



Swami Keshvanand Institute of Technology, Management & Gramothan

(Accredited by NAAC with 'A++' Grade)

Approved by AICTE, Ministry of Education, Government of India

Recognized by UGC under Section 2(f) of the UGC Act, 1956

Affiliated to Rajasthan Technical University, Kota

Department of Mechanical Engineering

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Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur



Department of Mechanical Engineering




Research Facilities (2022-23)



The SKIT is highly committed to provide facilities and environment conducive to high quality education, training and research & development. Moving forward in this way Department of Mechanical Engineering is equipped with various researcher facilities and has established RTU recognised research centre in the field of Renewable Energy Technology and Production engineering. A tremendous amount of research has been accomplished since last decade due to the availability of high-tech equipment and development activities funded by MODROB(AICTE), DST, MNRE and other funding agencies. Following are the research areas in which students and faculty members are doing their research work.



- Alternative fuels
- Emission characteristics and performance analysis of IC Engines
- Energy storage
- Solar energy utilization
- Optimization of machining parameters
- Characterization of composite materials
- Study on machining parameters on 3-D printing machine
- Robotics and Embedded systems



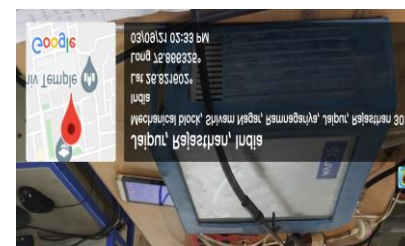
INFRASTRUCTURAL FACILITES


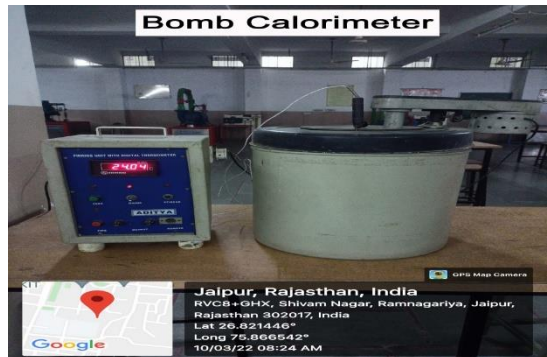

S. No.	Name of Equipment	Specification	Make	Research Application	Total Cost (Per unit in Rs.)	Bill no. & Date of purchase	View
1.	Pyranometer	Measuring range 0-2000W/m ²	Delta Ohm	<ul style="list-style-type: none"> Solar Intensity Measurement Facility Direct Beam Radiation and Diffuse Radiation Measurement 	3,38,405/-	04/ 09-05-2015	
2.	Parabolic Solar Concentrator	Temperature at focal point at different angle	Technical Teaching Equipment Bangalore	<ul style="list-style-type: none"> It utilizes optical devices to absorb a large area of sunlight i.e. focusing a bundle of sunlight on a small area with the assistance of optical equipment parabolic in shape. 	60,170/-	003/ 09-05-2015	




3.	Sunshine recorder	Glass sphere diameter = 10 cm, weight = 5.7 kg, dimension: 200mm × 180mm × 250mm	Technical Teaching Equipment, Bangalore	To measure time period of sunshine in a day.	24,675/-	003/ 09-05-2015	 <p>Sunshine Recorder</p> <p>Jaipur, Rajasthan, India Shivam Nagar, Ramnagarliya, Shivam Nagar, Ramnagarliya, Jaipur, Rajasthan 302017, India Lat 26.821698° Long 75.86612° 10/03/22 08:40 AM</p>
4.	Lux Meter	Measures from 0 to 50000 Lux/Fc in four range with resolution 0.1 Lux/Fc	HTA Instrumentation (P) Ltd.	For measuring light illuminance by using the light sensor.	8,244/-	003/ 09-05-2015	 <p>Lux Meter</p> <p>Jaipur, Rajasthan, India MECHANICAL WING, SKIT CAMPUS, Shivam Nagar, Ramnagarliya, Jaipur, Rajasthan 303012, India Lat 26.821622° Long 75.866146° 10/03/22 08:44 AM</p>
5.	Variable Compression Ratio, multi-Fuel, Direct-Injection, Computerized CI Engine Test Rig	Make: Kirloskar-TV1 Type: Single cylinder, 4 stroke, VCR engine Bore × stroke (mm): 87.5×110 Compression ratio: 19:1 Rated power (kW): 3.75 Rated speed (rpm): 1500 Injection type: Direct injection Intake system: Naturally aspirates	Technical Teaching Equipment, Bangalore (Kirloskar TV1)	<ul style="list-style-type: none"> Fully Computerized Controlled Compression Ratio, Injection Pressure, and Injection Timing Controls Equipped with Eddy Current Dynamometer Multi Tank Facility 	11,25,139/-	27/ 04-07-2012	 <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagarliya, Jaipur, Rajasthan 303012, India Lat 26.821622° Long 75.866351° 03/09/21 02:30 PM</p>




		Injection pressure (bar): 210 Injection timing (°CA BTDC): 23 Cooling type: Water cooling Software used: LABVIEW		for Alternative Fuels <ul style="list-style-type: none"> Exhaust Emission Analysis Facility Smoke Measurement Facility 			
6.	Computerized Variable Compression Ratio, multi-Fuel, Computerized SI Engine Test Rig	Vertical, four stroke cycle, single acting, totally enclosed, high speed, SI engine, Make: Greaves Cotton & MK-25, 2.2 kW/ 3 HP @ 3000 rpm, Bore X stroke: 70 x 66.7	Technical Teaching Equipment, Bangalore (Greaves MK 25 HSP)	<ul style="list-style-type: none"> Fully Computerized Controlled Variable Compression Ratio Engine Equipped with Eddy Current Dynamometer Exhaust Emission Analysis Facility Gaseous Fuel Induction Facility Spark Timing Controls 	10,16,785/-	011/ 21-06-2014	 <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821619° Long 75.866344° 03/09/21 02:30 PM</p>
7.	Variable Speed dual fuel CI Engine Test Rig arrangement, Morse test facility	Make: HM STRIDE 4-Stroke, 4-Cylinder, 10 HP, 1500 rpm, bore X Stroke: 73x 88.9, CR: 1:23, hydraulic dynamometer, self-start, water cooled	Balaji Education Equipments	<ul style="list-style-type: none"> Equipped with Hydraulic Dynamometer Multi Tank Facility for Alternative Fuels Setup Modification for Gaseous Fuel Injection Equipped with Exhaust Gas 	4,00,859/-	003/ 21/06/2014	 <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821619° Long 75.866344° 03/09/21 02:30 PM</p>




				Recirculation <ul style="list-style-type: none"> Exhaust Emission Analysis Facility Smoke Measurement Facility 			
8.	Single Cylinder, Four Stroke Diesel Engine Test Rig	Make: Kirloskar, AVI, CR: 1:17.5, 5HP, 1500 rpm, hydraulic dynamometer	Datacone (Kirloskar TV1)	<ul style="list-style-type: none"> With Multi Fuel Tank Facility for Alternative Fuels Equipped with Exhaust Calorimeter Coupled with Hydraulic Dynamometer Variable Injection Pressure and Timing Smoke and Exhaust Emission Facility 	1,68,000/-	DL/0467/2005 / 15-01-2005	
9.	4-Stroke 4-Cylinder Water Cooled Petrol Engine Test Rig with cylinder cut off arrangement, 10HP/1500RPM	Make: Issuzu, 10 HP, 1500 rpm, hydraulic dynamometer	Technical Teaching Equipment, Bangalore (Isuzu Automotuve)	<ul style="list-style-type: none"> Morse Test Facility Equipped with Hydraulic Dynamometer Exhaust Emission Analysis Facility 	1,50,000/-	009/ 13-07-2005	




10.	2-Stroke 1-Cylinder Petrol Engine Test Rig	Make: Bajaj, 2.5HP/3000RPM	Technical Teaching Equipment, Bangalore (Bajaj)	<ul style="list-style-type: none"> Modified with Multi Spark Plugs Motorised Run System for Indicated Power Measurement Exhaust Emission Analysis Facility 	11,0750/-	009/ 13-07-2005	
11.	AVL smoke meter	AVL 437 C, accuracy: $\pm 1\%$, range: 0-100%	AVL India	Smoke Measurement Facility	2,59,011/-	00005/ 09-04-2014	
12.	5-Gas Analyzer	AVL DiGas444, CO ₂ , CO, O ₂ , NO _x and HC Gas Measurements and λ air fuel ratio	AVL India	Exhaust Emissions Measurement including O ₂ , NO _x , Sox, CO, CO ₂ , etc	2,96,016/-	2116170622/ 07-10-2016	
13.	Exhaust Gas Recirculation (EGR) setup for Diesel Engine	Surge tank, stainless steel EGR cooler, control valve	Legion Brothers, Bangalore	Exhaust Gas Recirculation Control Facility	198,977/-	10/ 18-04-2009	




							
14.	Bomb Calorimeter	O ₂ Type	Savita Scientific, Haryana	To measure the calorific value of fuels	44,248/-	34/ 18-04-2009	
15.	Digital Weight Balance	Range – 220g, Accuracy – 0.001 g	Citizen	To weigh the biofuel during blending	28000/-	3244/ 27-03-2015	


16.	Cleveland Flash & Fire Point Apparatus	Determination of flash points of liquid samples, whose flash points are above 40 C to 350 C.	Technical Teaching Equipment, Bangalore	To measure properties of fuel and lubricants	18,274/-	010/ 21-06-2014	
17.	Saybolt Viscometer	Covers the measurement of viscosities of petroleum products at temperature between 21° and 99°C	Technical Teaching Equipment, Bangalore	To viscosity of liquid fuel or lubricants	10,420	010/ 21-06-2014	
18.	BOSCH Injection Pressure Testing Equipment	Pressure gauge Range: 0 - 400 BAR & 0 - 40 MPa	Bosch	Measure and set the required injection pressure in fuel injector	11,677/-	HDEPD81/ 25-04-2009	

19.	Axial Flow 3-Stage air Compressor	5 HP Motor, Jet pressure, 3 stage air compression	Technical Teaching Equipment, Bangalore	Test and performance axial flow characteristics	6,91,002/-	T/28/ 22-08-2013	 <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821674° Long 75.866245° 03/09/21 02:35 PM</p>
20	CNC Ultrasonic Machine	Frequency 22 kHz Work Table Area 250*250*100 mm Tool Diameter 10 mm Spindle RPM Max 1000	K & K Engineers, Delhi	For precise drilling and machining	3,35,000/-	55/ 19-08-2018	 <p>CNC Ultrasonic Machine Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821431° Long 75.866141° 13/09/21 12:13 PM</p>
21	Digital Surface Finish Tester	Display Unit Drive Unit Detector Carrying Case connecting AC adaptor Roughness specimen calibration stage	Bombay Tools	To check the surface finish of specimen or newly developed material	1,87,602/-	20200731/ 11-08-2020	 <p>Digital Surface Finish Tester Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821684° Long 75.866266° 14/09/21 10:50 AM</p>

22	3D Printing Machine	MAX DUE- High Quality and Heavy Duty Fuse Deposition 250*250 mm	Raj Infotech Malviya Nagar Jaipur	To produce intricate parts by 3D printing	3,12,700/-	3242/ 08-09-2020	 <p>3-D Printing Machine MAX200D</p> <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.82147° Long 75.866157° 13/09/21 12:47 PM</p>
23	C N C Lathe with Accessories	2 axis drive simulation liner and circular, swing over bad 100 mm, max job diameter 30 mm	HYTECH Educational Equipment, Pune	For precise machining	4,92,581/-	06/ 27-07-2006	 <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.82147° Long 75.866157° 13/09/21 12:14 PM</p>
24	C N C Mill with Accessories	3 Axis Drive Simulation liner, table size 600*225 mm, job size 100*100*10 mm	HYTECH Educational Equipment, Pune	For precise machining	6,94,069/-	06/ 27-07-2006	 <p>CNC MILLING MACHINE</p> <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.82147° Long 75.866157° 13/09/21 12:15 PM</p>

25	Pneumatic Trainer with air compressor	6 kg force per cm ³ Size- 20 Litre	M/S Anest Iwata Motherson Ltd Noida	To test and develop pneumatic circuits	1,41,004/-	2613553/977/ 21-08-2006 06-09-2006	 <p>Pneumatic Trainer</p> <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821628° Long 75.866139° 13/09/21 12:46 PM</p>
26	Hydraulic Trainer	Single Acting Cylinder Double Acting Cylinder Rotameter Check Valve	HYTECH Educational Equipment, Pune	To test and develop hydraulic circuits	81,000/-	01/ 06-03-2013	 <p>Hydraulic Trainer</p> <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821628° Long 75.866139° 13/09/21 12:46 PM</p>
27	5-Axis Robotic Arm	5 kg lift, 5- Axis Drive with stripper motor	HYTECH Educational Equipment, Pune	To study and research robotic motions	3,79,828/-	16/ 22-08-2013	 <p>5-Axis Robotic Arm</p> <p>Jaipur, Rajasthan, India Mechanical block, Shivam Nagar, Ramnagar, Jaipur, Rajasthan 303012, India Lat 26.821628° Long 75.866139° 13/09/21 12:46 PM</p>

28.	Lathe Tool Dynamometer	XYZ Direction, 50 KN, 3 Independent for XYZ force with digital LED Display	Neelam Engineering company, Agara	For force measurement on tool	30,250/-	102/ 19-05-2005	
29.	Drill Tool Dynamometer	XYZ Direction, 50KN, 3 Independent for XYZ force with digital LED Display	Neelam Engineering company, Agara	For force measurement on tool	26,048/-	102/ 19-05-2005	
30.	Milling Tool Dynamometer	XYZ Direction, 200 Kg, R- 350 ohm, V-12	Hitech Engineering & Testing Technology	For force measurement on tool in three axes	37,800/-	HETT/ROK/S KIT/020 20/10/2015	

31.	Computerized Universal Testing Machine	Capacity: (2.5kN-30kN)	KALPAK INSTRUMENTS & CONTROLS , PUNE - 411 041	To measure the tensile, compressive and flexural strength of the given test material (preferably polymer based) and plot the characteristic curves.	6,89,710/-	G-017 dated 21/05/2022	
32.	Micro Hardness Tester (Vickers)	A Table top Semi-automatic Micro Hardness Tester. Model: MHT-1000-AT with Large LCD Display Auto Turret along with Camera & Software suitable for above machine for case depth measurement	ACME Engineers, Dhayari, PUNE-411041.	To measure the hardness of the given test specimen and plot the characteristic curves.	7,19,800/-	2119 dated 20/06/2022	