Equipments for test in centrifuges

EARTHQUAKE SIMULATOR

The earthquake simulators manufactured by **ACTIDYN SYSTÈMES** are unique in the sense that they are designed as an integral part but dynamically decoupled of the centrifuge.

- **80 g centrifuge**
- **400 kg moving mass**
- **40 g's sine**
- **Dynamically balanced**
- **Single or dual axis**
- **Dual hydrostatic bearing**
- **Built-in data acquisition and FFT**
- **Dual axis MATRIX controller**

This dynamically balanced family of Quake Simulator QS offers vibration free operation as seen from the centrifuge structure and rigorously controlled input to the soil model.

The QS structure is free of resonant modes in its frequency range of operation.

The all digital control system is architectured around the Data Physics "MATRIX" multi-axis vibration controller, that also includes multi channel FFT acquisition and analysis.

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The axis control system consists of dual set of reciprocal hydraulic actuators powered from an on board hydraulic power supply via a set of high bandwidth voice coil servo valves.

Position feedback and readout is derived from a directly driven LVDT.

Accelerometers attached to the moving platform are used to monitor and control the moving platform spatial motion.

An industrial grade programmable controller supervises the hydraulic power supplies and executes all safety tasks.

The QS is operated from a PC located in the centrifuge control room or else.

The communication with the on-board computer and control system is via a fiber optic Ethernet link.

Technical Data Model		QS-61	QS-67	QS-80	QS-84 QS-C85
Mainframe					
Length	m	Specification Per Request	1	1.8	Specification Per Request
Width	m		0.5	1.1	
Height	m		0.6	1.2	
Weight	kg		1100	1900	
Axis performances					
Payload moving mass	kg		400	600	
Centrifuge acceleration range			100 to 800	100 to 800	
Maximum shaking force	N		220,000	220,000	
Displacement peak	mm		2.5	2.5	
Velocity peak	m/s		0.75	0.75	
Shaking direction			Y axis	Y axis	
Full load $\gamma_{peak.}$	m/s/s		400	300	
No load $\gamma_{max.}$	m/m/s		600	600	
Frequency response	Hz		40 to 200	40 to 200	
Spurious accelerations					
Model long axis, Y	%		≤ 5	≤ 5	
Model cross axis, X	%		≤ 10	≤ 10	
Model vertical axis, Z	%		≤ 10	≤ 10	
Miscellaneous					
Mains supply 3 phase	V		380 / 480	380 / 480	
Mains supply frequency	Hz		50 / 60	50 / 60	
Installed power	kW		120	140	
Hydraulic pressure	MPa		15	15	
Hydraulic flow	l/s		100	120	

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