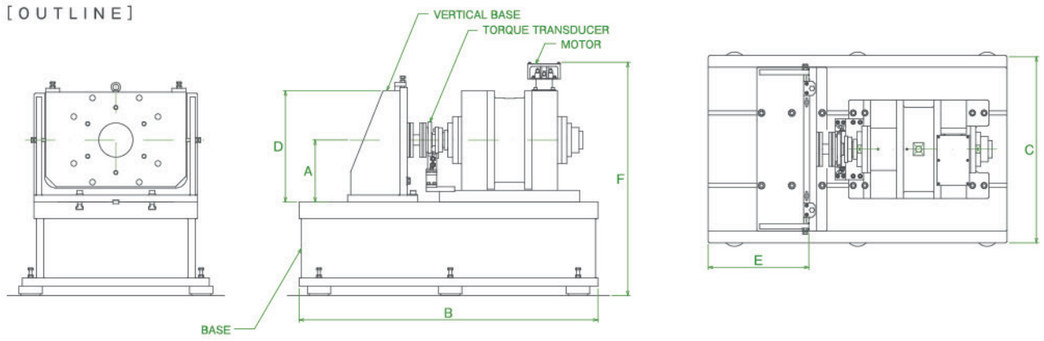
Engine Torque Simulating Dynamometer

EMoTS-03

[OUTLINE]



[SPECIFICATION]

EMoTS-03		8P	30P	50S	100S	200S
MOTOR POWER		8.3kW	28.9kW	50kW	100kW	200kW
RATED SPEED	rpm	2,400	2,400	4,800	4,800	4,800
MAXIMUM SPEED	rpm	3,000	3,000	10,000	10,000	10,000
RATED TORQUE	Nm	40	115	100	200	447
OVER LOAD TORQUE (1min)	Nm	80	230	150	300	670
ROTOR INERTIA	kgm2(J)	0.0058	0.0160	0.0408	0.0688	0.1100
ANGULAR ACCELERATION (theoretical)	rad/s²	6,897	7,188	2,451	2,907	4,064
COOLING		NO COOLING		OIL COOLING		
FRAME		190S	190L	300S	300Z	300L
AXIS HEIGHT (MINIMUM) A	mm	100	100	220	220	220
BASE LENGTH (typical) B	mm	800	1,100	1,400	1,400	1,800
BASE WIDTH (typical) C	mm	400	600	800	800	1,000
VERTICAL HEIGHT (typical) D	mm	400	400	600	600	800
WORK SPACE (typical) E	mm	400	500	500	500	600
MACHINE HEIGHT (typical) F	mm	600	600	1,000	1,000	1,200
MACHINE WEIGHT (typical)	kg	250	350	800	1,000	1,400
INVERTER PANNEL LENGTH G	mm	80	1,200	1,600	2,200	2,800
INVERTER PANNEL HEIGHT H	mm	1,800	1,800	2,000	2,000	2,200
INVERTER PANNEL WIDTH J	mm	600	800	800	800	800
INVERTER PANNEL WEIGHT	mm	350	450	800	1,100	1,500
XFMR PANNEL LENGTH	mm.	INSTALLED IN INVERTER PANNEL		800	1,100	1,500
XFMR PANNEL HEITH	mm			1,600	1,600	1,800
XFMR PANNEL WIDTH	mm			700	800	900
XFMR PANNEL WEIGHT	kg			400	800	1,200
OIL COOLING UNIT LENGTH	mm	UNNECESSARY		800	800	1,200
OIL COOLING UNIT HEIGHT	mm			1,200	1,200	1,500
OIL COOLING UNIT WIDTH	mm			900	900	900
OIL COOLLING UNIT DRY WEIGHT	kg			300	300	600
EFFECTIVE TANKAGE	L			90L	90L	180L
INTAKE POWER	kW	5	15	20	40	70
MONITOR PANNEL		19-inches RACK (700L*900H*700W)				

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Technical Support
Mechatronics and Measuring instruments

TECHNICAL SUPPORT CO., LTD.
www.t-support.co.jp

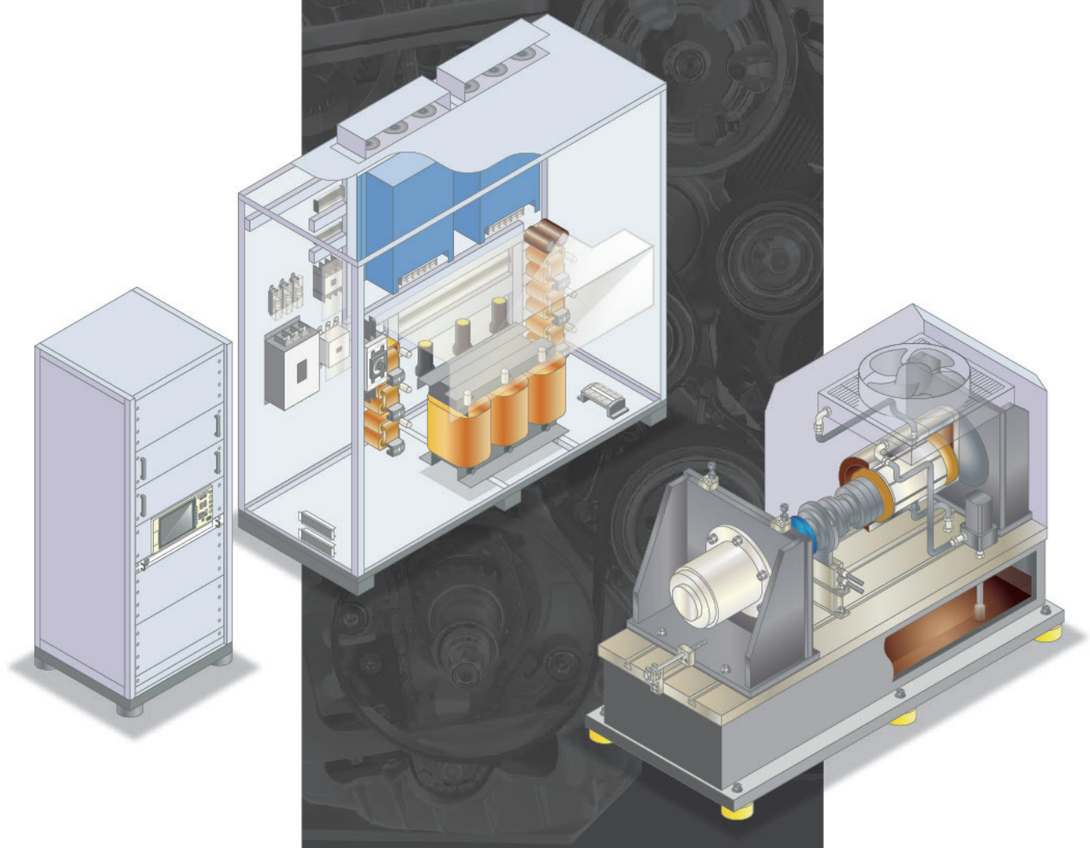
7000-71 Techno-land, Hosoe, Kita-ku, Hamamatsu-shi, 431-1304, JAPAN PHONE: +81-53-523-2231 FAX: +81-53-523-2271 E-mail:emots@t-support.co.jp

Electric Motor Testing System

Engine Torque Simulating Dynamometer

EMoTS-03

Simulating "Engine Torque Pulse"
with low inertia motor and
high bandwidth inverter



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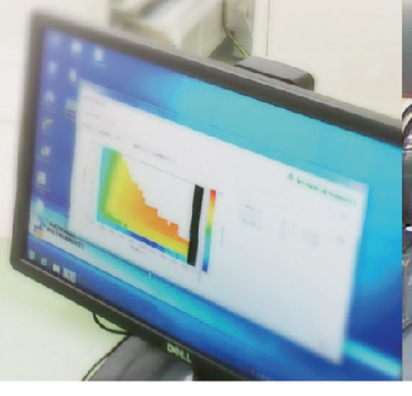
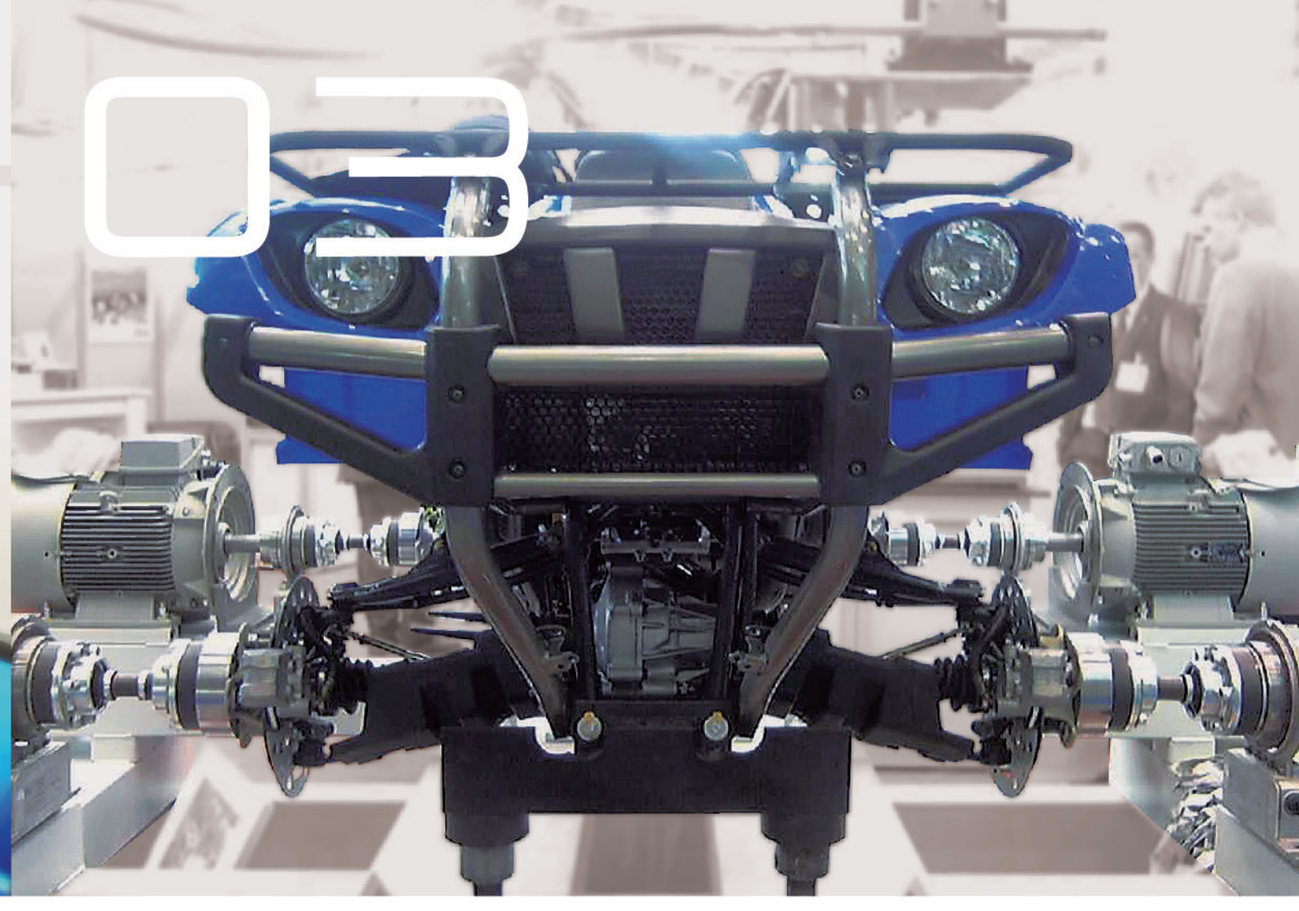
EMoTS-03

Engine Torque Simulating Dynamometer
Fine reproducting the wave of Engine Torque Pulse.
It is "EMoTS-03".

EMoTS-03 is consist of low inertia motor and high-bandwidth inverter controlled by LabVIEW with high-speed serial communication. Torque bandwidth reaches to 500Hz. EMoTS-03 can reproduce Engine Torque Pulse finely. Technical Support can design and build machine part, motor, inverter, power electronics and control/monitor software by ourselves. then our products can be customized according to test condition one by one. EMoTS-03 can reproduce test condition in detail and in fine. EMoTS-03 can easily synchronize with other test facility.





ADVANTAGE

- **Angular acceleration: more than 10,000rad/s² (theoretical)**
- **Fine reproducing "ENGINE RACING", "ENGINE BRAKE" or "IDLING"**
- **Fine reproducing speed or torque wave of "IDLE STOP"**
- **EMoTS-03 can run with just only electric power and cooling water (over 50kW machine only)**
- **Low space factor, low initial cost, low running cost, low acoustical noise (less than 74dB, typical)**

For endurance test with simulating torque pulse of high-fuel-consumption-rate engine

For testing of engine valve system, FEAD or all the other engine auxiliary parts

For NVH test or EOL inspection.

OPTION

Acoustical noise or vibration reduction technology or NVH
(sleeve bearing, noise isolation box, isolation dumper between machine and floor)

High-speed motor bench up to 20,000rpm (50kW, 100kW)

XYZ movable table, High/Low temperature heat chamber,
oil chamber or fly wheel

High-speed swing or tilting bench, vertical bench or bench in vacuum atmosphere.

Hydraulic control, lubrication or cooling oil supply system
or oil supply to rotating object via slip ring

DC power supply, battery simulation or inverter simulator.

【MONITOR AND CONTROL】

Manual, automatic or remote operation/interlock/monitoring/logging

Graphic analysis of acoustic noise or vibration, thermo-graph, FFT analysis

EOL inspection

【MACHINE TOOLING ON TEST PIECE】

Automatic test piece engage/dis-engage system

Cutting out test piece from mass-production assy or Jig design and build.

Machine tooling for sensor built in test piece

IDLE STOP (for example as test mode)

Suitable for idle stop endurance test. Operator set only wave data and top dead point of target engine before test start. Please confirm actual dead point of test piece and torque wave on the monitor console. Then push start button.
It can do 3 months non-stop endurance test.

OPERATING MODE

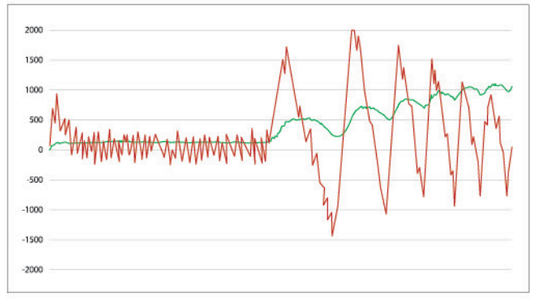
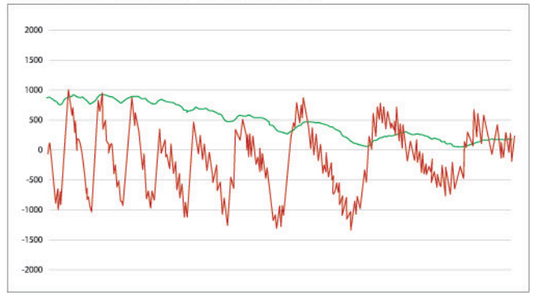
INDEPENDENT PULSATION MODE	Pulsation mode as frequency and magnitude are independently set up.
MULTI-CYLINDER PULSATION MODE	Pulsation mode as synchronizing with clank shaft of single cylinder engine up to V10 cylinder engine.
TOP DEAD POINT SYNCHRONIZATION is available	Synchronization between pulsation wave and top dead point.
QUACSI-ENGINE PULSE WAVE is available	Reproducing not only sine wave but also the wave which is closer to actual engine torque pulse wave.

【TEST PIECE (for example)】

Transmission, gear, drive shaft, CSJ, Torque converter, clutch, torsional dumper, dual mass fly wheel, embedded motor, balancer, differential gear, valve system, belt & pulley, generator, pump, belt tensioner, ISG, compressor, one-way clutch, chain...

for all unit or part affected by engine torque pulse.

■Torque and speed wave when engine start



■Torque and speed wave when engine stop