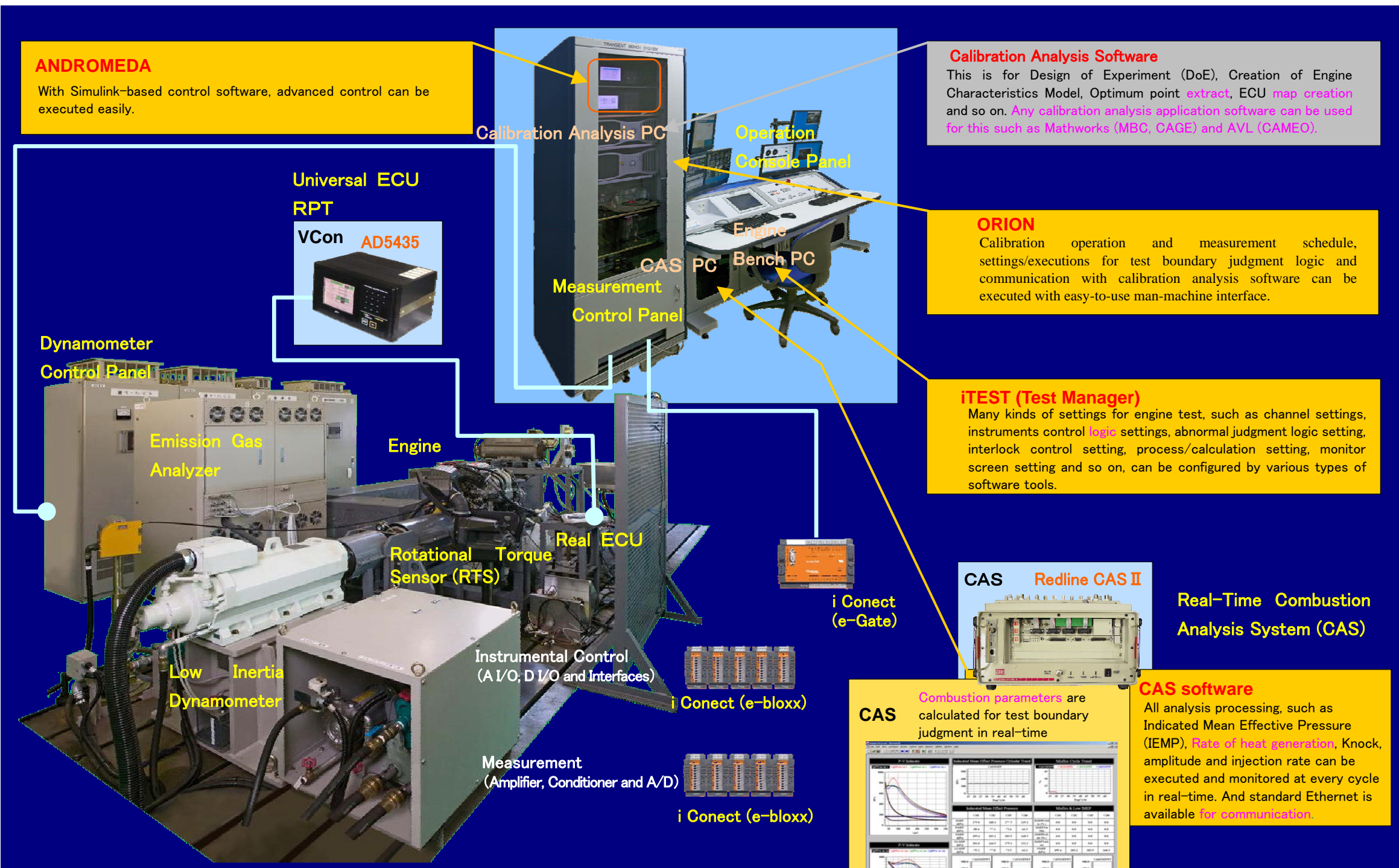


The most advanced A&D Engine Test System

Case A: Engine Test Bench for Calibration Test



ANDROMEDA
With Simulink-based control software, advanced control can be executed easily.

Calibration Analysis Software
This is for Design of Experiment (DoE), Creation of Engine Characteristics Model, Optimum point extract, ECU map creation and so on. Any calibration analysis application software can be used for this such as Mathworks (MBC, CAGE) and AVL (GAMEO).

ORION
Calibration operation and measurement schedule, settings/executions for test boundary judgment logic and communication with calibration analysis software can be executed with easy-to-use man-machine interface.

iTEST (Test Manager)
Many kinds of settings for engine test, such as channel settings, instruments control logic settings, abnormal judgment logic setting, interlock control setting, process/calculation setting, monitor screen setting and so on, can be configured by various types of software tools.

CAS Redline CAS II
Real-Time Combustion Analysis System (CAS)
CAS software
All analysis processing, such as Indicated Mean Effective Pressure (IEMP), Rate of heat generation, Knock, amplitude and injection rate can be executed and monitored at every cycle in real-time. And standard Ethernet is available for communication.

Verification Test

The emission gas test based on the legal regulations is done with a designed ECU map and then the effects of calibration output are verified.

With "Universal ECU", the designed ECU map can be configured easily and the engine is controlled easily with the designed ECU map.

Instead of the emission gas test by actual vehicle, vehicle-driving simulation, which simulates the actual driving with A&D engine test bench, can be performed, too.

Design of Experiment
(Example: Mathworks MBC)

Proper operation points, control points and measurement points can be obtained.

Operation Measurement Setting

ORION

The test schedule and boundary judgment logic can be easily set with operation/control/measurement points calculated by calibration analysis software.

Operation Measurement Execution

Operation, measurement and data acquisition can be automatically executed based on the test schedule.

Modeling

With the acquired data checked, they can be easily transferred to the calibration analysis

Optimum Analysis ECU Mapping
(Example: Mathworks CAGE)

With the characteristics model, the optimum point is extracted from the acquired data and then ECU map data is created.

The designed ECU map is verified by the simulation based on the characteristic model

The measured data is tested and then engine characteristic model based on the measured data is created