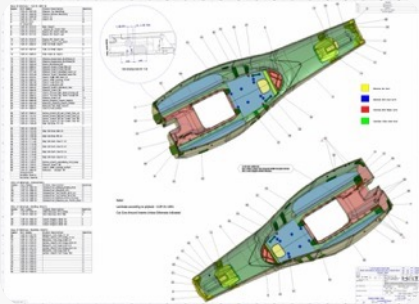
"Where we came from and where we are now"

# HISTORY & MILESTONE DATES



## 2006

Dash is founded on the 26th October and primarily supports the F1 industry with design & analysis simulation



## 2006-2012

Capacity for F1 part manufacturing increases with the kick-off of a full F1 homologated F1 Chassis delivered in 3.5 months. Complete design and analysis carried out by Dash.



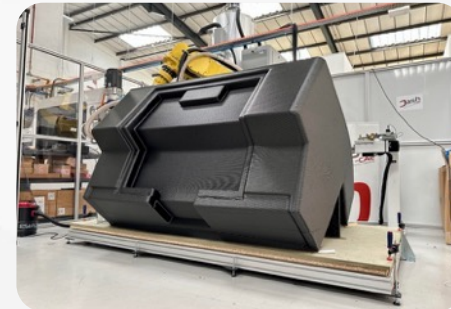
## 2012-2018

Automotive supercar/hypercar contracts are won, increasing the amount of repeat business and significantly aiding staff retention. Business growth greatly accelerated. Dash also, becomes involved with aerospace tooling, Moto GP & LMP component manufacture



## 2018-2020

Dash strategically undergoes factory expansion and explores large scale 3D printing through partnership with CEAD unlocking tool and part printing up to 3m x 2m x 2m. Total staff now exceeds 60 direct & indirect employees



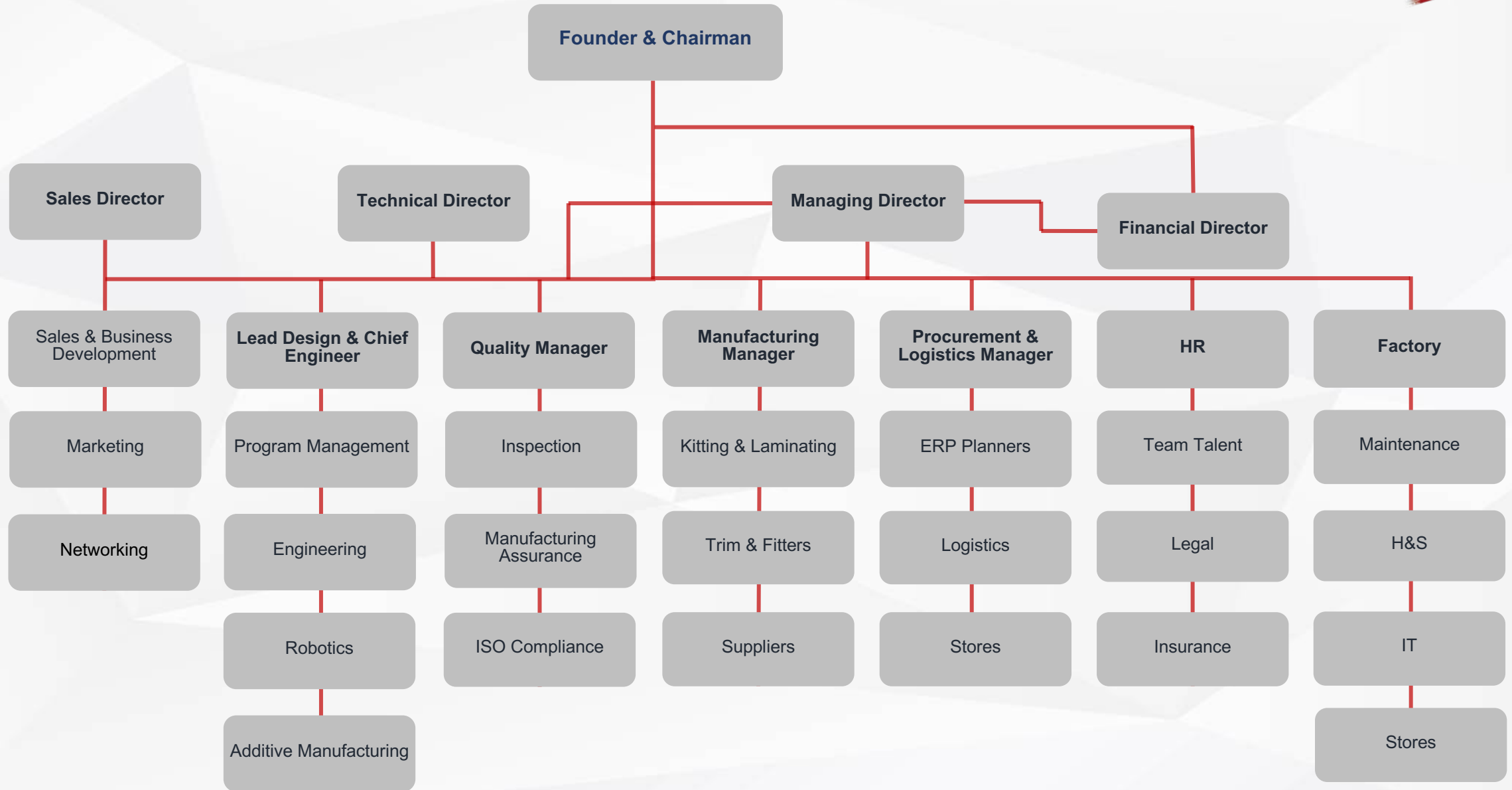
## 2020-2024

TR01 monocoque is designed, tooled and manufactured in-house. Contracts are won to supply niche vehicle hypercar programs alongside low volume GT3 projects and ground up EV sportscar.

Marine projects are won using large format recyclable 3D printing technology alongside repeat aerospace component manufacture



# COMPANY ORGANISATION





60+ Staff

Dash is a relatively large SME in the composites industry with excellent capacity for large projects.



15,000sqft facility

With room to expand in the form of a mezzanine, our facility is perfect for large run automotive projects with storage capability



1,000+ Components / month

With 3 Autoclaves, over 1,000 components a month is possible from our production facility.



Great location

Situated in Oxfordshire with great transport links for fast delivery to our customers





DASH IS AN ADVANCED ENGINEERING

COMPANY WITH ONE-STOP CAPABILITIES

TO PROVIDE RAPID RESPONSE FOR HIGH-END  
VEHICLE PROJECTS

Dash also provides design and engineering services for automotive (Including full system integration), aerospace and marine programs including production planning, Product Lifecycle Management, Bill of Materials management alongside stringent quality assurance.

Alongside composite laminating, Dash also prides itself in innovative tooling technologies such as 3D printing (small and large scale for parts and fixtures) alongside 30+ years in Chassis, suspension and general composites laminate design.



# MANUFACTURING COMPETENCE

Customer Approved Images & Manufacturing Capability



2x CNC Large Bed Kit Cutting Machines



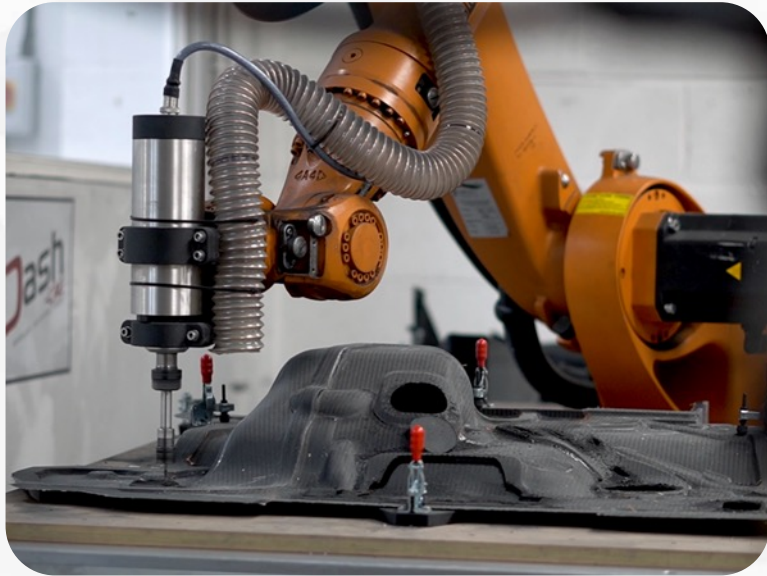
3x Autoclaves (Largest 1.65m Dia x 4m)



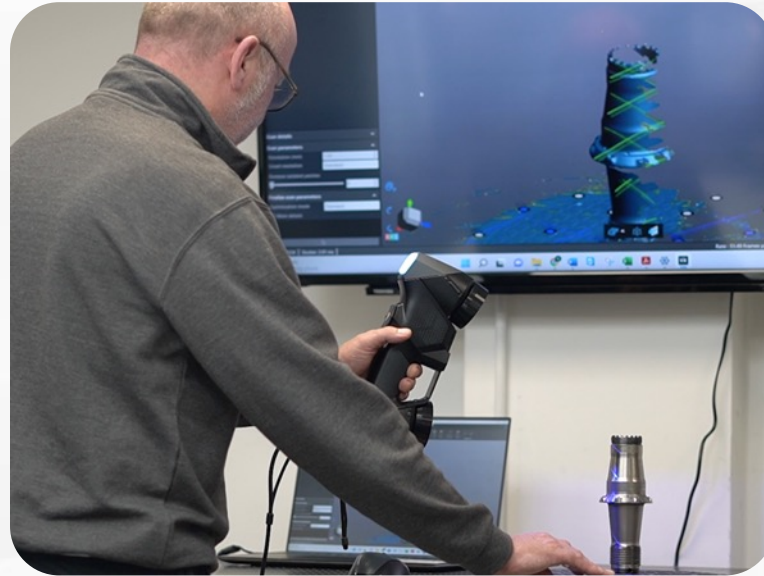
30+ Laminators Using State of The Art 3D Printing  
Mould Technology



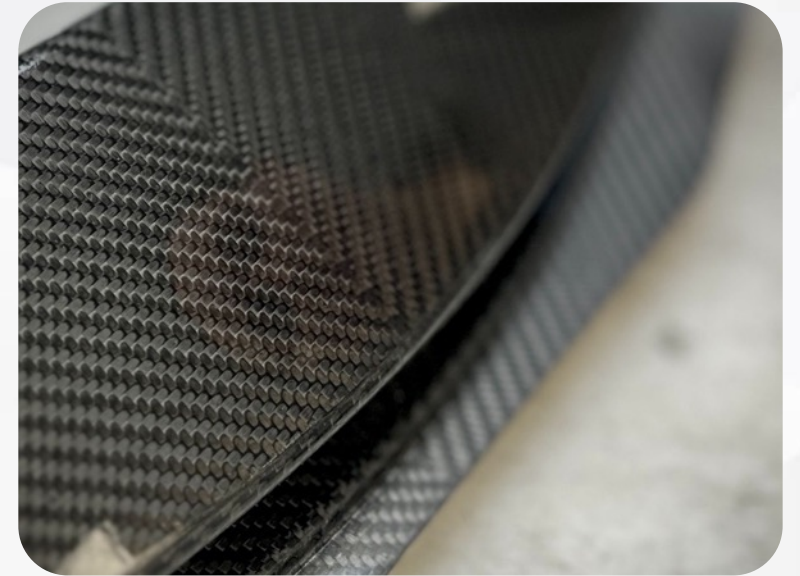
3x Automated CNC Trimming Robots



Creaform Handyscan Black Scanning Technology



Matched Herringbone Clear Carbon Part Capability  
To The Highest Customer Standards



# INNOVATION AND R&D

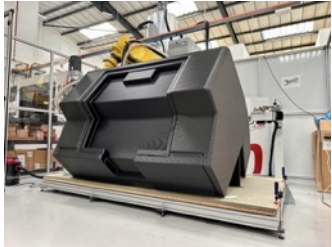
What Makes Us Different To Other Tier 1 Composite Suppliers?



3m x 2m x 2m Build Envelope



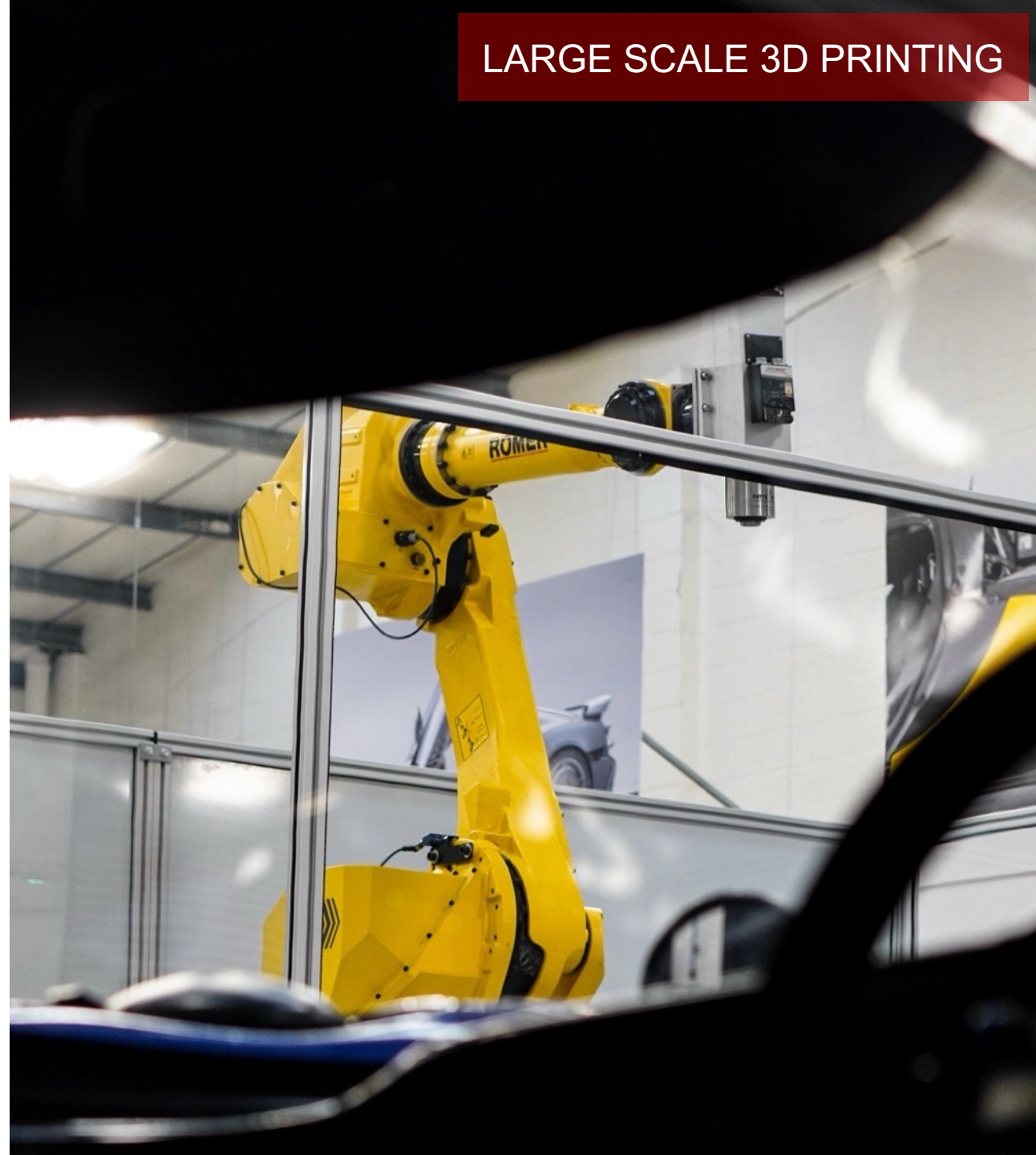
Post Machining For Smooth Finishing



Pre-Preg Capable Tools Up to 200C



CF Printed Inserts & Brackets Possible





Ultra High Stiffness

35kNm/degree of torsional stiffness suitable for both hard and open top configurations without compromised performance



Light Weight

The Dash TR01 has a mass of 48kg without front and rear crash structures



Completely In-House Developed

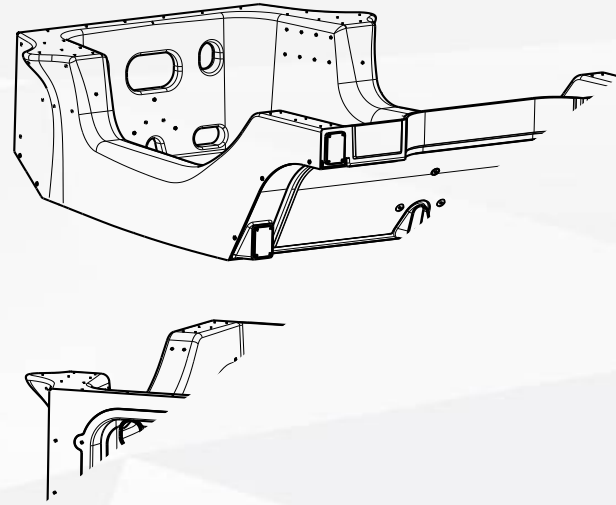
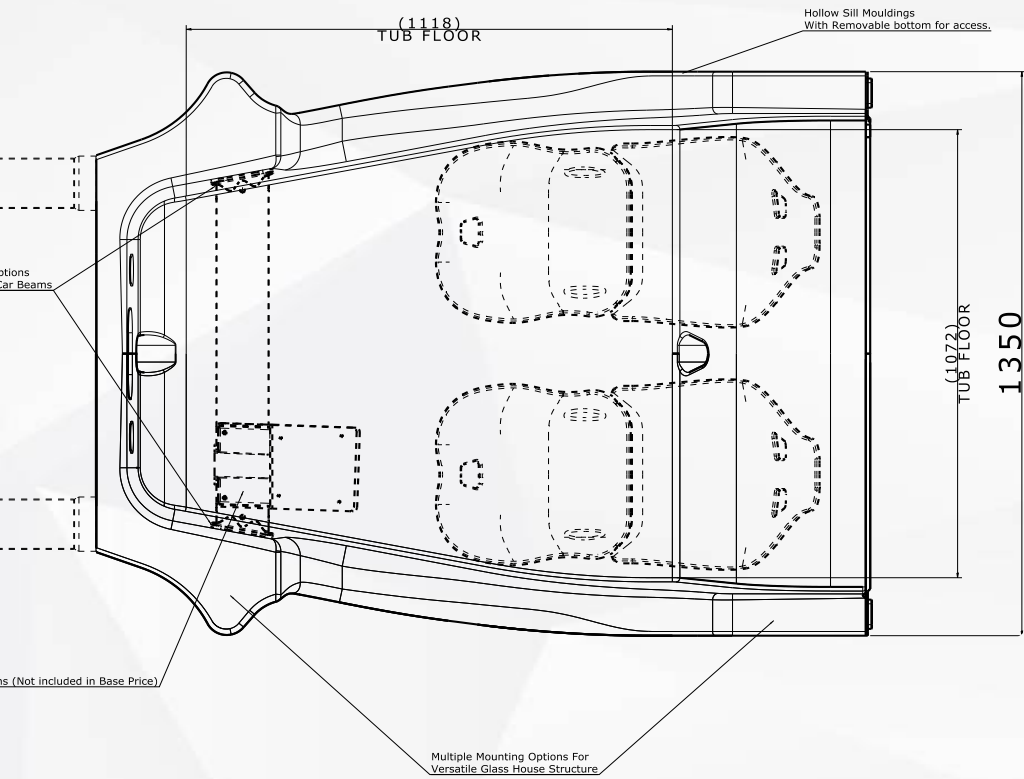
Dash CAE has full FEA capability in-house to model static and dynamic linear/non-linear simulations. The TR01 is designed, engineered & manufactured completely in-house



Complete Turn-key Project Management

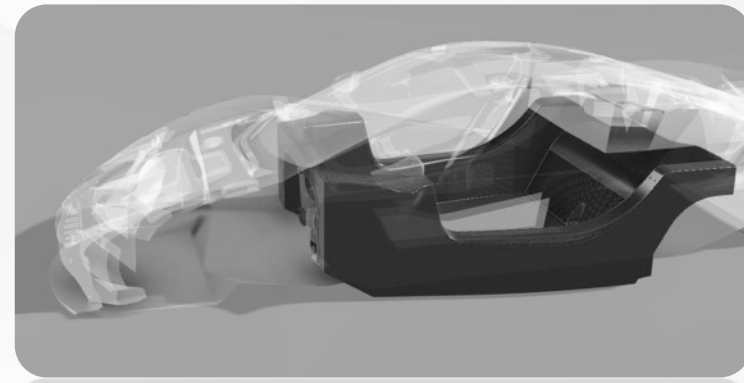
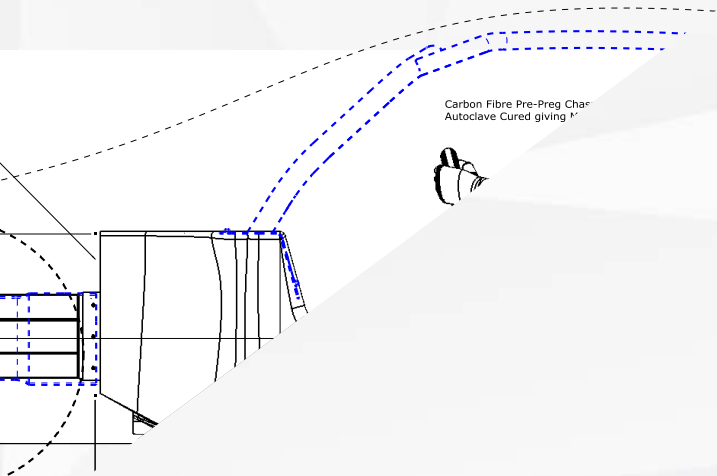
Full program management can be offered with the addition of wiring loom, powertrain, suspension and body

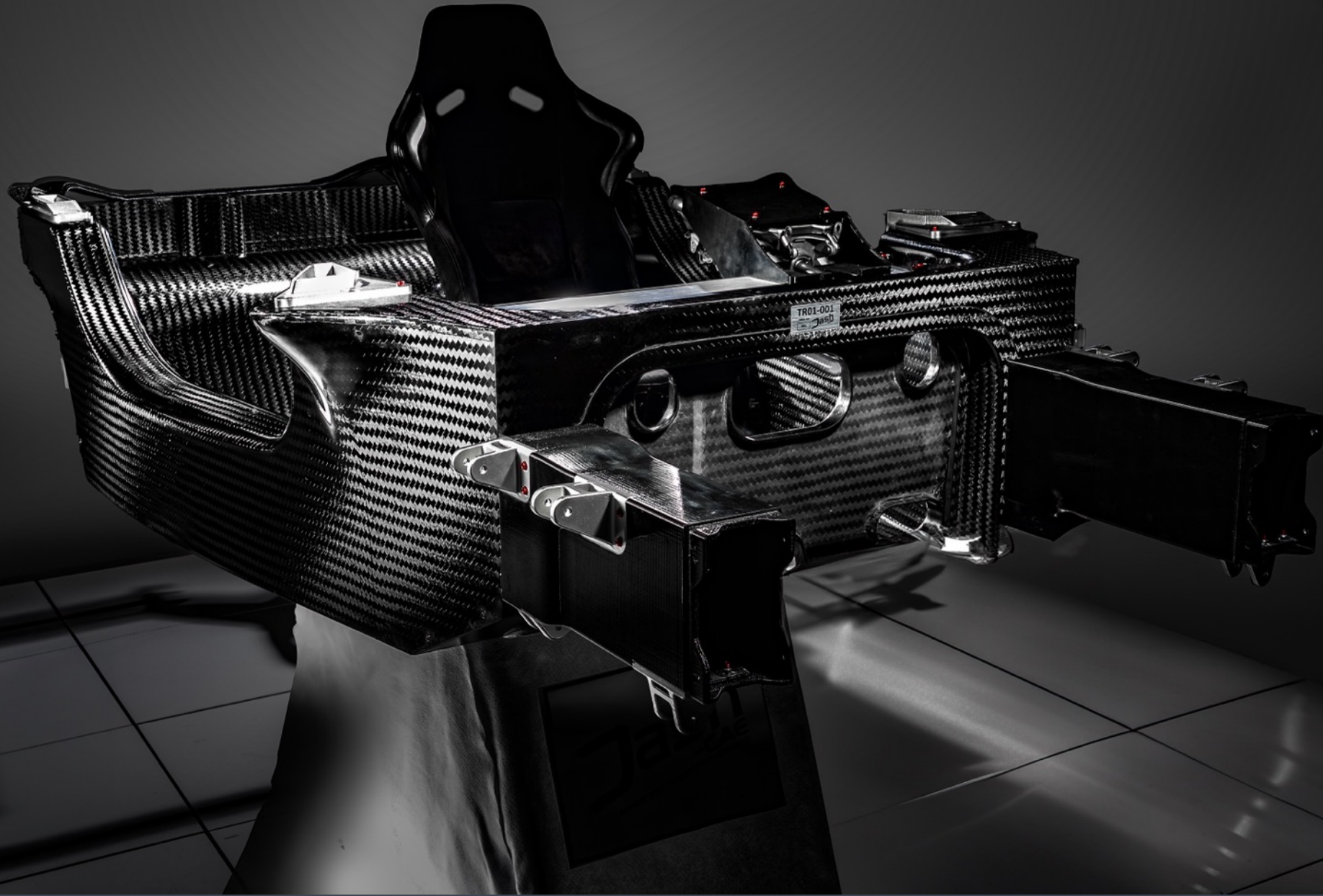


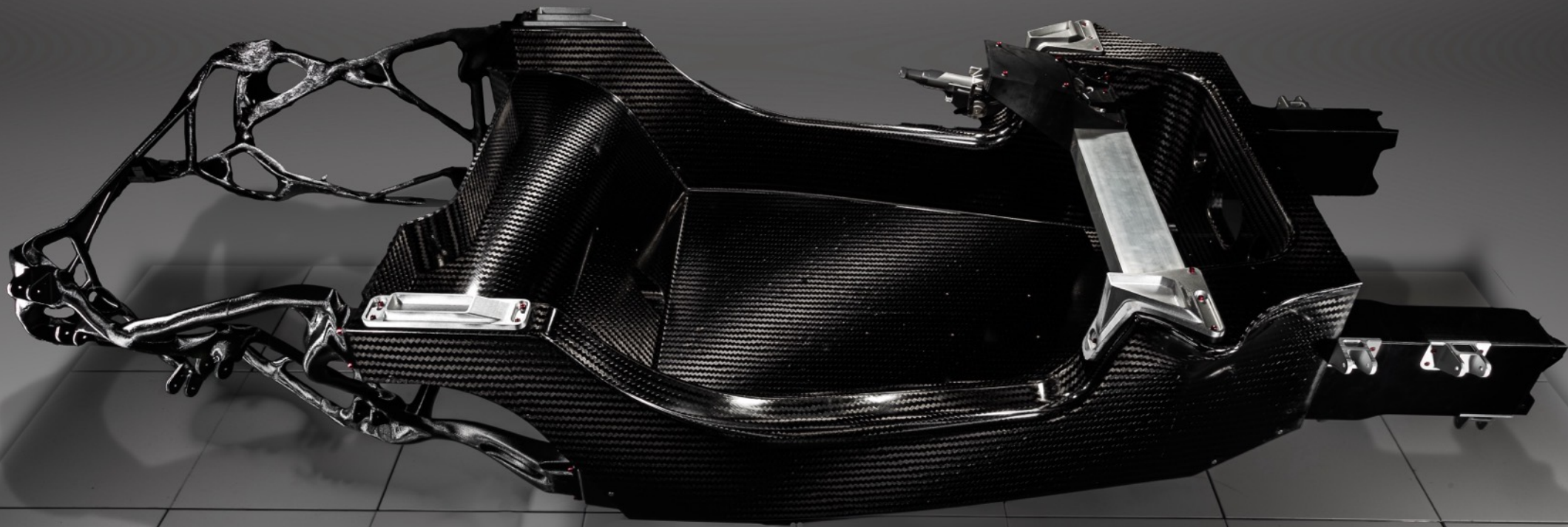


## TR01 Packaging Dimensions

Basic dimensions of the TR01 are 1784mm x 1350mm x 500mm without front and rear crash structures attached. The design was envisaged for a 2 seater mid engine sports car and is packaged to seat two 95<sup>th</sup> percentile Canadian manikins.







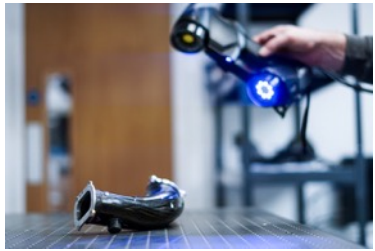




Blue Light Scanning Capability



Automotive Interior & Engine Cover Intakes



Forged Carbon & Visual Twill Pre-Preg



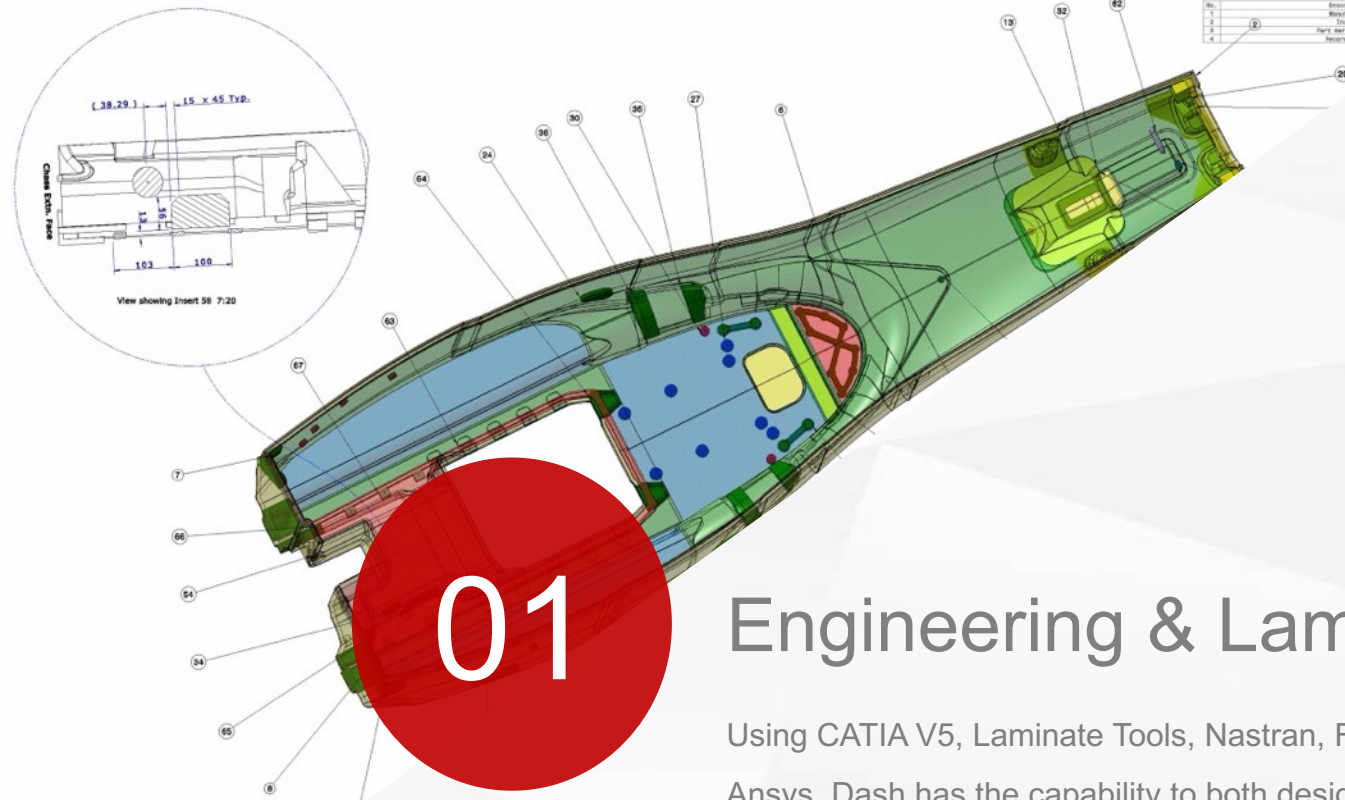
Matched Weave Herringbone



# ENGINEERING & ANALYSIS

Full vehicle integration support and analysis

Number	Part Number	Product Description	Quantity
1	112F-01-1001-02	Chassis Top Moulding	1
2	112F-01-1002-03	Chassis Bottom Moulding	1
3	112F-01-1009-02	Insert #1	1
4	112F-01-1011-01	Insert #2	3
5	112F-01-1012-01-Insert#4		6
6	112F-01-1013-01	Keel Insert	1
7	112F-01-1015-01	Engine Mt Insert Bld	1
8	112F-01-1016-01	Engine Mt Insert Mid RM	1
9	112F-01-1017-01	Engine Mt Insert Lwr	1
10	112F-01-1018-01	Engine Mt Insert Lwr	1
11	112F-01-1023-01	Chassis Insert_Stg_Head	1
12	112F-01-1026-01	Flwb Id Rwd Insert	2
13	112F-01-1027-01	Flwb Id Rwd Insert	1
14	112F-01-1028-01	Flwb Rwd Id Insert	1
15	112F-01-1031-01	Chassis_Suspension_Bulkhead_LH	1
16	112F-01-1032-01	Chassis_Suspension_Bulkhead_RH	1
17	112F-01-1033-04	Rocker_Bulkhead_Fwd	1
18	112F-01-1039-01	Chassis_Insert_Fwd_Fwd_LH	1
19	112F-01-1040-01	Chassis_Insert_Fwd_Fwd_RH	1
20	112F-01-1071-02	Chassis_Insert_HoseCam_Lower_LH	1
21	112F-01-1072-02	Chassis_Insert_HoseCam_Lower_RH	1
22	112F-01-1073-01	Insert_FLWB_FWD_Pean_LH	1
23	112F-01-1080-01	Insert_KERS_Cooling_Inlet	1
24	112F-01-1081-02	Insert_Loom_Exit_LH	1
25	112F-01-1082-02	Insert_Loom_Exit_RH	1
26	112F-01-1084-01	Chassis_Insert_Seatbelt_Fwd	2
27	112F-01-1086-02	Chassis_Insert_#6	8
28	112F-01-1087-01	Insert_Torsion_Bar_Hose_Fixing_LH	1
29	112F-01-1088-01	Insert_Torsion_Bar_Hose_Fixing_RH	1
30	112F-01-1089-02	Chassis_Insert_#7	14
31	112F-01-1090-02	Carbon_Chassis_Insert_Pedals	1
32	112F-01-1091-03	Rohacell_Chassis_Insert_Pedals	1
33	112F-01-1092-01	Rohacell_Bib_Ramp_Insert	1
34	112F-01-1093-01	Insert_Fuel_Outlet	1
35	112F-01-1099-01	Carbon_Insert_#1_Lwr_Crash_Tube_LH	1
36	112F-01-1101-01	Carbon_Insert_#2_Lwr_Crash_Tube_LH	1
37	112F-01-1102-01	Carbon_Insert_#2_Lwr_Crash_Tube_RH	1
38	112F-01-1100-01	Carbon_Insert_#1_Lwr_Crash_Tube_RH	1
39	112F-01-1105-03	Ckpt Sd Roha Frt LH	1
40	112F-01-1106-03	Ckpt Sd Roha Mid LH	1
41	112F-01-1107-02	Ckpt Sd Roha Mid RH	1
42	112F-01-1108-02	Ckpt Sd Roha RR LH	1
43	112F-01-1109-02	Ckpt Sd Carb Inert1 LH	1
44	112F-01-1110-02	Ckpt Sd Carb Inert1 RH	1
45	112F-01-1111-02	Ckpt Sd Carb Inert2 LH	1
46	112F-01-1112-02	Ckpt Sd Carb Inert2 RH	1
47	112F-01-1113-02	Ckpt Sd Carb Inert3 LH	1
48	112F-01-1114-02	Ckpt Sd Carb Inert3 RH	1
49	112F-01-1115-02	Ckpt Sd Carb Inert4 LH	1
50	112F-01-1116-02	Ckpt Sd Carb Inert4 RH	1
51	112F-01-1117-02	Ckpt Sd Carb Inert5 LH	1
52	112F-01-1118-02	Ckpt Sd Carb Inert5 RH	1
53	112F-01-1123-01	Carbon_Insert_secondary_roll_hoop	1
54	112F-01-1124-01	Chassis_Insert_#8	7
55	112F-01-1149-01	Insert_KERS_cooling_outlet	1
56	112F-01-1085-02	Rohacell - Cockpit RH	1
		Intensifiers	1
		KersMtg Inserts	1
		RollHoop Inserts	1

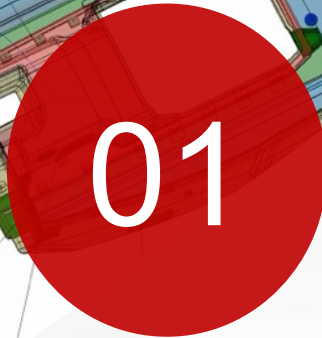


Number	Part Number	Product Description	Quantity
57	112T-01-1001-01	Intensifier_Chassis_Pedal_Area	1
58	112T-01-1002-01	Intensifier_Stg_Brkt_Clr	1
59	112T-01-1003-01	Intensifier_Top_Tether_Brkt_LH	1
60	112T-01-1004-01	Intensifier_Top_Tether_Brkt_RH	1
61	112T-01-1006-01	Intensifier_Chassis_Throttle_Face	1
62	112T-01-1007-01	Intensifier_Chassis_Lwr_Tether_Face	1

Number	Part Number	Product Description	Quantity
63	112F-01-1020-01	KERS Bolting_Brkt_Sides	10
64	112F-01-1021-01	Kers Bolting_Brkt_Fwd	2
65	112F-01-1022-01	Insert_Engine_Shear_#1	1
66	112F-01-1024-01	Insert_Engine_Shear_#3	1
67	112F-01-1040-01	Insert_Engine_Shear_#4	7

Number	Part Number	Product Description	Quantity
68	112F-01-1121-01	Rohacell_roll_hoop_rr_lh	1
69	112F-01-1129-01	Carbon_insert_roll_hoop_fr_LH	1
70	112F-01-1127-01	Rohacell_roll_hoop_mid2_LH	1
71	112F-01-1125-01	Carbon_Insert_roll_hoop_mid2_LH	1
72	112F-01-1123-01	Rohacell_roll_hoop_mid1_LH	1
73	112F-01-1121-01	Carbon_insert_roll_hoop_mid1_LH	1
74	112F-01-1119-01	Rohacell_roll_hoop_fwd_LH	1
75	112F-01-1104-01	Carbon_Insert_roll_hoop_fwd	1
76	112F-01-1132-01		1
77	112F-01-1130-01		1
78	112F-01-1128-01		1
79	112F-01-1124-01		1
80	112F-01-1122-01		1
81	112F-01-1120-01		1
82	112F-01-1128-01		1

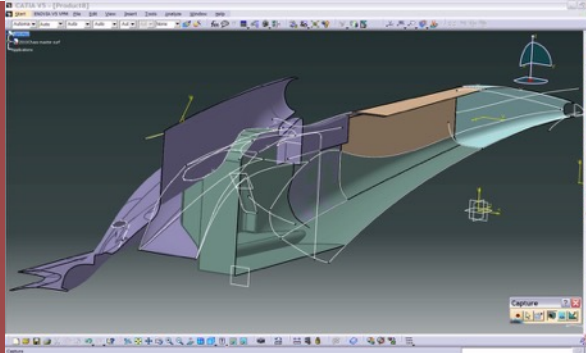
Note:  
Laminate according to  
Cut Core A



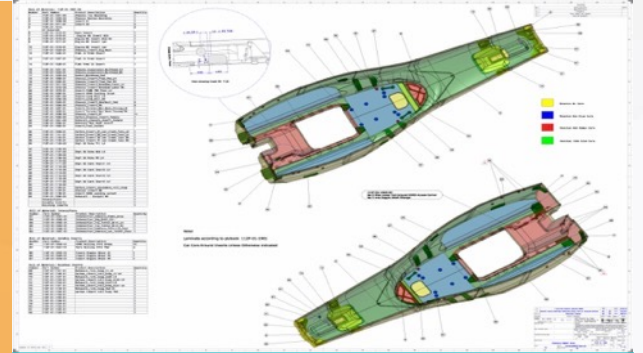
# Engineering & Laminate Design

Using CATIA V5, Laminate Tools, Nastran, Fusion 360 and Ansys, Dash has the capability to both design laminates and inserts for composite components. These drawings ensure our skilled staff have all the correct information to hand to make parts right first time, every time.

Assembly drawings & BOM management managed in our state of the art MRP system



Complex surfacing capability alongside generation of aero surfaces for automotive and motorsport projects



Dassault CATIA V5 is used by our design engineers to model and create complex drawings



Full plybook generation capability using Anaglyph laminate tools for accurate kits with zero manual intervention

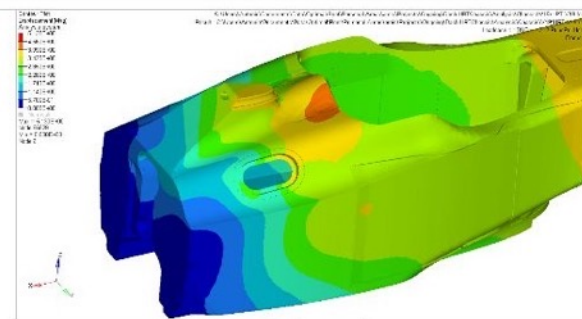


# 02

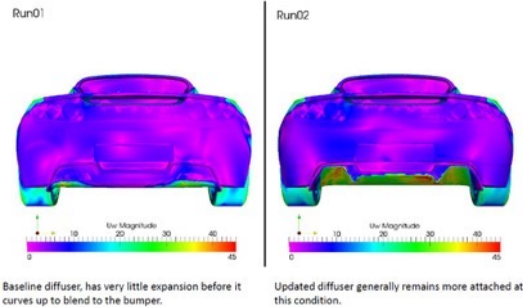
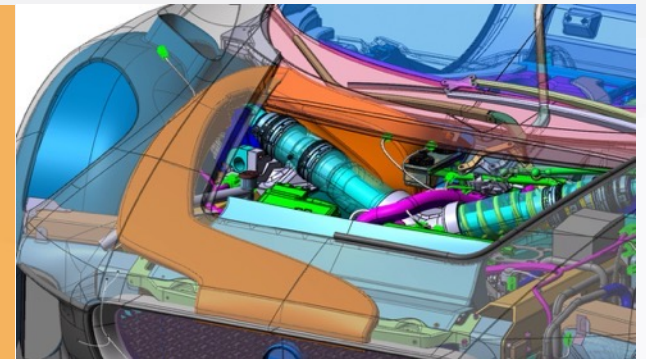
## Kinematics & Finite Element Analysis

Automotive and motorsport projects be supported with both composite part design and manufacture, alongside suspension/chassis kinematics and simulation.

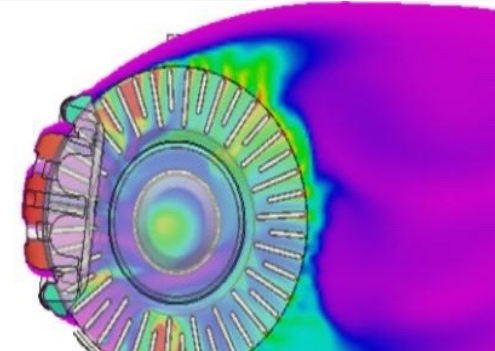
CFD Simulation for automotive and motorsport projects to improve performance



Mechanical systems analysis including dynamic pressure simulation can be carried out in-house and iterated quickly without sub-suppliers



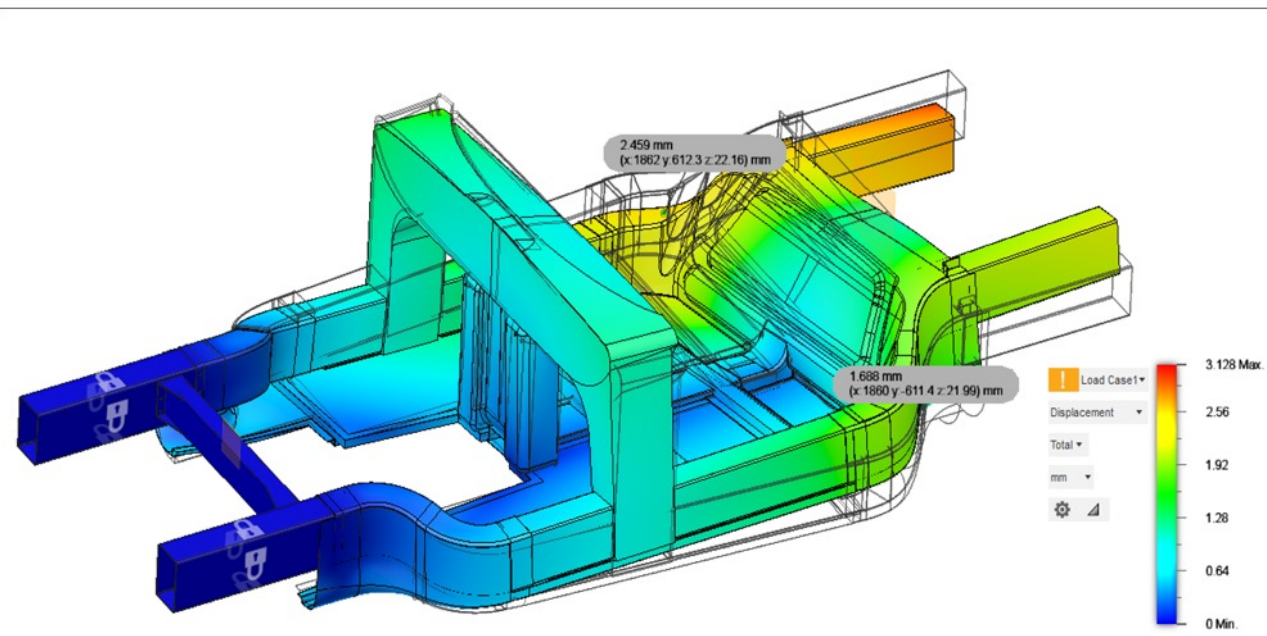
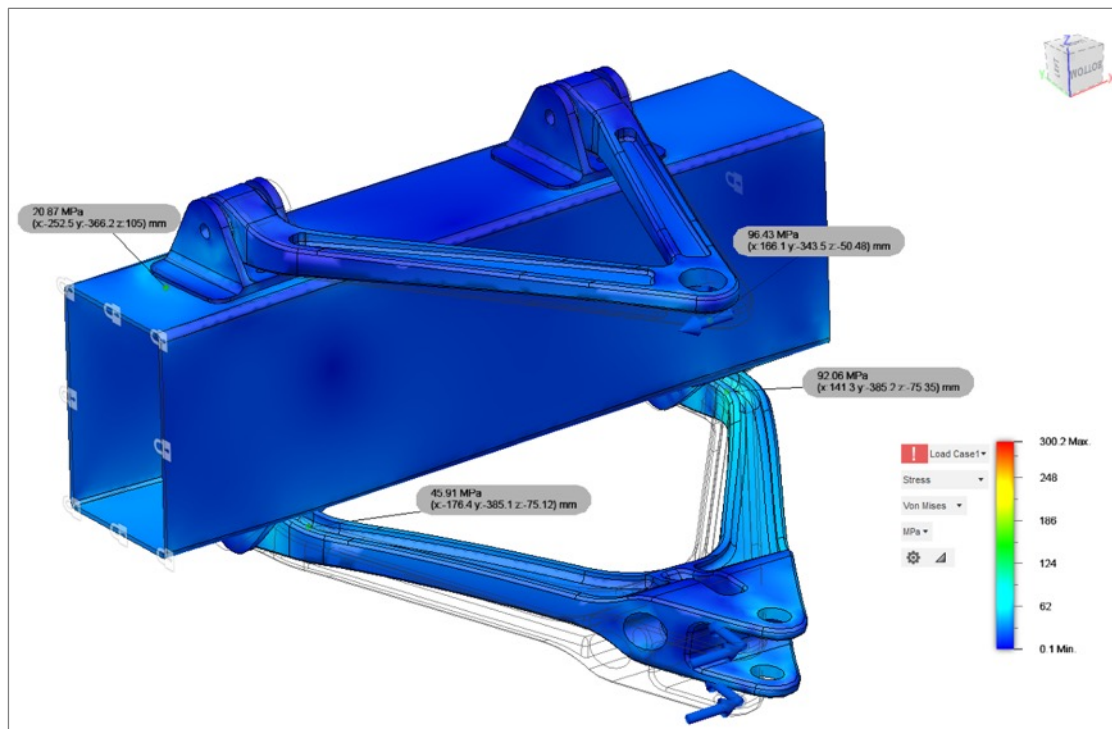
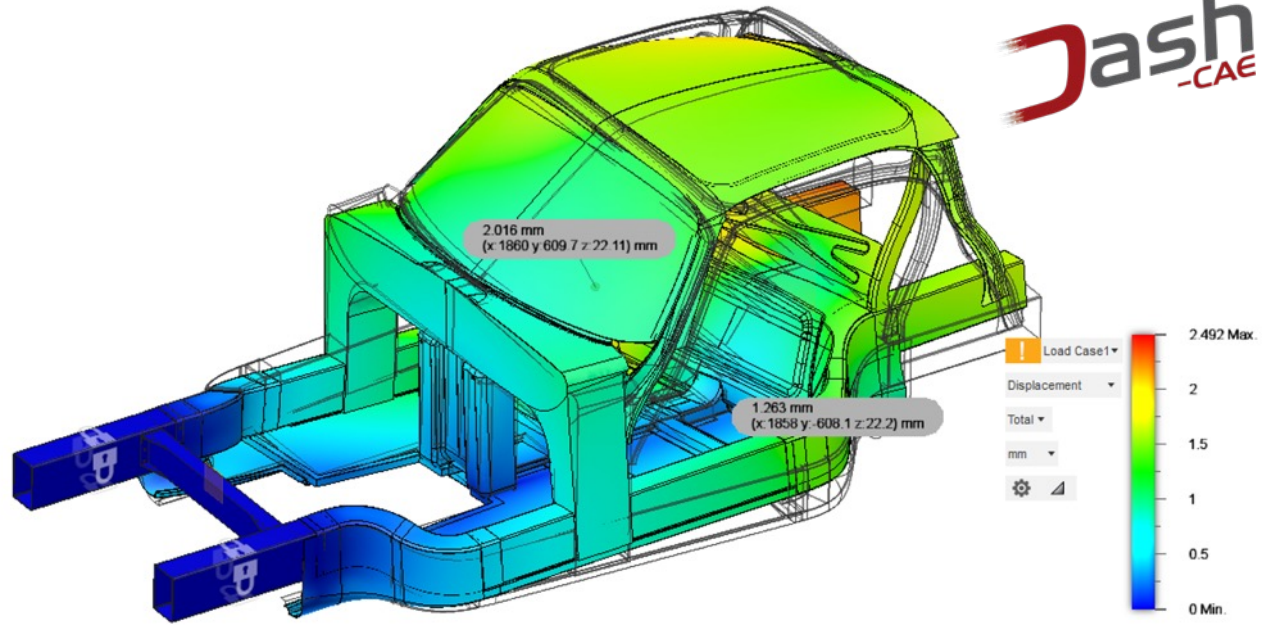
Linear static and non-linear dynamic simulation possible through Fusion 360 and Ansys



Full assembly kinematics analysis in CATIA V5 for suspension and chassis structures including exterior body

## EXAMPLE ANALYSIS REPORT FROM EV PROJECT

PARAMETER	UNITS	VALUE
Total Loading Applied	N	10,000
Distance of Loading From Neutral Axis	m	0.61
Total Torque Applied	Nm	6,100
Deflection at RR Bulkhead Probe Point	mm	2.018
Degrees of Rotation	Deg	0.18955
Chassis Torsional Rigidity	Nm/Deg	32,181
Chassis Mass as Tested	kg	70



03

## Suspension Design, Manufacture & Full Vehicle Integration

With our extensive supply chain and partners, full vehicle programs can be supported allowing us to supply engines, gearboxes, suspension, brakes and even ECU/wiring harnesses.



A red circle containing the white number "04".

# 04

## Reverse Engineering

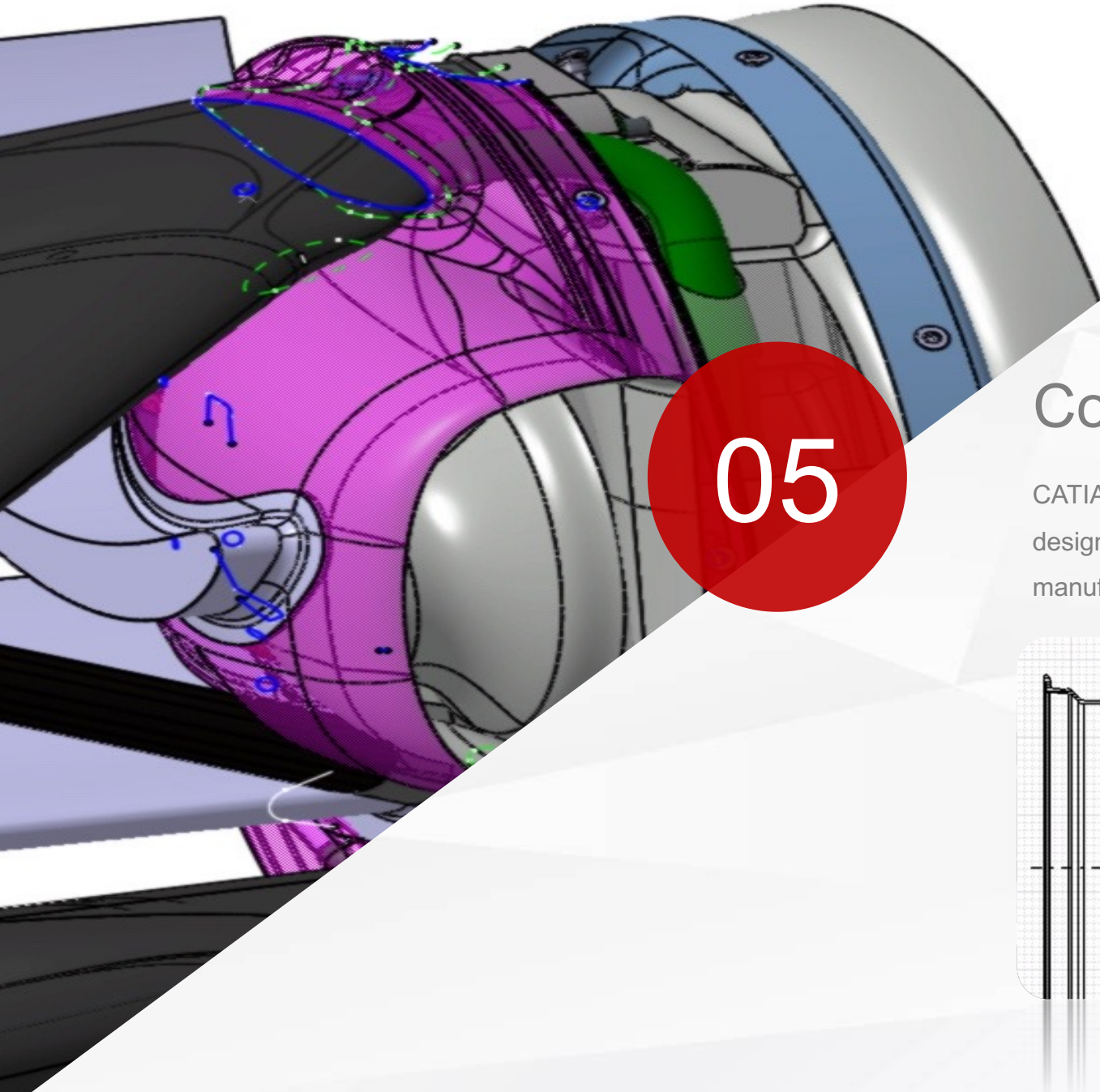
Our Creaform Handyscan Black scanners allow for quick and precise scanning of existing components. Combined with our in-house design team, Dash has the capability to quickly and efficiently reverse engineer and recreate historically heavy or obsolete components and improve performance.

QUICK & PRECISE REVERSE SCANNING

IN-HOUSE SCAN MESHING AND ENGINEERING

ALL EXISTING COMPONENT MATERIALS CAN BE  
SCANNED INCLUDING GLASS

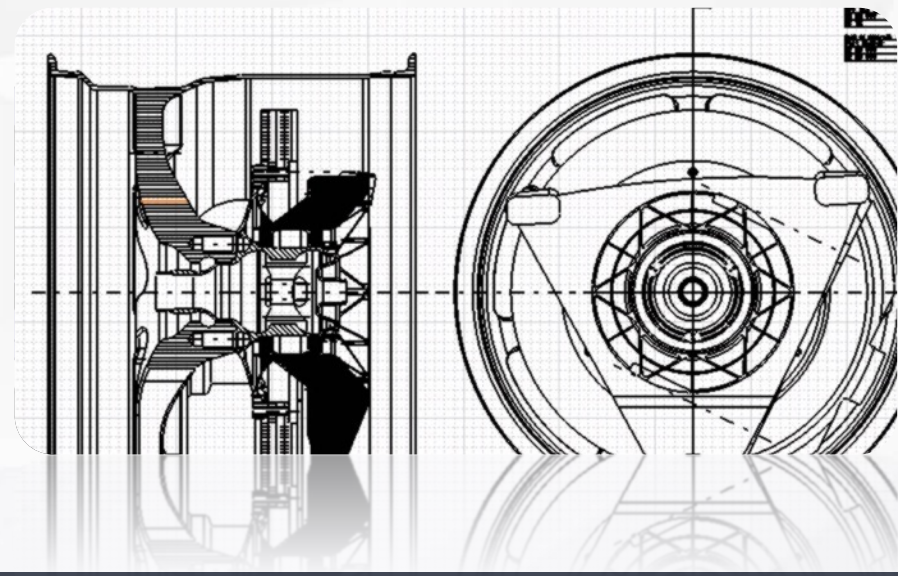




05

## Complex Mechanical Systems

CATIA V5 designed brake cooling ducts and suspension uprights designed, tooled and laminated in weeks using innovative in-house manufacturing methods.



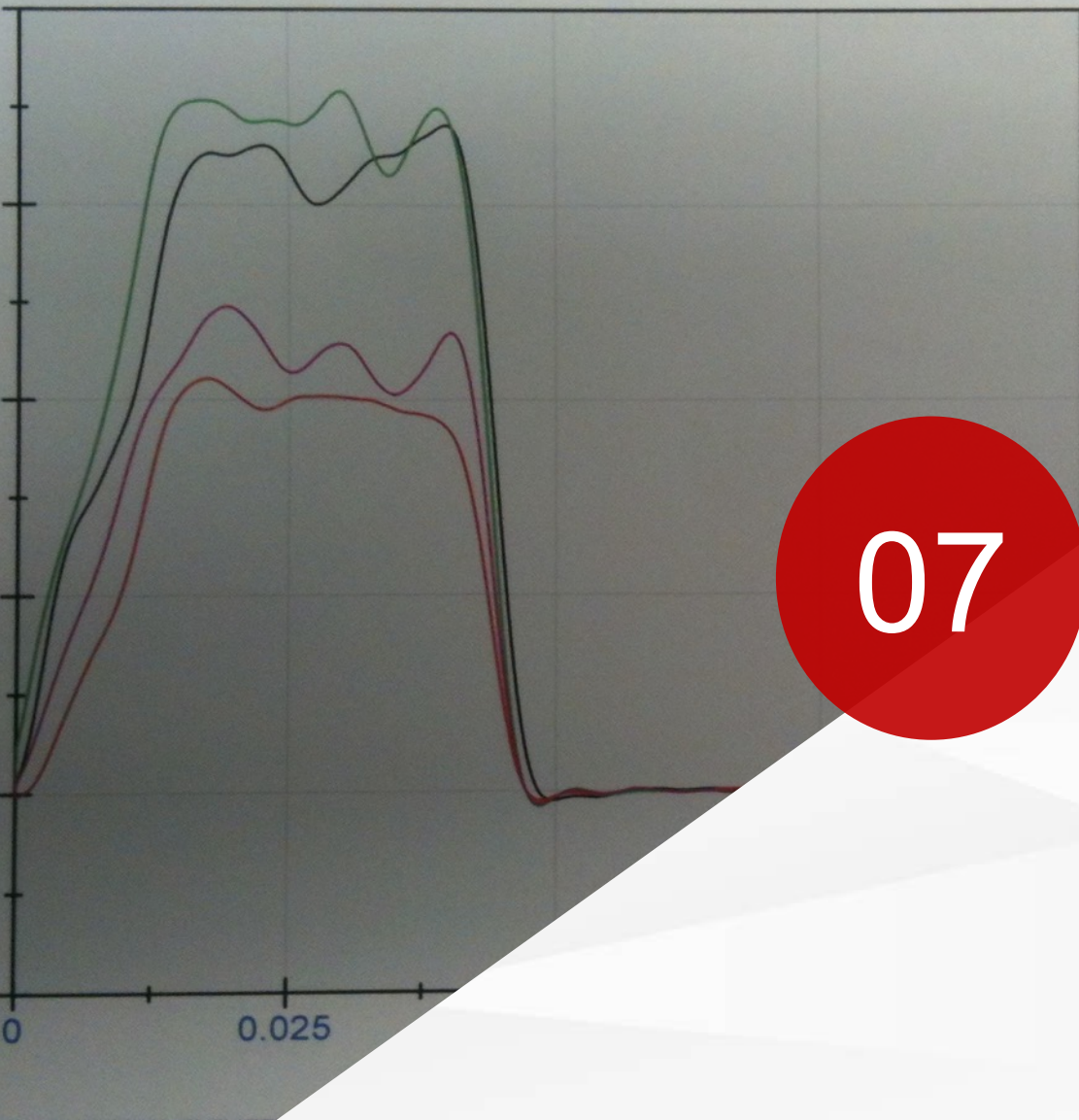
A large red circle containing the white number "06".

06

## Wind Tunnel Models

Extensive range of 3D printers including Stratasys Fortus (FDM), SLA and our innovative robot additive manufacturing allows for accurate and large scale models for physical wind tunnel testing.

Test Name: Side\_Mark1Upper\_211211



<b>Tile A</b>	Energy : 10.95 kJ	Share : 29.02 %
Peak Load : 68.16 kN	Time : 39.70 ms	3ms Clip : 68
<b>Tile B</b>	Energy : 6.420 kJ	
Peak Load : 42.17 kN	Time	
<b>Tile C</b>		



07

## Homologation & Physical Crash Testing

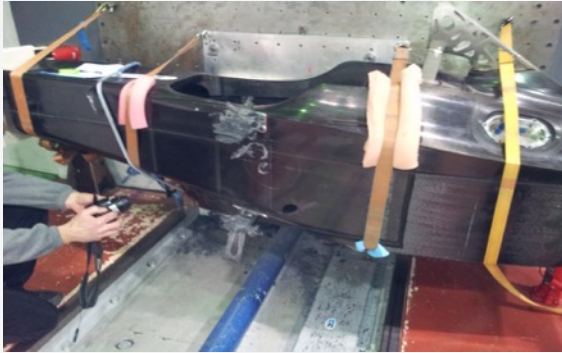
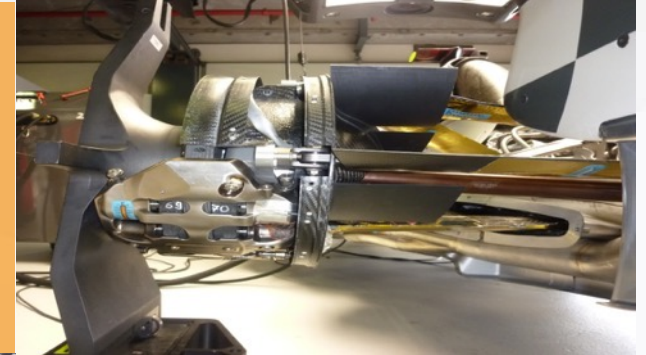
We have close connections to local testing houses validating our FEA analyses. This includes testing to meet industry standard accreditations such as Euro NCAP and IIHS safety standards.

# PHYSICAL CRASH TESTING

Physical side impact testing at various test standards including for the FIA, Euro NCAP & IIHS



Mechanical systems analysis including dynamic pressure simulation can be carried out in-house and iterated quickly without sub-suppliers



Side squeeze test and roll hoop impact testing using calibrated test equipment and rigs



In-house design of sub-structures, crash boxes and brake ducts which have undergone physical testing both for aero and crash compliance



For Any Sales Enquiries Please Contact

[Sales@dash-cae.co.uk](mailto:Sales@dash-cae.co.uk)