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## TRANSMISSION DESIGN

Antonov has extensive experience in the design of innovative transmission and driveline products for the automotive, commercial, military and industrial markets. Our proven specialist design expertise coupled with state of the art analytical software tools creates a highly efficient process from concept through to production. This 'right-first-time' approach greatly reduces engineering and program timing risk even on the most technically challenging projects.

Highly skilled engineers with a broad range of transmission engineering experience makes Antonov the ideal engineering partner for turnkey transmission design and development projects including:

- Conventional torque converter planetary automatic transmissions.
- Next generation wet clutch launch automatic and DCT transmissions.
- Single and multi-ratio highly efficient transmissions for electric and hybrid vehicles.
- Manual gearboxes for passenger car and motorsport applications.
- AWD driveline systems and torque vectoring differential products.
- Hydraulic and electric actuation and electronic control systems.

## PROTOTYPE MANUFACTURE AND DEMONSTRATION VEHICLE INSTALLATION

Once detailed component manufacturing drawings are complete, Antonov can manage the procurement and assembly of prototype transmission hardware. With in-house transmission test capabilities Antonov can validate prototype transmissions and using dedicated workshops install and calibrate transmissions in customer demonstration vehicles.

## PRODUCT OPTIMISATION AND VOLUME PRODUCTION LAUNCH

The transition from prototype to production is a difficult process. With our well established low cost transmission manufacturing partner's facilities in China and relationships with world leading production suppliers of hydraulic systems, control software and TCU hardware, Antonov can effectively manage the production supply of transmissions from niche applications through to high volume capacities. Antonov consider the following throughout the design optimisation and productionisation process:

- Engineering risk analysis and detailed FMEAs.
- Cost-down, modularity and part commonisation.
- Weight optimisation and piece part count reduction.
- Design for volume manufacture.
- Ease of assembly and assembly sequence.
- Bill of materials and volume costing.
- Vehicle packaging and installation requirements.
- Flexibility for future torque upgrades.

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## ANTONOV EXPERIENCE

Antonov has 20 years of experience in the design, analysis and development of geared products for the automotive industry. As well as a wealth of technical capability brought to the company by the transmission industry's leading engineers, Antonov has well developed business and project management processes to ensure that projects are delivered to the highest quality, within budget and on time. Complementing Antonov's technical excellence, these processes and capabilities enable us to be a complete service supplier within the transmission sector.

### PROJECT MANAGEMENT

With a proven track record in delivering projects on time and to budget, the Antonov project management team ensure that from project initiation to final delivery, the key elements and project structure are formulated and adhered to. Throughout the work flow, key milestones are defined and internal and external reviews are performed as required to ensure optimal delivery with minimal risk.

### PROTOTYPE MANUFACTURE AND ASSEMBLY

Antonov offers a full prototype manufacture, assembly and test service. We are able to procure all BOM items through identification and management of suppliers to ensure quality and timescales are met. Procured parts are inspected before assembly in our dedicated facilities by our skilled and experienced technicians.

### VOLUME PRODUCTION COSTING

It is essential that the full cost implications for volume production are evaluated early in the design process. Correct early design and process decisions ensure development programs run to budget and timescale and unit cost targets are achieved. Antonov offer a full volume production costing service to our clients.

### SUPPLIER QUALITY AUDIT

Ensuring the quality and consistency of parts from external suppliers is time consuming when resources could be utilised more efficiently elsewhere in your business. Antonov can both audit and select suppliers that are able to provide the greatest robustness and continuity of supply.

### SECURE CONFIDENTIAL WORKSPACE

Antonov has a dedicated transmission design, assembly and test facility based in the Midlands. Client programs are afforded the strictest confidence and dedicated project offices are available if required.

### OEM INDEPENDENCE

Antonov is able to offer a range of consultancy and product services that are fully independent. We offer the perfect combination of a proven creative and technical pedigree through our fully engineered transmission products, whilst providing a service tailored to the individual requirements of each client.

#### For more information contact:

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