

ACS SYSTEMS INTEGRATION

Process and Application Expertise

Project Experience | 4WD Chassis Dyno Test Cell Upgrade

Our customer's goal was to make the best and most timely product development decisions. This required that they have effective tools* – which in this case was renovated test cells.

As a systems integration supplier, we used our proven process and over twenty-five years of application experience to guarantee a successful project. The ACS team assumed overall responsibility for managing the scope, schedule, and budget of the project.

Our expertise in testing equipment, technology, and industry regulations, as well as deep knowledge of building design and construction, provided a total resource to guarantee a successful project. The ACS team focused on creating seamless integration between the testing process and the facility infrastructure.

ACS assumed single source responsibility for what was a broad scope, including:

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- Architectural and engineering design services
- Purchase and integration of 4WD dyno system
- Robot driver system
- Design and delivery of climatic chamber
- Road speed fan
- Gas detection
- Dyno pit and facility upgrades
- Fire suppression for pit and test chamber
- Compressed air distribution
- Upgraded electrical distribution
- All required demolition and construction
- Full integration of all systems and components
- Installation and commissioning
- Full acceptance testing

A key element of our systems integration process is creating a strong team. ACS partnered with an engineering design firm with a background in designing automotive climatic test chambers and wind tunnels and a self-executing general contractor who had a strong history with our client and familiarity with this facility.



ACS process guarantees a successful project – from bar napkin idea through design and execution

The other critical piece of this project involved the dynamometer system. As systems integrator, we worked closely with our client to verify all technical dynamometer requirements and assisted in the validation of multiple vendor proposals, ultimately helping them choose the best-fit dynamometer solution and supplier. With the selection made, ACS took responsibility for integrating the chosen dynamometer solution into the overall system from facility fit and layout to selection of custom and off-the-shelf options to optimizing the handshakes between the dyno controller and the facility process PLC for ease of operation, troubleshooting, and maintenance.

Learn more about the tool (test cell) we designed and built using ACS Systems Integration process and application experience.

*Tools – Examples of "tools" as defined by the ACS Systems Integration process are facilities, cells, stands, benches, beds, and rigs that take into consideration the complexities of the business and technical drivers required for decisions regarding product testing, production, and industrial processes.



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DESCRIPTION

ACS provided turnkey engineering, design, construction, integration, and commissioning to upgrade four 4WD chassis dyno test cells capable of testing up to Class 4 trucks. ACS specified and procured dynamometers, robot drivers and data acquisition system. ACS designed, fabricated and installed road speed fan systems capable of 200 MPH simulation, thermal enclosures, control systems, gas detection, and complete vehicle integration tools. The mileage accumulation facility upgrade included two heated enclosure test cells and two open air test cells. ACS also performed conceptual engineering for future upgrade phases for this facility.

KEY FEATURES

- 4WD chassis dyno test cells capable of testing up to Class 4 trucks
- Road speed fan systems capable of 200 MPH simulation
- Thermal enclosures
- Control systems
- Gas detection
- Complete vehicle integration tools



SERVICES PERFORMED

- Test cell and equipment design
- Managed construction including demolition of existing cells and renovation
- Integration of existing building infrastructure including power, fire protection
- Design, fabrication, installation and commissioning of test cell and safety control systems
- Upgrade of fuel dispensing systems
- Installation of Electric Vehicle (EV) charging infrastructure
- Complete air flow and CFD (Computational Fluid Dynamics) study to correlate track air flow with road speed fan







