

A close-up, low-angle shot of the front left corner of a bright blue car. The image shows the headlight, the front bumper, and the front wheel. The car is parked on a dark, textured surface. The background is a solid white color.

A&D TECHNOLOGY PRODUCT OVERVIEW

Introduction

WELCOME

Thank you for your interest in A&D Technology's suite of products and solutions. We are dedicated to helping our customers integrate state-of-the-art technology into both new and existing systems.

At A&D Technology, we work to make sure each and everyone of our products can be integrated into your workflow. We believe in offering our customers solutions, meaning our products can either complete a setup or comprise the entirety of a test system. We believe strongly in our products and customer service and know that our customers will remain with A&D Technology, because we care and it shows.

We work with both industry leaders and small businesses.

We would like to work with you.

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About A&D Technology

INNOVATORS IN THE DEVELOPMENT OF TESTING TECHNOLOGY

A&D Technology delivers integrated test automation and lab management solutions to the transportation & energy markets.

A&D's open, flexible and cost-effective tools are designed to fit a wide variety of applications, from durability, performance and (HIL) simulation to hybrid/electric vehicle and battery test systems.

A&D Company, Ltd. is a world-class producer of advanced measuring, monitoring, controlling and testing instruments. Individuals with varied educational and technical skills use these instruments in a wide range of applications. Yet these products share a number of things in common:

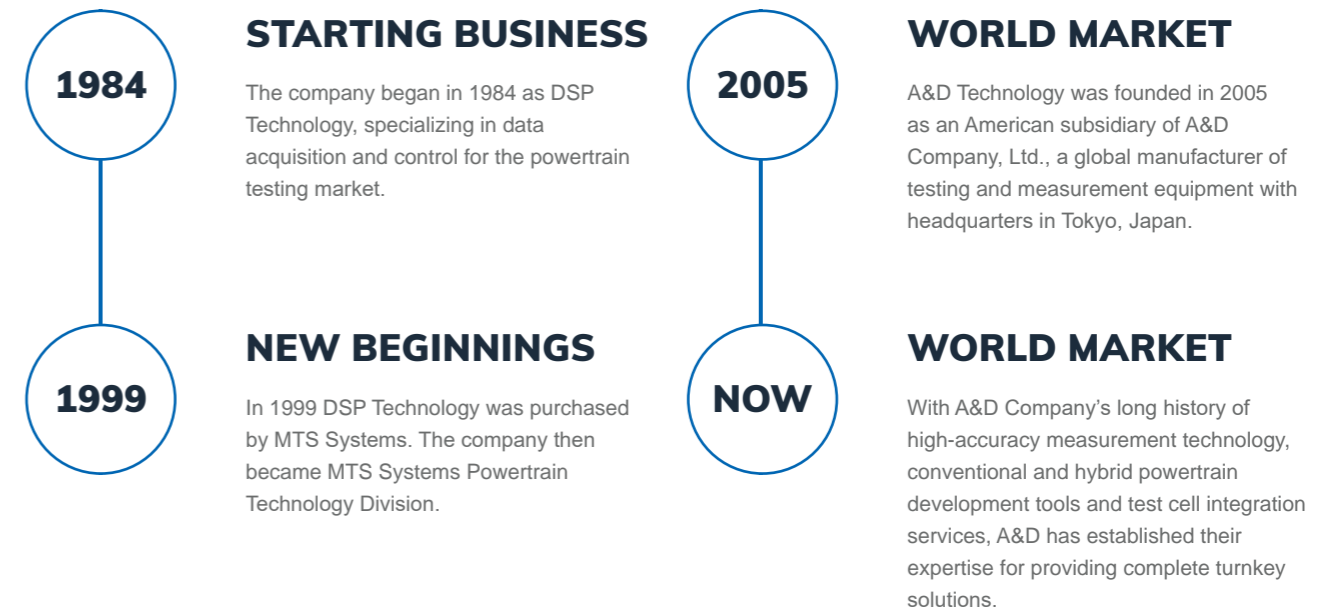
- High performance through advanced analog-to-digital and digital-to-analog conversion technology incorporating highly accurate sensors and exceptional quality.
- Since its inception in 1977, A&D has built a reputation for high quality products, which help the user to perform his/her job more accurately and effectively.
- A&D's products have expanded into a comprehensive line that ranges widely throughout industry, education, medicine and science.

Meet Our History

THE COMPANY HISTORY

A&D Technology was founded in 2005 as an American subsidiary of A&D Company, Ltd., a global manufacturer of testing and measurement equipment with headquarters in Tokyo, Japan. The goal was to bring A&D Company's testing and measurement expertise into the automotive engine and powertrain development market.

Recognizing the need for an organization with experience in engine and powertrain test cell integration, A&D purchased the former Powertrain Technology Division of MTS Systems. Together these two companies have over 30 years of experience in supporting powertrain and vehicle development.



Overview

COMBUSTION ANALYSIS

The demand for lower emissions, increased fuel economy, improved reliability and overall better performance has become the driving force behind the increased levels of technology in today's internal combustion engines.

Development and calibration engineers tasked with integrating this technology need to utilize best-in-class tools to meet the many goals of a development project. One of the most effective of these tools is a high-quality combustion analysis system.

THE A&D SOLUTION

A&D's Phoenix combustion analysis systems uses in-cylinder piezoelectric transducers to measure the pressures throughout the entire engine cycle. Cylinder pressure measurements are then analyzed simultaneously with data acquisition providing analysis results for display and logging while the engine is operating. Instantaneous availability of combustion results facilitates the implementation of automated calibration and optimization.

The Phoenix system includes other features such as crank position sensor signal interpolation, self powered charge amplifiers and 12 volt DC operation which makes it ideal for in-vehicle applications. The availability of immediate results can be used to properly set start-up fuel and ignition timing, calibrate knock detection, and validate misfire indication.

A&D's Phoenix systems include all the software necessary to perform standard tests required to properly evaluate combustion processes in two or four stroke, spark or compression ignited engines. Features built into the Phoenix systems include: Start-up test mode for evaluating engine cold-start strategy, Knock detection and indication to protect the engine and increase reliability, Data Acquisition with a fixed time base. Crank position sensor/ engine-mounted encoder for flexible DAC methods, Automation system interface for implementing closed-loop test cell control and Post processing for post-test analysis.

Phoenix AM/RT | Lab Setting Combustion Analysis

COMBUSTION ANALYSIS

The A&D Phoenix combustion analysis product line offers the ideal instruments for optimal engine calibration. Built on more than 25 years of experience and an installed base of 300+ systems worldwide, Phoenix sets the standard for advanced combustion analysis systems.

The Phoenix AM/RT supports up to 48 channels with real-time cycle-by-cycle combustion analysis. The Phoenix AM/RT also allows the streaming of the processed data to 3rd-party systems via standard communication interfaces (e.g. CAN, XCP on Ethernet, or UDP).



Highlights

- High-speed processing performs cycle by cycle evaluation at engine speeds up to 12,000 RPM
- Streaming interfaces connect to third-party devices for closed-loop control in automated test applications
- Expandable to 48 channels to grow with testing requirements
- User developed calculations can be embedded into the real-time system for custom analysis

Phoenix C3 - Portable Combustion Analysis

COMBUSTION ANALYSIS

The Phoenix C3 is a compact, configurable, combustion analysis system ideally suited for in-vehicle testing, or any application with a low channel count. Representing the next generation in combustion analysis, the Phoenix C3 is configurable through any device with a web browser, eliminating the need for a laptop. Once it is configured, it runs automatically, requiring no babysitting.

The Phoenix C3 also provides seamless integration with industry-standard ECU calibration tools, supports infinite streaming, and the large data storage capacity provides the ability to perform extended test procedures, such as FTP75, without interruption.

HIGHLIGHTS

- Compact Design for in-vehicle data acquisition
- Real-time cycle-by-cycle combustion analysis
- Support for user-defined cycle-by-cycle calculations
- Multiple cycle-by-cycle streaming output choices
- Operation without a PC
- Large data storage with SD card support



Phoenix CAS - Software

COMBUSTION ANALYSIS

The Phoenix Combustion Analysis Software (CAS) provides the ability to configure the system hardware based on the specific testing needs of the application. Using the acquired data, Phoenix CAS calculates all of the typical combustion parameters, including Indicated Mean Effective Pressure (IMEP), Heat Release and full Knock evaluation. The results can be viewed with customizable display objects and stored in a variety of formats.



Built-in Calculations:

- Indicated Mean Effective Pressures (IMEP)
- Misfire Detection
- Full Knock Evaluation
- Start and End of Combustion
- Mass Fraction Burned and Heat Release
- Peak Pressure and Location of Peak Pressure
- Maximum Rise and Location of Maximum Rise Rate
- Combustion Noise Level Evaluation
- Ignition and Injection Timing
- Ignition Delay

iTest Application

TEST AUTOMATION

Our iTest family of test automation systems provide a full range of capabilities, allowing you to purchase just the right solution for your application without having to overbuy.

Testing applications vary greatly, from simple component testing to complex systems such as e-motor hybrid test stands that include simulation and calibration. The test automation requirements for these systems also vary. In most cases these systems need to integrate and acquire data from a variety of measurement devices from different vendors, all while following a defined test schedule.

ITEST PRO

iTest.Pro is our full-featured, expandable test automation and control development platform for any application. With more than 150 available device drivers, iTest.Pro can be completely customized to meet even the most challenging needs, such as test systems running transient test schedules or tests involving simulation.

ITEST LAB AUTOMATION

iTest.LA is a standard application for engine testing and includes the AutomationPanel operating interface and FlexEdit workflow editing tool. iTest.LA has a large library of standard modules used in engine testing. Even after the solution is adapted to a test cell, updates to AA&D standard modules can be applied.

ITEST MICRO

The iTest.Micro platform supports pre-configured “out-of-the-box” solutions that are targeted for test systems running simple, repetitive sequences (e.g. on/off), usually found in component or end-of-line quality testing.

ITEST SPEED

iTest Speed platform offers unique preconfigured options that are important for testing systems related to racing and aeronautics.

iTest Application

TEST AUTOMATION

The iTest family, which includes iTest.Pro, iTest.Standard and iTest.Micro, provides a range of functionality and configurability to fit any application. Because they are all based on the iTest platform, it is an easy transition to go from one to the other, with minimal learning curve, as requirements evolve. Third-party device manufacturers have successfully used iTest to develop controllers, and many automotive OEMs have implemented the system as the basis for their test automation.



iConnect I/O X-Series

TEST AUTOMATION

An evolution in the development of I/O solutions, A&D is offering a plug-n-play solution through our iConnect X-Series I/O modules. An important piece of test automation equipment, iConnect X-Series offers easy integration, using EtherCAT for high-performance measurement and control applications.

EtherCAT also provides flexibility with a simple and robust architecture. The iConnect X-Series I/O system can be used with A&D's iTest data acquisition and control software as well as any EtherCAT data acquisition system. Custom wiring at the module end is NOT required with iConnect X-Series.

HIGHLIGHTS

- EtherCAT can be used with other systems
- Mix and match functions in the same rack – more flexibility in configurations
- Support for AD7314 and standard Gantner modules – customers can use any Gantner Q.bloxx XE module
- AD7314 modules USE M12 connections – readily available connector and harnesses
- Same I/O specifications as GI Q series XE
- No customer driver to modify
- GI Bench® and TwinCAT® support – use standard GI and Beckhoff® software for configuration
- Rack-mounted chassis (mounts directly to ADT Boom Box, up to 6 chassis)
- I/O Module / Test Automation Equipment for multiple uses



iConnect I/O

TEST AUTOMATION

Through its state-of-the-art design and open system architecture iConnect delivers high accuracy and stability, along with the ability to adapt to specific testing needs. The system can be easily expanded or scaled down, making unused I/O modules available for other test cells. This creates a laboratory environment where each test cell is equipped with an optimal set of I/O. Modules addressing specific needs can be added as needed.

Highlights:

- Easily scaled for specific test requirements
- Large variety of available I/O modules
- I/O modules can be placed close to the sensors



ORION - Automated Engine Calibration

ENGINE CALIBRATION

ORION automates the process of characterization and calibration of engines to contribute to reducing the total test time. It facilitates the calibration process by taking control of both the ECU calibration system and the test cell control system to run experiments as part of an automated calibration process.

With connectivity to IAV's EasyDOE, Mathworks' MBC Toolbox and other DOE tools, ORION provides an extremely powerful environment for mapping an engine and generating the Engine Management System calibration tables. The modular design means the product can be configured to a users' specific requirements and work practices, rather than having to adhere to rigid methodologies dictated by prescriptive software.

SYSTEM PERFORMANCE

Calculation engine: 100hz* execution rate

- Minimum observed limits: 50
- Minimum parallel controls: 10

Communication to Test Cell System (max settings)

- Read: 350 channels
- Write: 350 channels
- Rate: 100 Hz*

Communication to ECU Calibration tool (max settings)

- Read: 350 channels
 - Write: 350 channels
 - Rate: 100 Hz* PC
- *up to 100Hz, depends on processing load

PC System Requirements (Minimum)

- 2.66 GHz Intel Core2 Duo (or equivalent)
- 2 Gb RAM
- 4 Gb Free space on disk
- Windows 10

ORION - Automated Engine Calibration

ENGINE CALIBRATION

Highlights

- Includes built-in, proven calibration methods letting users quickly get to work
- Incorporates a real-time engine
- Provides flexibility, allowing users to quickly build tests by providing the ability to parameterize features
- Interfaces to popular calibration tools and test cell systems such as iTest, PUMA OPEN, and ETAS INCA
- Managing growing number of degrees of freedom
 - Automating boundary detection
 - Automating data collection and analysis



iTest Battery Application

BATTERY TESTING

A&D Technology battery test systems are designed specifically for the development, optimization and validation of batteries, including the battery system components. Based on iTest, our flagship test automation platform, iTest.Battery includes proven drivers for seamless integration with best-in-class testing components, such as power process systems, air coolant systems, battery ECUs (BMS), chiller systems and environmental chambers.

iTest.Battery triggers the measurement instruments and sub-systems to gather data to compile test results and generate standard test reports.

HIGHLIGHTS

- Significantly improves test throughput by providing immediate feedback of test results used as set-points in the current test
- Enables safe and secure 24/7 unattended operation when coupled with integrated lab management system
- Ensures error-proof testing through minimal programming changes
- Convenient offline simulation for test development verification
- Quick and easy installation with pre-configured instrument and test cycle modules (system is typically fully operational in less than two days)
- Fully integrated lab and data management systems
- Open architecture for I/O hardware integration
- 150+ existing interfaces to common third-party measurement instruments
- Integrated reporting package provides reports at the test cell or remote location
- Expandable with lab growth

iTest Battery Application

BATTERY TESTING

Understanding the challenges facing today's battery testing facilities is essential in developing effective tools and control strategies. With the wide range of test equipment in use, communication between devices is difficult, creating a huge need for an integrated test system.

Current solutions often require multiple technicians to both run tests and define new ones. The test results are then potentially generated in a different format for each piece of test equipment, and time-consuming manual data crunching may be required to fully understand the test results. Above all, safety is a major concern, and test facilities require manned operation in case of faults that required manual shutdown of the test.



BMS HILS

HIL SIMULATION

The testing of Battery Management Systems (BMS) with real Li-ion batteries can be costly and time consuming. Using a system such as A&D's BMS Hardware-in-the-Loop (HIL) system will help shorten the development cycle of a BMS system. In addition to reducing the cost and time it also makes BMS testing more flexible and traceable, easier to reproduce and safer when testing beyond the normal range of battery operation.

HIGHLIGHTS

- Supports up to simulation of 192 cells
- Voltage output function of 0-5V with an accuracy of +/-0.1% of full scale per cell.
- Voltage and Current measurement function of 0-5V with an accuracy of +/-0.1% of full scale.
- Fault insertion capability.
- Noise contamination functionality
- MATLAB/Simulink compatible.
- Flexible and open modeling environment on Real-Time Linux Operating System.
- Running Battery Models or even entire Vehicle Models is possible.
- CAN Communication
- BMS storage space
- User interface via A&D VirtualConsole GUI interface for signal display and parameter tuning.
- Writing of test sequences



ECU & Engine HILS | HELIOS

HIL SIMULATION

A&D HIL systems provide hardware and software that reduces the users burden on ECU test environment creation and dramatically shortens the development period.



HIGHLIGHTS:

- CPU with powerful computing performance
- Distributed computation with core partitioning and multi-nodes
- Fast inter-node communication, low latency model synchronization
- High scalability
- Many options that enable the creation of a test environment in a short period of time
- All-in-one design with integrated I/O and I/F for compact and low price
- Integrated software platform with A&D test bench software (iTest)
- Flexible configuration based on needs of system from small to large scale

Procyon | Real-time Simulation - Lab Setting

HIL SIMULATION

Procyon is a high-speed real-time simulation and control platform, customizable for a diverse range of applications. The open and configurable system architecture supports multiple CPUs with multiple cores as well as HyperTransport, PCI Express and conventional PCI interconnections.

Procyon uses A&D's VirtualDSPConsole as a visual front end for system monitoring and parameter setting. MATLAB/Simulink is used for modeling and control development. Simulink blocksets for the function boards are provided and can be easily integrated in the solution.

HIGHLIGHTS

- Multi-core/multi-CPU support (Can be extended up to a 32-core system with 8 Intel® Xeon® 3.5GHz processors)
- Direct connection of I/O interface to CPU
- Real-time application development environment with MATLAB/Simulink.
- Open system.
- Easy system setup and configuration
- Model division among CPU cores and parallel processing.



ADX | Real-Time Simulation - Portable

HIL SIMULATION

The AD5436 is a high-speed measurement and control system that can be customized for a wide variety of applications. It addresses various systems requirements by combining multiple I/O boards and a CPU employing a Linux Real-Time Operating System. Its easily programmed using MATLAB/Simulink® models and A&D's GUI-generating and experimentation support tool VirtualConsole.

After downloading compiled Simulink/Stateflow models onto the AD5436, it is possible to monitor and change parameters easily. The AD5436 has 14 programmable function keys and a touch-screen interface for stand-alone functionality. It can also be controlled via a Windows PC Ethernet connection and A&D's VirtualConsole software.



PerformanceLine by A&D

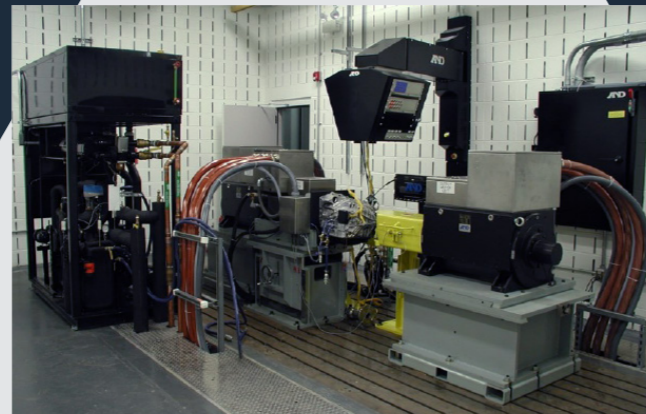
DYNAMOMETERS

The comprehensive Performance Line includes a solution for all of the tasks of a modern and efficient test field, from durability, vehicle simulation, and high dynamic transient to high-speed e-motors. When accuracy, reliability and performance matter look to the name that means dependability: A&D Technology.

The comprehensive PerformanceLine includes a solution for all of the tasks of a modern and efficient test field, from durability, vehicle simulation, and high dynamic transient to high-speed e-motors. Choose from a variety of field-proven models from the PerformanceLine family with proven performance to meet your testing needs.

HIGHLIGHTS

- Suitable for high speed, transient and steady state
- Development of powertrain system with multiple drive axle combinations
- Angular-speed variation for simulation of IC firing pulses
- Both AC and EC models available



Dual-Loop Dyno Controller

DYNO CONTROLLER

Visualization module:

A large LCD touchscreen to set/display information for measurement & control.

Native digital conditioning:

Speed & torque are directly conditioned by the rack (load cell & torque meter), which allows for accuracy and resolution to be maximized.

Available operating modes:

Several control modes (N/%, N/T, N/X, RLS, etc.)

Available hybrid options:

0-10V Outputs for feedback of speed, torque and power.

0-10V Inputs for set-point external definition

Digital inputs/outputs for alarm signals

HIGHLIGHTS:

- Compatible connections to existing system
- Auto-switching between dynamic and static PID's
- Rackmount LCD touch panel
- Multiple communication options:
 - Modbus
 - Profibus
 - EtherCAT
 - Discrete I/O
 - 100Hz real time control



In-Cell Emissions Testing Bex-1000FT

EMISSIONS MEASUREMENT

BEX-1000FT, a multi-component gas analyzer based on Fourier Transform Infrared (FTIR) technology, allows for the continuous raw or dilute measurements of up to 40 gases using one device, which allows the system to replace multiple conventional analyzers. Since there is only one detector, all measurements are synchronized. Additionally, there is only one time delay to handle –compared to multiple time delays when using numerous conventional analyzers. The standard system operates at vacuum pressure, which allows for a fast-response time and a longer maintenance cycle.

HIGHLIGHTS

- Provides asynchronous measurement of over 30 regulated and unregulated gases at one detector
- Vacuum sampling system that allows for decreased absorption, a fast response rate (T10-90 -approximately 1.5 sec) and a lower consumption of the exhaust sample
- One device that replaces multiple conventional analyzers, with only one time delay to consider for dynamic analysis
- Optional roll cabinet available to provide easy sharing between test cells
- Designed to provide continuous measurement of undiluted (raw) vehicle exhaust for gasoline, diesel, CNG and alternative fuel vehicles
- Low-cost operation due to drift-free calibrations and minimal maintenance requirements
- A single device that measures all gases imperative for emissions regulations as well as engine and catalyst calibration and development



In-Vehicle Emissions Testing Bob-1000FT

EMISSIONS MEASUREMENT

BOB-1000FT, a multi-component gas analyzer based on FTIR (Fourier Transform InfraRed) technology, allows for highly accurate emissions testing. The BOB-1000FT is the only FTIR system optimized for use on-board, and includes integration of data from the ECU, weather data, GPS data and time-aligned video. The system allows for the continuous raw or diluted measurement of up to 30 gases at one sample detector with a sampling rate up to 5Hz.

HIGHLIGHTS:

- A single device, providing asynchronous measurement of up to 30 regulated and unregulated gases at one sample point
- Durable design and vibration dampening for use on-board under “real world” conditions or in a test cell configuration (roll cabinet available), where it can be moved easily between cells
- Designed to provide continuous measurement of undiluted or diluted vehicle exhaust for gasoline, diesel, CNG and alternative fuel vehicles
- Low-cost operation due to drift-free calibrations and minimal maintenance requirements
- Vacuum sampling system that allows for decreased absorption, a fast response rate (T10-90 -approximately 1.5 sec), and a lower consumption of the exhaust sample
- A single device that measures all gases imperative for emissions regulations as well as engine and catalyst calibration and development
- Integrated data from vehicle ECU, GPS, Weather Data and video each time aligned to all emissions data



LabWorX Suite

LAB MANAGEMENT SYSTEM

LabWorX by A&D Technology has been designed to work seamlessly to transform a collection of test systems into one managed lab. Not only can you manage, monitor and automate your test systems reliably, you can do it from anywhere. LabWorX gives you the control.

LabWorX Suite

LAB MANAGEMENT SYSTEM



LABWORX SUITE

Centralized Server

Enables test lab managers to monitor and manage the activity of multiple test cells from a single web page interface.

Automated Notification and Response

Standalone lab-wide system that supports 24/7/365 unattended operation by providing automated notification and response capabilities when no operator is present.

Automated Reporting

Automated report generation tool that provides centralized report configuration management.

Cloud-Based Lab Management

Allows users the ability to transform a collection of test stations into one managed lab without requiring on-site IT support.

Mobile Access

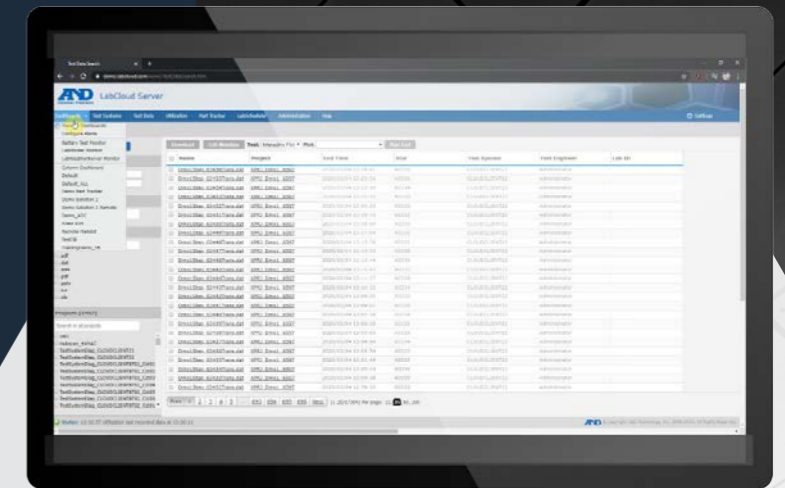
User interface is optimized for mobile devices, both iOS and Android, providing easy navigation and clear, readable display of data.

Test Schedule Management

Triggers personnel who have an action to perform and provides feedback to the original test requester.

Test System Interface

Allows users the ability to set and retrieve the value of all available data parameters, execute procedures on the test system, and upload test data.



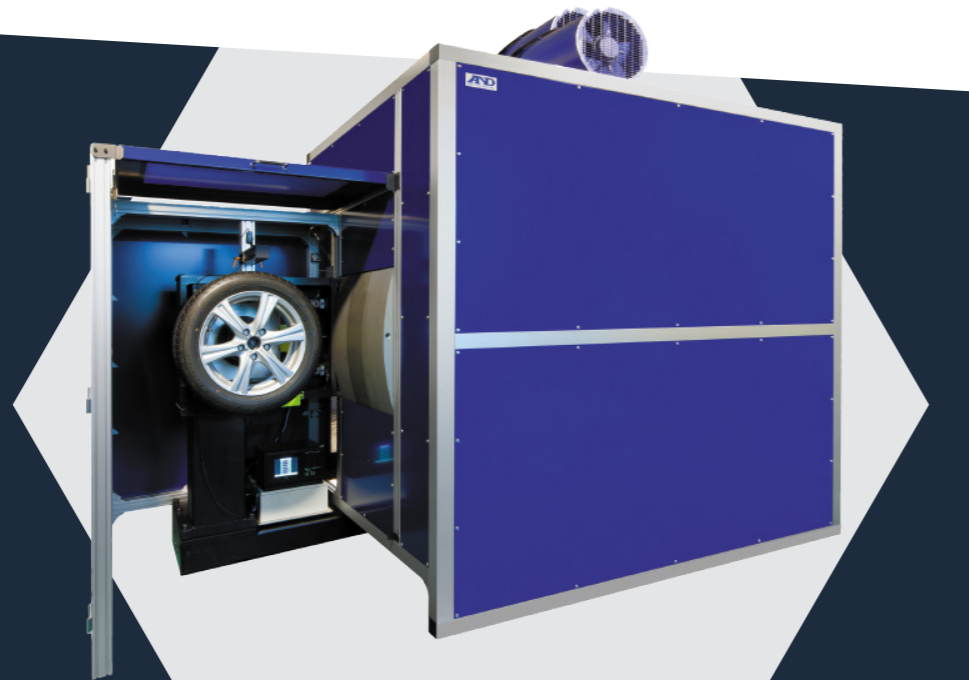
Rolling Resistance Test Rig

TIRE TESTING

The A&D Rolling Resistance Test Rig (RRTR) is a high-accuracy drum-based rolling resistance test machine. The RRTR offers world class repeatability and accuracy through its rigid design and a customized load-cell developed using our Model-Based Sensor (MBS) technology. Built with consideration for ease of use, maintenance and calibration, it offers automated and manual test scheduling along with a user-friendly operator interface. The RRTR is available in a variety of configurations and sizes for passenger car (PC) and truck and bus (TB) tires, so that customers choose the machine that best fits their needs. Customization is possible depending upon customer needs.

HIGHLIGHTS

- High accuracy robust measurement
- Test standards compliance
- Fully automated
- Energy saving aluminum cast drum (about 30% compared to steel drum)
- Optional temperature chamber



Flat Belt Tire Test Rig

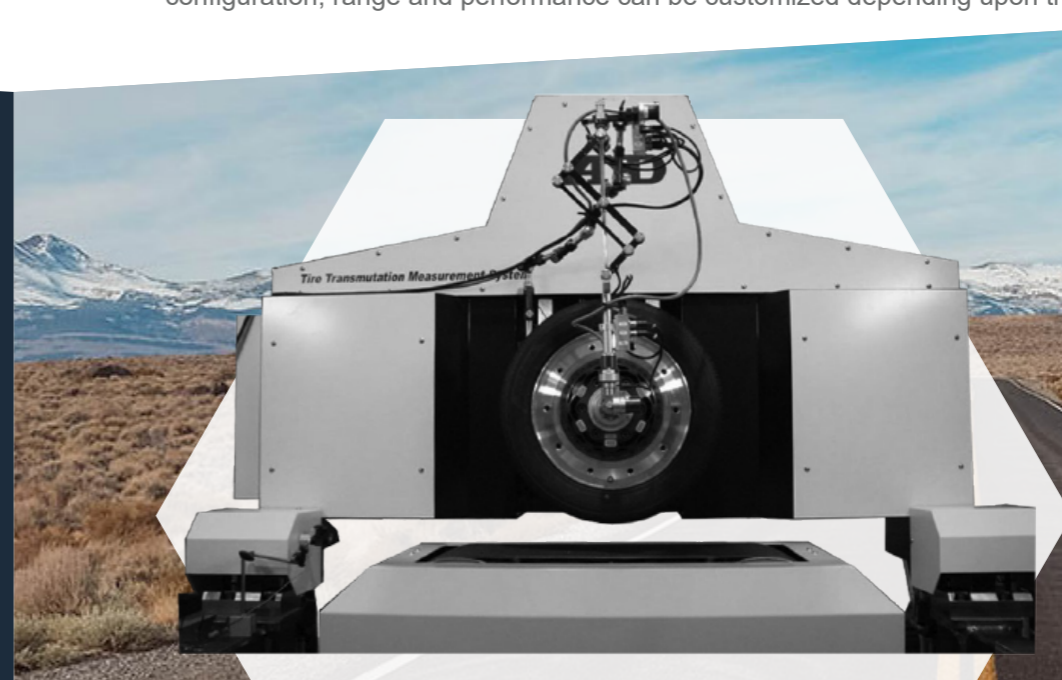
TIRE TESTING

The A&D Flat Belt Tire Test Rig is an indoor tire force and moment testing machine. It allows the tire to be tested against a flat surface under dynamic conditions. The flat surface is emulated by an electrically controlled belt-pulley assembly while the tire load is supported by an air bearing (for passenger cars loads) or a water bearing (for higher loads) that is present under the belt.

This belt-pulley assembly rests over a hydraulic shaker system that can emulate tire vertical motion and slip-angle generation in a highly dynamic fashion. The tire stand itself is capable of changing the tire vertical load and camber angle during the test run. Forces and moments experienced by the tire are measured at a high sample rate using A&D's 6-component Plate Force Sensor (PFS) mounted on the tire stand. The configuration, range and performance can be customized depending upon the intended application.

HIGHLIGHTS:

- Six degrees of freedom enable various tire setups
- Numerous safety features such as belt health monitoring and crack detection
- Belt and tire fully driven by electric motors
- Accurate steel belt control reproduces realistic road conditions
- Compact size
- Optional shaker simulation



Dynamic Contact Force Rig (DCFR)

TIRE TESTING

The A&D Dynamic Contact Force Rig (DCFR) is a new testing technology that combines a fully dynamic tire test rig with contact tire patch measurement sensors. This new technology provides a unique opportunity to the customer by measuring the dynamic contact patch shape with a 3-component force transducer embedded into a 3.2 m diameter drum machine.

SPECIFICATIONS

- Drum outer diameter: 2-3.2m
- Rotational Power: 300kW AC Motor
- Position resolution: 18,000 P/R
- Ground Speed: Max. 180 km/h
- Speed Accuracy: 0.10%
- Conformity Tire: PC, LT
- Tire Speed: Max. 180 km/h
- Movable Axis:
- Steering Angle: $\pm 20^\circ$, 50° / sec
- Camber Angle: $\pm 10^\circ$, 20° / sec
- Load: Max 10 kN, 40,000 N/sec

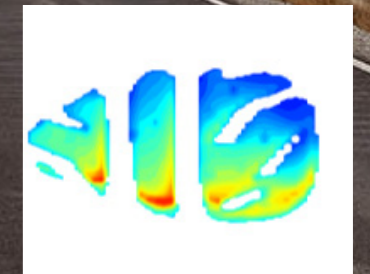
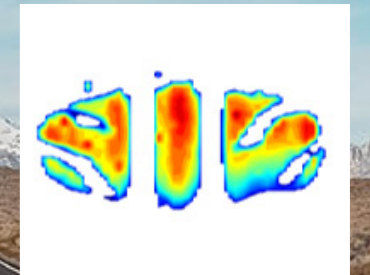
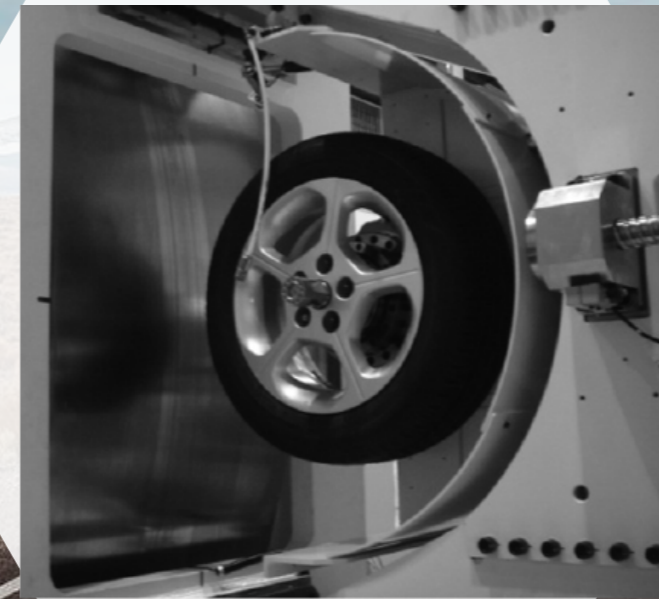
HIGHLIGHTS

- 3.2m diameter drum emulates a flat road surface
- Advanced rotation synchronization and slip ratio setting
- Built-in 6-component force sensor (Fx, Fy, Fz, Mx, My, Mz)
- Simulated road surface can be applied to drum

Dynamic Contact Force Rig (DCFR)

TIRE TESTING

The 6 force components include three force measurements in the X, Y and Z direction along with measuring the Moments of the X, Y and Z axis. The measurements can be recorded while adjusting the road force, camber angle, slip angle, tire speed, longitudinal slip and tire pressure. The adjustability of the tire machine and the performance of the sensor allow the capture of the true tire patch.



Vehicle Measurement System (VMS)

MODEL-BASED SENSORS

The A&D Vehicle Measurement System is a collection of embedded controllers and high-accuracy sensors acquiring synchronized vehicle dynamics test data under various real-world conditions. It is completely modular and scalable, and can be configured to include only the sensors required for a specific application. Third-party sensors can also be incorporated.

VEHICLE MEASUREMENT SYSTEM

Wheel Force Sensor (WFS)

Obtains all six components of forces/moments acting on the wheels.

Wheel Position Sensor (WPS)

Obtains the motion of the wheel in all six degrees of freedom.

Laser Ground Speed Sensor (LGS)

Obtains ground speed, effective wheel radius and side-slip angles.

GPS Sensor

Obtains latitude, longitude and altitude position of the vehicle.

Inertial Sensor

Obtains roll, pitch and yaw accelerations of vehicle.

Wind Sensor

Obtains the direction of wind with respect to the vehicle, wind speed and wind temperature.

In-Vehicle Network

Obtains information from vehicle ECU such as engine speed, throttle and brake information, current gear, coolant temperature, etc.

Temperature Sensors

Obtain ambient, vehicle and tire temperatures.

Vehicle Measurement System (VMS)

MODEL-BASED SENSORS



HIGHLIGHTS

- Calculation of road slope
- Road coefficient of friction estimation
- Road load coefficients estimation including on-road rolling resistance
- Data for tire modeling
- Vehicle parameter estimation
- Vehicle benchmarking
- Rapid control prototyping of vehicle controllers
- Vehicle performance testing: torque vectoring, brake testing, hybrid powertrain testing, etc.



Services & Offerings

TESTING & DEVELOPMENT

A&D Technology delivers integrated test lab management solutions and services to the transportation & energy markets for a wide range of applications, from engine and transmission development to vehicle electrification and hardware-in-the-loop simulation. With over 30 years of experience and more than 1000 installations worldwide, A&D has the expertise and proven technology to help you implement the most advanced and cost-effective solution for your testing challenge.

AREAS OF TESTING & DEVELOPMENT

HEV Powertrain

A&D Technology provides complete turnkey solutions for HEV applications, including component testing, controls validation, and component performance simulation.

Combustion Analysis

A&D's systems include all the software necessary to perform standard tests required to properly evaluate combustion processes in two or four stroke, spark or compression ignited engines.

HIL Simulation

A&D's various platforms are high-speed, real-time systems that can be configured for a wide variety of applications.

Engine

A&D Technology can provide a complete turnkey solution or individual components that can be easily integrated into your existing system.

Transmission

With a complete line of low-inertia dynamometers and a family of high-performance AC drive systems available, A&D can design a wide variety of transmission test systems.

Battery

A&D Technology can provide a complete turnkey solution for both battery and EV/HEV testing applications, including design, project management, installation, commissioning, and service plans.

Services & Offerings

RESIDENT ENGINEER

A&D Technology offers on-site support service with our resident engineer program. Not only can you get your project up and running immediately, we will help you develop solutions on-site, FAST. Whether you're getting staff up-to-speed or your project requires a dedicated expert, A&D can offer support when you need it.



A&D
Discover Precision

Questions?

CONTACT US NOW!

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