

Powertrain Integration

Application Areas



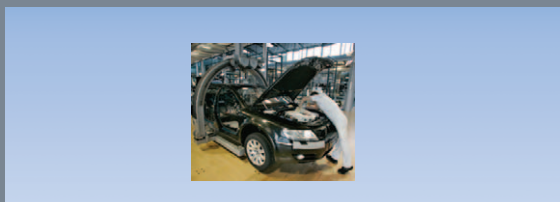
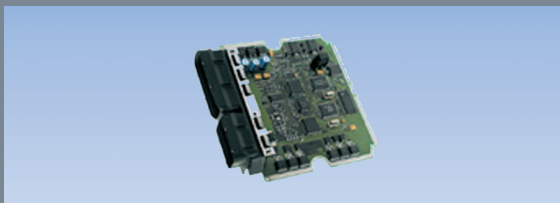
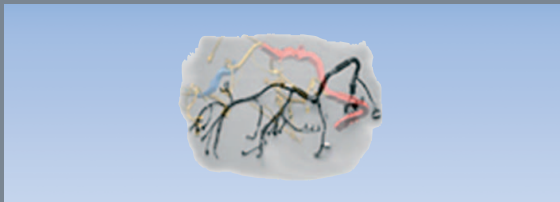
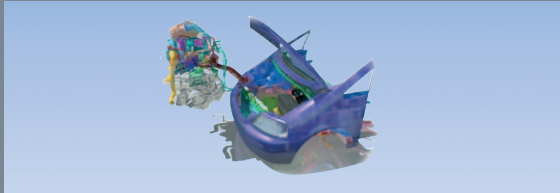
Product Definition		Careful Understanding of Your Market Needs Function Definition & Competitor Benchmarking Project Timing & Logistic planning
	Specification	System & Vehicle Specifications DVP & R Generation for Product Validation Management Within Your Change Control System
Packaging & Modeling GD&T, FMEA and DFMA	Engineering Design	Compatible CAD System With Your Own Release of CAD Models, Details & Drawings
FE Analysis & Dynamics Modeling Kinematic, Thermal and NVH Labs	Development	Build & Test Issue Resolution Robust Design Iterations to Targets
Hot, Cold & Environmental Testing Durability & Key Life Tests Finalize Calibrations & Performance	Validation	Management of Validation Tests at IAV's or Your Own Test Facilities
Milestone Submission of DVP & R Completion	Sign-off	Achieve 100 % Testing Complete Execute Engineering Sign-Off
Process & DFMA Engineering Manage PPAP Approvals	Pilot Builds	IAV Team In-Plant for Process & Build Issue Resolution
	Process & DFMA Issue Resolution 100 % PPAP Management	Job 1
	Support Operator Training Process & DFMA Sign Off	Production Builds

IAV offers a complete, production-ready engineering solution for the integration of complex powertrain systems into new vehicles. Whether it's a minor modification assignment or a multinational vehicle program with 20+ derivatives - IAV possesses the knowledge and experience to complete the job. As the world's recognized leading powertrain system integrator, IAV provides maximum project efficiency and exceptional value.

- ▶ Diesel Engines
- ▶ CNG/LPG/H2 Engines
- ▶ Gasoline Engines
- ▶ Catalysts, deNOX and DPFs
- ▶ Automatic Transmissions
- ▶ DC and CV Transmissions
- ▶ Hybrid Powertrains
- ▶ Fuel Cell Systems
- ▶ Control System Design
- ▶ Software Engineering
- ▶ SiL/HiL Testing
- ▶ Advanced DoE Techniques
- ▶ Axles and Driveline
- ▶ Powertrain Calibration

IAV has a logical systems approach to engineering powertrains into your vehicles ...





Packaging & Specification

At the start of every powertrain integration program, IAV investigates the most beneficial package design for the given engineering goals. From this, we create the specifications for all necessary modifications to the powertrain.

Engine & Transmission Modifications

IAV can perform all required engineering integration changes to the engine and transmission. IAV utilizes the latest design, calculation, and simulation tools. IAV facilities, among the most modern in the world, are set up for component design through to total system testing. In addition, we have implemented proprietary development processes ensuring unrivalled quality and development efficiency.

Engine Bay Modifications

IAV has full capability to design, package, analyze and release the engine bay components including those within the powertrain mounts, induction, exhaust, thermal, HVAC and fuel systems. We control the component and system suppliers from design release, through development, PPAP and into saleable production launch.

Vehicle System Modifications

In some cases it is beneficial to make minor changes to the target vehicle system (e.g., improvements to overall NVH, safety, or cost). IAV forms and recommends these changes and we also execute the resulting vehicle changes.

Wiring

IAV engineers design, develop and launch production-ready wiring systems for power and signal distribution and charging and energy storage. Additionally, we supply high fidelity, functionally robust prototype harnesses for our customers' powertrain and vehicle systems.

Complete Calibration

IAV deploys advanced tools, processes, laboratories and skilled personnel for the total calibration of engine, transmission and driveline control systems. ECUs are calibrated for optimal emissions, driveability, performance, fuel economy, NVH, safety and control quality.

ECU System Development

In order to make the powertrain fit seamlessly into the increasingly complex electronic environment, IAV manages all changes within the ECU system. This includes the generation of hardware and software changes. The final software coming from the ECU supplier is quality-checked using IAV's hardware-in-the-loop systems. IAV also writes production-intent software code in-house.

Homologation and Production Support

IAV ensures that all specified government requirements such as emissions regulations, OBD and government safety standards are met. We support our customer through the homologation process and if needed, we expertly support the documentation and submission process required for vehicle homologation.