

# CURRICULUM VITAE

## DION SIMMS

Senior Mechanical Engineer & Team Leader, Infrastructure Engineering

Bachelor of Engineering (Automotive) (Hons), RMIT University, 2013

Professional Certificate (Architecture and Systems Engineering),  
Massachusetts Institute of Technology xPro, 2018



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## PROFESSIONAL HISTORY

February 2021 onwards

Senior Engineer & Team Leader Infrastructure Engineering, Smedley's Engineers

February 2016 onwards

Motorsport Performance Engineer, Wall Racing

February 2016 – January 2021

Director & Design Engineer, Polymathic

January 2014 to December 2020

Design Engineer, CEENA Pty Ltd

August 2008-December 2013

Design Drafter, CEENA Pty Ltd

September 2018-May 2019

Senior Vehicle Architecture Engineer, Ford Motor Company

December 2015-September 2018

Vehicle Architecture Engineer, Ford Motor Company

March 2014-December 2015

Design & Data Engineer, Garry Rogers Motorsport

## SPECIFIC TECHNICAL EXPERTISE

CATIA CAD software (Dassault-certified CATIA V5 Fundamentals, Advanced Surfacing & NURBS Surfacing

Certificates), AutoCAD and BricsCAD expert-level

Visual Basic for Applications and Python programming

ABAQUS Static Linear and Dynamic FE analysis

Finite element analysis of static structures

Finite element frequency response analysis

Design for fabrication & low-volume CNC manufacturing

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Data logging and field testing

Coordinate system, GIS-integration and BIM-integration CAD specialist

Motorsport vehicle dynamics & chassis tuning

#### DETAILED PROFESSIONAL EXPERIENCE

##### Smedley's Engineers (February 2021 - onwards) – Senior Engineer and Team Leader, Civil and Infrastructure Engineering

- Developed road design advice for a coking coal haulage project, including developing custom software for mass-inertia velocity modelling of various truck combination masses and powertrains over a 600 km route.
- Developed FE analysis of an existing sewage treatment plant inlet works load distribution over foundations in response to load cases.
- Developed FE analysis of multiple concrete pump station roof slab lifting arrangements.
- Developed FE analysis of multi-level steel sheep loading ramp with hoist to provide validation to Australian Standards.
- Developed novel methodology to measure and digitise heavy vehicle swept turning paths whilst performing physical validation.
- Developed novel methodology to optically measure PBS parameters such as high speed transient off-tracking, rearward amplification and yaw damping coefficients during physical validation.
- Lead an extensive dynamic suspension performance testing program of an alternative heavy vehicle air suspension control system.
- Developed a test rig to destructively test omnibus rollover protection hoops.
- Lead the data acquisition and analysis phase of a project to compare rigid drawbar heavy vehicle convertor dollies to hinged drawbar convertor dollies.
- Lead design of load sensing components to gather road loads from physical testing of a road train combination to revise the Australian Standard for heavy vehicle tow couplings.
- Developed and manufactured 8-channel 100 hz CANBUS-connected analog sensor logging equipment.

##### CEENA (August 2008 – December 2020) – Originally Design Engineer & 3D Designer, then Senior Design Engineer, Lead 3D Designer

- Conducted vibration failure analysis and developed an FE-validated bespoke solution for a jet aerator assembly for Mount Saint John STP in Townsville QLD, including complete fabrication details.
- Developed linear elastic ABAQUS FE model of existing concrete pumpwell in accordance with AS3600-2009 to assist in RPEQ certification of extensive structural alterations.
- Developed FE analysis to support compliance with Australian Standards for concrete formwork & structural design, including AS1657-compliant removable platforms.
- Developed FE analysis and fabrication details for AS3996-compliant aluminium hinged access covers to Class B & Class D.
- Basic structural design and detailed mechanical design including pumping/pipeline hydraulics.
- Bespoke detailed design and related 3D drafting of stop log hoisting winches.
- Developed an elevated electrical switchboard platform design and steel fabrication details for a sports field lighting upgrade in McIndoe Park, Emerald QLD.
- Developed a comprehensive plant upgrade 3D design for the Dingo and Duaringa WTPs filter replacement project including high structural steel roofs, elevated accessways, switchboard building and backwash and town water pump stations, pump sizing & hydraulic modelling, mechanical layout and P&ID review for Central Highlands Regional Council.



- Developed a 3D model for the Rolleston WTP switchboard replacement project including an elevated switchboard platform (above flood level) and a roofed partly enclosed chemical storage and dosing bund for Central Highlands Regional Council.
- Developed 3D models for the Gladstone WWTP service water upgrade projects including the service water supply and other pumping stations, the 12 tank chlorine contact tank/service water storage facility and interconnecting pipelines.
- Developed 3D design and 2D documentation for Hadgraft St SPS & Jardine Park SPS pumping, ventilation and electrical upgrades in Rockhampton, including steel and aluminium accessway fabrication shop drawings, pipework and pump support design.
- Produced structural, civil, electrical and P&ID engineering drawings in AutoCAD to AS1100.101 and AS1100.501 for issue to contractors and local government.

#### Polymathic (February 2016 – February 2021) – Design Engineer

- Motorsports performance engineering – Porsche Carrera Cup Australia, Australian GT, TCR Australia, International GT
- Motorsports support software development (ie NextSession cloud-based garage timing, DataPace online team data database, BlackRings tyre tracking).
- Automotive roof crush test rig FE structural analysis and validation for Ford Motor Company.
- Designed adjustable portable motorsport chassis alignment stands.

#### Ford Motor Company (December 2015 - May 2019) – Vehicle Architecture Engineer & Senior Vehicle Architecture Engineer

- Engine bay and underbody packaging & mechanical integration, powertrain motion envelopes.
- Development of concept unibody CAD to support vehicle CAE model development.
- Involved in the transition to a 3 cylinder powertrain including actions to counter characteristic vibration behaviour by conducting centre of mass analyses and powertrain motion envelope generation leading to engine mount relocation and mass dampers.
- Key pre-program mechanical and package integration contact for China Mondeo project.
- Developed alternative team structure for increased efficiency of pre-program technical decision making.

#### Garry Rogers Motorsport (March 2014 – December 2015) – Design & Data Engineer

- Involved in analysis and design of various actions to address the characteristic vibration of the 60° flat plane crank Volvo V8 race engine including engine sub-frame design modifications for direct mounting.
- Involved in new steering rack design to counter resonances caused by the characteristic torsion bar natural frequency.
- Prepared damper motion frequency analyses for each V8 Supercar racetrack to inform damper valving decisions.
- Linear hydraulic fuel flow modelling, validated by the design and construction of an experimental rig and subsequent physical testing.
- Unique clean-sheet mechanical-hydraulic adjustable sway bar controller and actuator system design.

