OSC 77FD560MT Two-Shaft Gas Turbine Engine



Photograph inclueds optional equipment

< Features>

- -The turbine is a small two-shaft gas turbine engine with a radial flow compressor and axial flow turbine as in the modern power generation industry
- -The first shaft is a gas negerator
- -Inlet air through an orifice flow measuring device is compressed by a single stage radial flow compressor
- -The turbine is started by LPG and run on Jet A fuel
- -Fuel is injected by a fuel pump and ignighted in the combution chamber providing hot gas for a single stage axial flow turbine
- -The hot gas is discharged axially to a larger power turbine on the second shaft and exhausts to atomosphere
- -The gas generator unit is complete with automatic front motor starter
- -The turbines run on ceramic bearings
- -Lubricating oil is mixed with fuel, no sepatrate lubrication system to the turbine is required except in the gear box
- -An air blower is provided for cooling the engine
- -Speed of the power turbine is reduced by an oil cooled gear box
- -A hydraulic dynamometer is connected to the gear box by a synchronous belt speed reducer for power measurement
- -An Electronic Control Unit (ECU) controls the basic turbine operation
- -Additional instruments are provided for monitoring and controlling turbine performance
- -A human machine interface (HMI) unit with an input/output module and software are provided for data display and analysis
- -Safety features includes shut down for gas generator or power turbine over speed, and high power turbine entry temperature

<Typical Tests>

- -Understanding the thermodynamic
- -Torque vs speed
- -Power input and output and engine efficiency

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<Specifications>

<pre><specifications></specifications></pre>	OSC 77FD 560MT
Gas generator engine construction	Engine diameter 90mm, length 168mm w/o motor
	Diffuser : 7075 aluminium
	Combution chamber: 316 stainless steel with inconel vaporizing tube
	Bearing : Ceramic ball bearing
	Shaft : EN 24 grade steel
	Turbine: Vacuum cast inconel, 54mm diameter
	Compressor : Garrett high grade aluminium alloy
	Motor start: Aluminium casting, copper clutch assembly, ball bearing motor
Gas generator	Idle speed : 45,000rpm
	Maximum speed : 155,000rpm
	Running fuel: Kerosene or Jet A with 6 % jet oil from a fuel tank with a level gauge
	Starting fuel: Liquefied Petroleum Gas (LPG) in 4kg cylinder with a pressure
Power turbine construction	Turbine: Vacuum cast inconel, 72mm diameter
	Interstage guide vane : SS310
	Maximum speed : Over 50,000 rpm
Gear box	Type: Planetary, gear ratio 5.6:1
	Lubrication: Automotive auto transmission oil with a circulation pump and a
	Maximum speed : Upto 3kW
	Idling speed : Upto 1700rpm
	Maximum output speed: 8500rpm
Dynamometer	Type : Hydraulic, water cooled
	Capacity : Over 7.5kW
dynamometer	Synchronous belt
connection	·
Accessories	0.75kW blower for engine cooling, Engine exhaust duct : 2 ea
	Dynamometer cooling water flow measurement : Ratameter
Display	Sensor data, input power, output power, and efficiency
	Characteristics curve of power vs speed and torque vs speed
Human machine	Display: 262K TFT LCD, 800x600 reduction
interface unit	Input/output interface : 4 COM ports, 1 parallel port, 4 USB port, VGA port
Power supply	220V, 1Ph, 50Hz. Other power supply is available
Size (WxLxH)	Approx. 900 x 1400 x 1500 mm
Weight	Approx. 200kg

Sensors are supplied for the following:

-Temperature at Compressor entry, compressor exit, gas generator turbine entry, power turbine entry

power turbine exit, gear oil, dynamometer cooling water discharge

-Pressure at Compressor exit, power turbine entry, power turbine exit -Speed for Gas generator, gear box output shaft and dynamometer

-Dynamometer torque

-Fuel flow rate

-Differential pressure sensor of inlet orifice for air flow measurement