Alternative Fuel Research lab

Bio-Diesel Plant:



Technical Specification:

Trans-etherification Reactor: S.S 304,15 Liters volume Trans-esterificaton reactor with S.S Electric heating coil of 0.5KW, Thermo well with thermometer, S.S liquid flow indicator, Reaction view port, Reaction pressure indicator, Charge/Loading port, Polypropylene circulation pump for liquid transfer and Uniform mixing Reaction test cork, safety valve, etc.

Washing and drying vessel: Washing inlet and outlet and drain valves and drying vessel in SS 304with 15 liters volume Bio-Diesel with top lid and bottom cone. The vessel is fitted with 0.5KW SS heating-coil, thermo meter.

M.S Structure: The structure is a angular structure to mount reactor and equipment's. This structure is specially designed in the form of a portable skid. If required; the structure can be transported to different sites.

Reflux Condenser: S.S 304 Vapor condensing tubes in M.S Body, water inlet & outlet, vapor inlet & condensate outlet with control valve and pipelines like Final vent, Pressure indicating gauge, Vapor inlet, Water inlet & outlet Condensate outlet

Hot water tank: Hot water tank with 20 liters holding capacity equipped with 1.5KW heatingcoil, water inlet & outlet, over flow, drain control valves, temperature indicating thermometer mounted on a M.S Stand connected with flexible washing shower

Electric control panel: A traditional electric control panel with single phase/ heating system equipped with indicators, volts and amps meter



Oil Expeller: 5-10 Kgs per hour oil expeller along with bag filter and compatible accessories.



Bio-fuel Titration Kit: B-Beaker low form 250ml Boro lab, B-Beaker lowform 100ml Boro lab, F-Conical flask250ml Boro lab, Conical Flask 100 ml, T-Thermometer 10' C TO 110' C, H-Hydro meter Range: 0.7 TO 1.0, J-Measuring jug 2ltr Poly Propylene, J-Measuring jar 500 ml Poly Propylene, Test tube 25x150 mm (3 Nos), Burette stand with clips, P-Phenolphthalein solution 125ml P40871, I-Isopropyl alcohol 500ml. I11129, Indicator paper ph 0-14Nice I-40656, Heating mantel-250 ml, Graduated glass measuring cylinder 10 ml.

Bio Diesel Testing Lab Equipments as per BIS IS15607:2005: Viscometer bath with Viscometer, Pensky-Martin Flash point Apparatus Digital, Copper Strip Bath with Bomb with Standard Strip, Top Pan Balance – 300 gm capacity, sensitivity 0.1 gm, Supporting Literature.

The computerized VCR Engine set-up:



Technical Specification and Details:

1Cylinder, 4 Stroke, Multi Fuel, Kirloskar TV1, constant speed, Power 5.2 kw @ 1500 rpm, 661cc The is a single cylinder, four stroke, VCR (Variable Compression Ratio) Diesel Engine. The set up has stand-alone panel box consisting of air box, twin fuel tank for duel fuel test, manometer, fuel measuring unit, transmitters for air and fuel flow measurements, process indicator and piezo powering unit. Rota meters are provided for ooling water and calorimeter water flow measurement. The setup enables study of VCR engine performance for both Diesel and Petrol. Single cylinder four stroke, water cooled, Kirloskar engine modified to VCR Diesel. The compression ratio can be changed without stopping the engine and without altering the combustion chamber geometry by specially designed tilting cylinder block arrangement.

Features: • Changing CR without stopping the engine

• Diesel operation • Diesel injection point advancement

• Electric starting arrangement • PO-PV plots, IP, IMEP, FP indication • Combustion analysis Dynamometer :Type eddy current, water cooled, with loading unit Propeller shaft With universal joints Air box M S fabricated with orifice meter and manometer Fuel tank Capacity 15 lit, Type: Duel compartment, with fuel metering pipe of glass Calorimeter Type Pipe in pipe Piezo sensor Combustion: Range 350BA, Diesel line: Range 350 BAR, with low noise cable Crank angle sensor Resolution 1 Deg, Speed 5500 RPM with TDC pulse.

Data acquisition device NI USB-6210, 16-bit, 250kS/s.

Temperature sensor Type RTD, PT100 and thermocouple, Type K Temperature transmitter Type two wire, Input RTD PT100, Range 0–100 Deg C, Output 4–20 mA and Type two wire, Input Thermocouple, Load sensor Load cell, type strain gauge, range 0-50 Kg Fuel flow transmitter DP transmitter, Range 0-500 mm WC

Air flow transmitter Pressure transmitter, Range (-) 250 mm WC Software "Enginesoft" Engine performance analysis software Rotameter Engine cooling 40-400 LPH; Calorimeter 25-250 LPH Pump Type Monoblock

Software: Engine Soft is Labview based for engineperformance monitoring system. EngineSoft can serve most of the engine testing application needs including monitoring, reporting, data entry, data logging. The software valuates power, efficiencies, fuel consumption and heat release. Various graphs are obtained at different operating condition. While on line testing of the engine in RUN mode necessary signals are scanned, stored and presented in graph. Stored data file is accessed to view the data graphical and tabular fo mats. The data in excel format can be used for further analysis.

Instrumentation: Product is supplied with best quality instruments. The dycurrent dynamometer is SAJ,Pune make. The components like Combustion pressure sensor (PCB Piezotronics, USA), Crankangle sensor(Kubler, Germany), Fuel flow ansmitte r(Yokogawa, Japan), Temperature & pressure transmitters(Wika, Germany),

High speed data acquisition device (National instruments, USA) are of MNC grades

Diesel Smoke meter:



Measurement range: Absorption 0-99.99 m-1, Opacity 0-100%. Resolution: Absorption 0.01m-1 Opacity 0.1% Better than +/- 0.1m-. Operating temperature: $0^{\circ}C-50^{\circ}C$. Calibration: Automatic Linearity Check: Around 50% of measurement range at the press of key/lever. Measurement length: 430mm +/- 5mm, Dimension: 600x260x370mm. (W X H X D). Weight: Approximately 22 Kg s. Power supply: AC 190-240V AC 50. DC 11 V-36V DC within built inverter. Printer: Built in impact printer with provision for multiple print out. Computer interface: RS 232 serial interface to operate on PC for communicating data.

Display: Digital, Clear and visible in all natural conditions. Approval: A.R.A.I. Pune. Results compatibility: Measurement results are fully compatible with Hatridge Smoke Units (HSU). Range/Accuracy/Resolution: The Device should have Calibration for low and high speed with indication. The device should calibrate before each free acceleration test.

Exhaust Gas Analyzer:



Technical Specification and Details:

"MARS" make Microprocessor based Multi Gas Analyser for CO,CO2,O2,NOx & HC model MN-05 with standard accessories with printer Operating System: PIC- Micro Controller Display: LCD Display

Interface: RS-232 & RS-485 Power Supply: 230v AC 50 Hz 12 v DC (Optional)

Dimensions: 450 mm X 300 mm X 120 mm Approx. Weight: 5 kg Approx.

Measurements:

- 1. CO (Range: 0 9.99% vol Resolution: 0.001% vol)
- 2. HC (Range: 0 15000 ppm Resolution: 1 ppm)
- 3. CO₂ (Range: 0 20% vol Resolution: 0. 01% vol)
- 4. O ₂(Range: 0 25% vol Resolution: 0. 1% vol)
- 5. NO_X (Range: 0 5000 ppm Resolution: 1 ppm)
- 6. Engine RPM (Range: 500 6000 rpm Resolution: 1 rpm)
- 7. Oil Temperature (Range: $0 150^{\circ}$ C Resolution: 1° C)

Lambda (λ) (Range: 0.200 – 2.000% Resolution: 0.001)

The e-Yantra Embedded System and Robotics Lab:

The research flat form 'The e-Yantra Embedded System Lab' has been created in collaboration with IIT Bombay, MHRD, New Delhi and National Education through Information and Communication Technologies, New Delhi to develop innovative projects.





Technical Specification: Firebird V 2560 with ATMEGA 2560 processor, IR proximity sensor, IR Range sensor 60X2 character LCD display, 2.4 GHz wireless Zigbee, Servomotor support.



The Web inauguration function of "e-Yantra Robotics Lab" in coordination with IIT, Bombay



The TPED Digital library

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		Fo	orm U161				
		TP Educational Inform	ED Grant Prog Institution Gr ational Purpor	ram rant Request ¹ ses Only ²			
Institution Name:	Hirasugar Institute of Technology				Partner	IN-01-1-109	
Institution Address	Nidasost	idasoshi, TQ: Hukkeri, Dist: Belgaum, Karnataka, India - 591236					
Grant date	August 1" 2	010 (needed by)	Institution	Reference	Letter Date	ed 7/15/2010	
Project & Grant Type ³ :	1 Sta Software/h	Base Request Initial Buy Grant Appliance(s) Standard Upgrade or e/Hardware Maintenance		Itemental Request Special Rec aancements or Initial Grant stall/Upgrade Replacement		pecial Request ial Grant 🔯 or placement 🗌	
			Project Cost (US	SD)			
		FY10 Request	FY11 Estimate	FY12 Estimate	Support	Marketing and PR Estimates	
General Funds							
Special Funds		\$10,000				\$2.000	
Inter Partner Transfers/ Internal Service Funds		\$11,500	\$1,002	\$1,002			
Matching/Upgrade	Funds	\$6,250					
Total		\$27,750	\$1,002	\$1,002		\$2,000.0	
		Expenditure C	ategories (dolla	ars in thousands)			
		FY10 Request	FY11 Estimate	FY12 Estimate	Support Estimate	Marketing and PR Estimates	
Installation and Commissioning Services		8%					
Contractual Service	15						
Professional Service	25						
Other							
Travel							
Maintenance							
Supplies/Inv. Exem	pt						
Operating Costs							
Other Financing Us	es						
Total		0.0	0.0 .	0.0	0.0	0.0	
				the second se		and the second diversity of th	

¹ Please see Partners Grant request guide. Grant provided for approved categories only.
² Base budget information is strictly used for informational purposes only.
³ Follow FY09 Grant Request Flow Chart. Submit one form per Grant type. Grant may not be approved beyond 60%. Special resolution needed for funding beyond 60%
*Separate institutional overhead expenses shall not be provided

UGCT-O-10728 1003 9012393

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September 15 2010 CONFIDENTIAL

Page 1 of 4





		Form U168				
		TPED Grant Pro	ogram			
		Special Requ	est ⁴		TO /CAD /IN /	
Institution Name:	Hirasugar Institute of Technology			Member Reference:	Q2-2010-980	
Proposed Install Date:	3 rd week of Octobe	er 2010				
Multi-Year Project	Yes 🛛	No	List agencies	participating:		
Institution Type	Institution for Women Non-Profit University Minority Institution Starter Program			Charitable Trust Specialty Research Electrical, Mechanical, Computer Science, Bio Technology, Chemical Engineering)		
Transfer Terms	Transfer to Partne Debit Note	r 🖾				
	FOR	OFFICE INTERN	AL USE ONI	Y		
	FY10 Request	FY11 Estimate	FY12 Estimate	Support Estimate	Marketing and PR Estimates	
Local Funds						
Special Funds						
Inter Partner Transfers/ Internal Service Funds						
Matching Funds						
Total	0.0	0.0	0.0	0.0	0.0	
	Expen	diture Categories (do	llars in thousan	ds)		
	FY10 Request	FY11 Estimate	FY12 Estimate	Support Estimate	Marketing and PR Estimates	
Installation and Commissioning Services						
Contractual Services						
Professional Services						
IT Services						
Other						
Travel		and the second	-			
Maintenance						
Supplies/Inv. Exempt						
Operating Costs		-				
Other Financing Uses						
Total	0.0	0.0	0.0	0.0	0.0	

⁴ Special Request has to be approved by Panel

UGCT-O-10728 1003 9012393

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September 15 2010 CONFIDENTIAL

Page 2 of 4

31



FOR OFFICE USE ONLY: GRANT STATUS

Grant Status	Approved Denied Insufficient Paperwork Partial Grant Re-Approval Required	Request #: 732851 Grant Code (10 digits): 92UB7-WQNLD Grant Release Date: September 15 2010
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1. Grant request should be submitted along with required forms

2. Price should include installation and commissioning

3. Local Taxes, levies extra.

- 4. Grant usage register will be maintained by the institution for federal GRAC
- 5. The Grant is towards purchase of Unified Library Appliance and related equipment
- The Grant is valid prorata in the case of special grant towards future upgrades of the same Unified Library Appliance for a period requested

7. Institution should not reveal the actual price and Grant details to any third party

8. Institution consents to publish a case study for marketing purposes

9. Institution agrees to comply with all applicable laws, rules, and regulations in connection with the Product Agreement. Without limiting the foregoing, Institution agrees to comply with all applicable international and national laws that apply to the Software, including the U.S. Export Administration Regulations, as well as end-user, end-use and destination restrictions issued by U.S. and other governments. Institution shall not export or re-export (directly or indirectly) the Software, Documentation or related technical data except in compliance with the applicable export control laws

UGCT-O-10728 1003 9012393

September 15 2010 CONFIDENTIAL

Page 3 of 4





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Date: September 18th 2010

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Dean,

Reference: TD/SAP/IN/Q2-2010-980 TPED Partner: Genesis Systems & Solutions (TPED PARTNER CODE: IN-01-1-109) Institution: Hirasugar Institute of Technology

Camin 1 H	Part #	Description	Quantity	Price
1	EL-1260-6R	Unified Library Server Model EL-1260R Base with NAS, SAN, Backup, Instant Recovery	1 -	
2	D-S-5012	SATA Disks 1500GB	1 ~	
3	R-F-0802	CrossTide™ File System Router Software	1-	
4	R-S-0305	CrossTide [™] Storage Router [™]	1 2	
5	A-M-0342	Digital Media e-Library Module with NVD JukeBox-3000 Soft 2041	1 ~	
6	A-M-0301	CD/DVD Mirror Server Module 4	1 /	
7	A-M-0306	Digital e-Learning Video serving Module	1	
8	A-E-0301	Mail Server Snooper Module v	1 -	
9	A-P-0241	Proxy Server Module 11	1 /	
10	A-P-0310	Print Server Module 1	1 /	
11	A-A-0106	SimServ™ Management . 'M	1 -	
12	U-M-0191	UAM Client Access Manager *	300 /	
The state			Line of	
13	N-Switch	24 Port Unmanaged Switch not opened	1 ~	
14	Server UPS	1KVA UPS for EL-1260R	1 ~	
15	Viewers	Desktops with 17" Monitor, DualCore Processor, 1GB RAM, 160GB HDD	5 /	
16	Inerall	System Installs Configuration 5444	1	
l'otal	10 (Instan) System instans, computation 1 =			D= 172607
CPED Gro	ate Drogram (B	Approx # 732851 Collage Degreet Dutad	7/45/2010	KS. 17,34,954
ipproval	Code: 92UB7-W	(QNLD)	/15/2010,	Rs.12,50,000
otal after TPED				Rs 4.84.950

College Share: Rupees Four Lakhs Eighty Four Thousand Nine Fifty Only

TidalData Solutions Private Limited

TAX INVOICE

From

Date-21-10-2010 Ref:No TD/SAP/IN/Q2-2010-980

Genesis Systems & Solutions No.287/B. Behind BBMP Corprotaion Office Hebbal . Banglore 560024

To

The Principal Hirasugar Institute Of Technology Nidasoshi, Pin-591236 Diss. Beloaum Kamataka

Part #	Description For Library	Quantity	Price
EL-1260-4R	Unified Library Server Model EL-1260R Base with NAS, SAN, Backup, Instant Recovery	1	
D-S-5010	SATA Disks 1500GB	4	
R-F-0802	Cross Tide™ File System Router	1	
R-S-0305	CrossTide™ Storage Router	1	
A-M-0342	Digital Media e-Library Module with NVD JukeBox -3000	1	
A-M-0301	CD/DVD Mirror Server Module	1	
A-M-0306	Digital e-Learning Video Serving Module	1	
A-E-0301	Mail Server Snooper Module	1	
A-P-0241	Proxy Server Module	1	
A-P-0310	Print Server Module	1	
A-A-0106	SimServ™ Management	1	
U-M-0191	UAM Client Access Manager	300	
N-switch	24 Port Unmanaged Switch	1	
	Part # EL-1260-4R D-S-5010 R-F-0802 R-S-0305 A-M-0342 A-M-0301 A-M-0306 A-E-0301, A-P-0241 A-P-0241 A-P-0241 A-P-0310 A-A-0106 U-M-0191 N-switch	Part #DescriptionFor LibraryEL-1260-4RUnified Library Server Model EL-1260R Base with NAS, SAN, Backup, Instant RecoveryD-S-5010SATA Disks 1500GBR-F-0802Cross Tide™ File System RouterR-S-0305Cross Tide™ Storage RouterDigital Media e-Library Module with NVDA-M-0342JukeBox -3000A-M-0301CD/DVD Mirror Server ModuleA-M-0306Digital e-Learning Video Serving ModuleA-E-0301Mail Server Snooper ModuleA-P-0241Proxy Server ModuleA-A-0106SimServ™ ManagementU-M-0191UAM Client Access ManagerN-switch24 Port Unmanaged Switch	Part #DescriptionFor LibraryPuantityEL-1260-4RUnified Library Server Model EL-1260R Base with NAS, SAN, Backup, Instant Recovery1D-S-5010SATA Disks 1500GB4R-F-0802Cross Tide™ File System Router1R-S-0305Cross Tide™ Storage Router1Digital Media e-Library Module with NVD A-M-03421A-M-0301CD/DVD Mirror Server Module1A-M-0306Digital e-Learning Video Serving Module1A-E-0301,Mail Server Snooper Module1A-P-0241Proxy Server Module1A-A-0106SimServ™ Management1U-M-0191UAM Client Access Manager300N-switch24 Port Unmanaged Switch1

15	IN-SWILGH	24 Fort Onmanaged Switch	1	
		14 I		
14	Serever UPS	1KVA UPS for EL -1206R	1	
15	Viewers	Desktops with 17" moniter, dualcore processor,		5
		1GB RAM 160GB HDD		
	- Her			
16	Install	System Installs, configuration	1	
		Total	1	484,950.50
		Add : Vat @ 5%		24,247.50
		the second secon		509,198.00

In Words : Five Lakhs Nine Thousand One Hundred Ninety Eight Only

Tin No. 29710477589

For Genesis Systems & Solutions, Author

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Computation Lab with MAT Lab Software

The laboratory have 10 high end, 50 Mbps speed LAN connected computer systems, exclusively utilizing for Research works related to simulation. The laboratory consists of LCD projector.

