Powertrain Design and Development Group

Specialists in
(DCT) Dual Clutch, (AT) Automatic,
(MT) Manual, (AMT) Automated Manual,
Hybrid Transmissions

Power-flow design
Clutch design
Cross-section design
Electro-hydraulic systems design
Control software design and calibration
Prototype development and testing
Vehicle integration
Production development
Test and evaluation
Innovation

NTC Powertrain, a Member of the AVL Group, is an innovative tier-one provider of transmission designs and prototype solutions to the world’s foremost automotive companies. Key clients include General Motors, Ford, Volkswagen, Geely, Chery, Great Wall Motor Company, SAIC, BorgWarner, FEV and Jatco.

Transmission designs include both front and rear wheel drive Dual Clutch Transmissions (DCT) suited to vehicles ranging from high performance sports cars to small passenger sedans. NTC has to date delivered over twelve new DCT designs in what is still a very new technology segment.

International Customers

NTC has gained a reputation for innovation and excellence as demonstrated by the receipt of many industry awards including winning “The Australian Institution of Engineers, Engineering Excellence Awards” on several occasions. NTC’s innovation has been recognized with the registration of many patents for transmission innovation and the launching of advanced technology into the international arena with global automotive customers and supply partners. NTC is a preferred Technology Supplier to GM Powertrain and VW and recognised in the industry as a leading tier-one technology supplier with manual, automatic and dual clutch technologies to major automotive customers.
In-house vehicle test and evaluation with capabilities to test:

- Mechanical reliability
- Software
- Controls
- Cycle fatigue

Rapid Prototypes
- Mechanical Hardware
- Hydraulic Control Systems
- Software
- Complete 3D Analysis
- Engine-to-ground design
- FEA
- FMEA
- Root Cause Analysis
- Warranty Investigations
- DVP and Test Specifications

Design of:
- AT
- AMT
- DCT
- MT
- Transfer Case
- Differentials
- Hybrids
- Control valve bodies
- Solenoids
- Full integrated system simulation

Over 30 Patents Registered

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<th>Method of controlling DCT</th>
<th>2-Speed marine transmission</th>
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<td>Multi-speed auto with integrated starting device</td>
<td>De-coupling clutch</td>
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<td>Dual wet clutch automated manual transmission</td>
<td>Hydro drive</td>
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<td>4/5/6/7 speed transmission</td>
<td>Hybrid reverse pump</td>
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<td>Shift spool position detection</td>
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<td>Electro-hydraulic control for AT</td>
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<td>Transmission control apparatus</td>
<td>Method of controlling DCT synchronizers</td>
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Hydraulic Systems

- Hydraulic circuit design
- Solenoid design and development
- Valve body design and prototype
- Lubrication
- Pump/Pump on demand
- Accumulators
- FMEA

Model Based Design

Through Model-Based Design, embedded control system design teams can begin evaluating software designs without using prototype products and real-time targets. The Simulink environment for Model-Based Design allows NTC Powertrain engineers to mathematically model the behavior of the vehicle, design the software and model its behavior, and then simulate the entire system model to accurately predict and optimize performance. The system model becomes a specification from which you can automatically generate real-time software for testing, prototyping, and embedded implementation, thus avoiding manual effort and reducing the potential for errors.

Industry Awards & Recognition

Australian Institute of Engineers Excellence Awards

- Hazardous Area Communication and Lighting System - 1997
- Dual Clutch Transmission (DCT) Electro-Hydraulic Control System - 2003
- ION575R6 6 speed transmission - 2004

Hills Industry Award for Excellence

- Dual clutch transmission electro hydraulic control system - 2003
- ION 575R6 6 Speed transmission - 2004

Australian IAME award for service to the Industry - 2003