TH 411 STIRLING CYCLE HOT AIR ENGINE, Vertical Cylinders

GENERAL DESCRIPTION:

The unit is for demonstration of stirling cycle hot air engine principles.

The engine consists of two vertical stainless steel cylinders. The first cylinder is to generate hot air using a heater. Power to the heater can be varied. The second cylinder is to generate a mechanical power using hot air from the first cylinder. Both cylinders are attached to a common shaft, with a suitable flywheel. The hot gas cylinder head is cooled by outside water supply. Instruments are provided for measurement of input power, and output power.

The advantage of this design is the ability to bring the engine to operating condition in a short time.

Instruction manual is also included.

Photograph with optional equipment

EXPERIMENT CAPABILITIES:

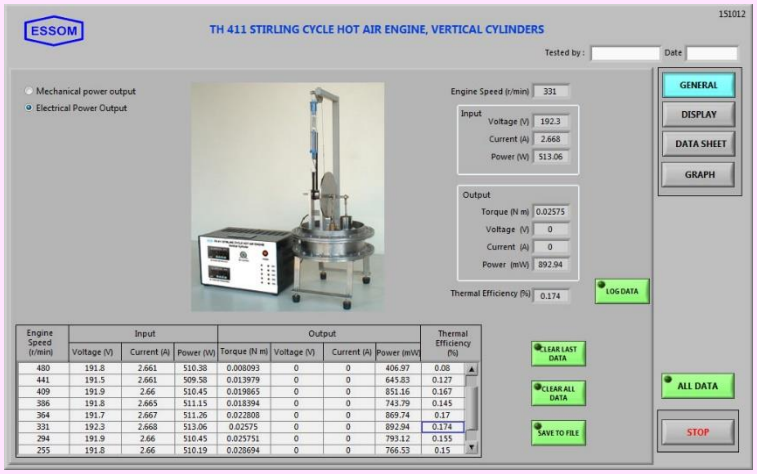
- Torque vs speed for a given input power.
- Output and efficiency vs speed for a given input power.

TECHINCAL DATA:

- Heater : 500 W max
- Maximum power (mechanical) : Approx. 900 mW
- Measuring instruments
  - Torque : Mechanical dynamometer with spring balance, belt, and weights
  - Speed : Portable tachometer
  - Sensors with digital display : Voltage and current of input power
- Software for data display and analysis by computer (separately supplied).
- Power supply : 220 V, 1 Ph, 50Hz. Other power supply is available on request.

OPTIONAL EQUIPMENT:

- TH 411-001 Cooling system: Water storage tank and pump
- TH 120-003A Torque digital display instead of spring balance and weight
- TH 411-010 DC generator with resistive loads with voltage and current digital display
- TH 411-050 Computer interface
  This includes computer interface unit with torque, speed and watt sensors instead of spring balance with weights and tachometer.
- Other optional equipment, please contact manufacturer (essom@essom.com)



Engine Speed (r/min)	Input			Output				Thermal Efficiency (%)
	Voltage (V)	Current (A)	Power (W)	Torque (N m)	Voltage (V)	Current (A)	Power (mW)	
480	191.8	2.661	510.38	0.008093	0	0	406.97	0.08
441	191.5	2.661	509.58	0.013979	0	0	645.83	0.127
409	191.9	2.66	510.45	0.019865	0	0	851.16	0.167
386	191.8	2.665	511.15	0.018394	0	0	743.79	0.145
364	191.7	2.667	511.26	0.022808	0	0	869.74	0.17
331	192.3	2.668	513.06	0.02575	0	0	892.94	0.174
294	191.9	2.66	510.45	0.025751	0	0	793.12	0.155
255	191.8	2.66	510.19	0.028694	0	0	766.53	0.15

Net (unpacked) shipping dimensions WxLxH : 35 x 50 x 45 cm
Net weight : Approx. 20 kg

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