DOCUMENT

Open Competitive Bid (OCB)

For

Supply and Installation of Equipments to the Manufacturing Process Lab of Mechanical Engg. Departments. at the three campuses of Rajiv Gandhi University of Knowledge Technologies

Proprietary & Confidential

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES
Ground Floor, Vindhya C4 Building,
IIIT-H Campus, Gachibowli
HYDERABAD- 500 032
Phone: 040-23001830

Tender Ref: RGUKT/Proc/ME/ MP/T 27/2012

Description: Supply of Equipments to the Manufactruing Process Lab of Mechanical Engineering Departments at the three campuses of RGUKT.

Bidder Details:

Name : _____

Place : _____

Tender Processing Fee Details:

Amount : Rs.5000/-

DD No : _____, Date: _____

Name of the Issuing Bank: _____

Date of Issue: Signature of Issuing Authority

Proprietary & Confidential

Contents

News paper advertisement

Short Tender Notice

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES

Ground Floor, Vindhya C4 Building, IIIT-H campus,
Gachibowli, HYDERABAD- 500 032
Phone: 040-23001830

Sealed Tenders are hereby invited from reputed Manufacturers or Authorised dealers for supply and installation of equipments of the Manufacturing Process Lab of Mechanical Engineering Departments at the three campuses of RGUKT located at Basar (Adilabad District), Nuzvid(Krishna District) and RK Valley (YSR Kadapa District) of Andhra Pradesh:

Last date of submission of tender along with EMD as specified in the bid document is on 13.09.2012 before 04 .00 pm.

Interested parties can collect the Tender document from 01.09.2012 to 12.09.2012 against payment of Rs. 5,000/- towards the cost of Tender document fee (non-refundable) through D.D. from any Nationalized Bank payable to REGISTRAR, RGUKT at Hyderabad from the office of the RGUKT. For further details visit our website www.rgukt.in

Date: 01.09.2012

-Sd-
Registrar

Time schedule of various Short tender related events

Bid calling date	01.08.2012
Last date for sale of document	12.09.2012 at 05:00 P.M
Pre bid meeting	04.09.2012 at 04.00PM
Bid closing date/time	13.09.2012 at 04:00 P.M.
Technical Bid Opening date/time	13.09.2012 at 04:30 P.M.
Price Bid opening date/time	14.09.2012 at 04:30 P.M.
Bid Document fee	Rs.5,000/-
Contact person	Registrar, RGUKT
Reference No	RGUKT/Proc/ME/MP/T 27 /2012

Registrar,
RGUKT

TENDER FORM

Not transferable

Reference. No. RGUKT/Proc/ME/MP/T 27/2012 Dated 01.09.2012

Subject: Invitation of Tenders for Supply, installation and commissioning of Manufacturing Process Lab Equipments to the Mechanical Engineering Departments at three campuses of RGUKT located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and RK Valley (YSR Kadapa Dist) of Andhra Pradesh.

Last date and time for submission of the TENDER AT RGUKT, Vindhya-C4, IIIT Campus, Gachibowli, HYDERABAD **is 13.09.2012 up to 4:00PM**

Dear Sir/Madam,

A. RGUKT invites sealed tenders comprising technical bid and price bid separately from reputed manufacturers (or) authorized dealers for its three campuses located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and R K Valley (Kadapa Dist) of Andhra Pradesh.

B. The Tender form consists of 34 pages of which pages from 7 to 24 are instructions and page No.25 contains the format for financial bid. The duly completed Technical Bid together with a copy of the bid document (this tender) signed on all pages by the Bidders authorized signatory and the Price Bid should be kept in separate sealed covers. These sealed covers must be submitted in a sealed master envelope super scribed "Tender for Supply , Installation & Commissioning of Manufacturing Process Lab Equipments to the Mechanical Engineering Departments at the three campuses of RGUKT. The last date for submission of bid is **13.09.2012 and closing time is 04:00 PM.**

C. The Sealed Tenders should be deposited in the Tender box kept in the office of Registrar, RGUKT, Hyderabad up to **04:00 P.M. on 13.09.2012.**

For any clarification and further details on the above tender please contact by Telephone No: 040-23001830 or Contact in Person during office hours.

Thanking you

Yours faithfully,

Registrar,
RGUKT.

STATEMENT OF IMPORTANT LIMITS/VALUES RELATED TO BID

Item	Description
EMD	**Rs. 1,00,000/- by way of Demand Draft from any Nationalised Bank or by way of irrevocable bank guarantee from any Nationalised Bank only. DD/BG from other than Nationalised Banks will not be accepted.**
Bid Validity Period	90 days from the date of opening of Financial bid
EMD Validity Period	90 days from the date of opening of Financial bid
Warranty Period	3 years
Variation in quantities/number of residents	**+ 40 %**
Period for furnishing performance Security Deposit	Within 10 days from date of receipt of award
Delivery Schedule	Bidder shall deliver the goods in one single lot within 30days from the date of award of the contract.
Performance security value	5% of contract value by way of irrevocable Bank Guarantee from any Nationalised Bank
Performance security validity period	38 months from award of contract (including 30 days of installation period)
Period for signing the order Acceptance	Within 7 days from date of receipt of notification of award

Payment terms	
On delivery at user site	Payment for goods and services shall be made in Indian rupees as follows. 1. 80% of payment will be paid after installation, commissioning 2. Balance 20% will be paid after 3 months after obtaining the satisfactory certificate from the Director, RGUKT IIITs.
Maximum Liquidated Damages for late deliveries	For delays:- If the supplier fails to deliver any (or) all of the goods or perform the services within the time period specified in the contract the purchaser shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 0.25% of the contract value per day until actual delivery or performance up to a maximum deduction of 10% of the delayed goods or services contract price. Once the maximum deduction is reached, the purchaser may consider the termination of the contract duly forfeiting the performance security etc.,

ELIGIBILITY CRITERIA

5.1. This bid is open to all firms within India who are eligible to do business under relevant Indian laws as in force at the time of bidding, subject to meeting the pre-qualification criterion. They should provide list of customers of previous supply of similar/ same items to IITs, NIT's or Central Universities or any Academic Institute of National repute with contact details. Copies of orders received from the reputed firms on bidding firm need to be submitted.

5.2. The bidder should have servicing facility or work shop with in India so the provision of service is possible at a short notice and without incurrence of delay.

5.3. The Bidding firm should have minimum turnover as follows:

Bid Value offered against the tender call	**Last financial year's business turnover**
25 lakhs	50 lakhs
50 lakhs	1 crore
50-100 lakhs	2 corers
Greater than 100 lakhs	3 crores

The bidder should have adequate experience in supply of such materials as required in the tender. Bidder should furnish proof of having supplied such materials as required in the tender in the previous financial year ending 31st March 2012 as mentioned above . A certificate indicating the Turn Over value details (in Rupees) of subject material, during the financial year 2011-12 (for the year ending 31.03.2012) from a Firm of Chartered Accountants must be enclosed (in original) as a proof for Turnover. The Turn Over of the subject Material must be separately indicated in the certificate.

5.4. The bidder should furnish satisfactory performance certificate from the parties concerned to whom bulk supplies were effected, in case such supplies were made. RGUKT may contact any such parties to elicit details**.**

5.5. Bidder should be registered under VAT Act/CST Act with the relevant State Sales Tax Authorities. He should furnish along with the bid document, the relevant VAT/CST Registration Document and PAN / TAN Card copies.

5.6. All bidders shall also include the following information and documents with their tenders (in the Technical bid cover)

5.6.1. Copies of original documents defining the constitution or legal status, place of registration, and principal place of business of the bidding firm/entity; written power of attorney of the signatory of the Bid to commit the Bidder.
5.6.2. Machinery/equipment owned by the bidder and number of employees.
5.6.3. Latest Income Tax returns and **VAT/ CST** Returns filed.
5.6.4. List of Present Clientele with contact addresses & telephone numbers.

5.7. All the certificates furnished along with technical bids should be attested by a Gazetted Officer, counter signed by bidder along with their seal.

The bidders must submit all relevant documentary evidence to support their claim for eligibility in placing bid. **The tenders received without the above documents will be rejected.**

Requirement of Manufacturing Process Lab equipments

S.No	Item	Qty Required
1.	High Speed Precision Lathe	3
2.	Knee Type Universal Milling Machine	3
3.	Cutting Force Dynamometer	3
4.	Infrared Thermometer	3
5.	Hydraulic Power Press	3
6.	Automated MIG Welding System	3
7.	Automated TIG Welding System	3
8.	Spot Welding Machine	3
9.	Equipment for Arc Length Measurement	3
10.	Sand Testing Equipment	3
11.	Pillar Type Drilling Machine	3

Manufacturing Process Lab equipments Technical Specifications

1. Specifications of High speed precision Lathe:

Capacity:	
Height of Centers	minimum: 240 mm
Swing over bed	minimum: 480 mm
Swing over carriage wings	around 480mm
Swing over cross slide	minimum: 260mm
Width of bed	minimum: 400 mm
Distance between centers	1000mm
Type of bed	Straight
Head stock:	
Spindle bore	Minimum: 50 mm
Speed range	16 from 40-2040 forward
	7 from 60-1430 reverse

Spindle socket taper	Metric 60
Tailstock:	
Sleeve diameter	90 mm
Sleeve taper	MT5
Sleeve travel	200mm
Carriage:	
Cross slide travel	300mm
Top slide travel	150mm
Tool shank size	25x25mm^2
Spindle feeds	
No of longitudinal & transverse feeds	60 or more
Feed range longitudinal	0.04-2.24mm/rev
Feed range cross	0.02-1.12mm/rev
Lubrication:	
Suitable Lubrication system for various rotating & sliding components	
Threads:	
Metric threads	0.5-28mm
Inch threads	56-1tpi
Module threads	0.25-14mm
D.P	112-2
Lead screw pitch	6mm
Power capacity:	
Power of main motor	minimum:10kW
Coolant pump motor	0.1kW
Total weight of machine (approx.)	2000kg or more

Standard accessories

Electrical equipment i.e. Motor and control gear suitable for operation of 400V ± 10%, 3 phase , 50 Hz, AC supply, Starter for Overloaded protection and single phase prevention fitted on Centralized control panel for drive.
Face plate, chuck plate, steady rest, follow rest, three jaw chuck, longitudinal stop, roll stop. Machine light, Coolant Pump with complete fitting, Suitable lubrication system for various rotating and sliding component, Splash and protection Guard, Change Ger -1 set, Set of operating tools, dead centre MT4 and MT5, quick change tool post with 5 tool holders, Chip tray / Swarf tray fitted on the machine, Grease Gun, One set of Service Tool.

2. Knee Type Universal Milling Machine

Specifications:

NOMENCLATURE			DIMENSIONS
Table	Overall dimensions(Length x width)	Mm	1500 x 300 to 1550 x 350
	Power operated traverse: Longitudinal Cross Vertical	mm	 750 to 850 230 to 260 380 to 450
	Max. safe weight on table	kg	450 to 600
	Swivel of table to either side	degree	45
Milling spindle	No. of speeds		18 -20
	Speed range	rpm	25-2000
	Swivel of milling head to either side	degree	45
FEEDS	Number of feeds		18-20
	Feed range: Longitudinal & cross Vertical	mm/min	 16-800 4-200
	Rapid traverse: Longitudinal & cross Vertical	mm/min	 Around 3000 Around 700
Power	Main motor	kW/rpm	5.5/1500
	Feed motor	kW/rpm	1.5/1500

Additional Accessories:

S.No.	Name of the item	Qty.
1.	Machine vice with swivel base 200mm	1
2.	Stub milling arbor ISO dia. 22x19/25mm	1
3.	Stub milling arbor dia. 27x21/25mm	1
4.	Stub milling arbor dia. 32x24/25mm	1
5.	Stub milling arbor dia. 40x27/63mm	1
6.	Collet holder ISO 40	1
7.	Universal dividing head 135mm with tailstock, supporting	1
8.	3 Jaw self centering chuck dia. 160mm	1
9.	Conical type collet dia. 5 to 20 (7 nos) 5,6,8,10,12,16 &20	1 set
10.	Reduction sleeve type-B ISO 40/MT1	1

11.	Reduction sleeve type-B ISO 40/MT1	1
12.	Milling Arbora ISO 40 dia. 22 x 500 mm	1
13.	Milling Arbora ISO 40 dia. 32 x 500 mm	1
14.	Vertical milling head, ISO 40, 70 mm quill	1
15.	Motorized Overarm with Vertical milling head(ISO 40)	1
16.	**Digital read out system (X,Y & Z axes), 5 micron**	1
17.	Automatic lubrication system	1
18.	Clamping kit (52 pieces)	1 set
19.	Tooling kit	1 set
20.	Coolant equipment with pump & motor	1

3. Specifications of Cutting Force Dynamometer:

Piezo electric cutting force dynamometer, Multi channel charge amplifier, Multi channels Data Acquisition system - Hardware and software

It should have capability to measure 3 forces F_x, F_y, F_z and 3moments M_x, M_y & M_z

Calibration			Calibrated
Measuring range	F_x, F_y, F_z	kN	±5
Sensitivity	F_x, F_y	pC/N	≈-7 to -8
	F_z	pC/N	≈-3 to -4
Operating temperature range		^oC	0…70
Connections			Compatible
Length		mm	≈150-200
Width		mm	≈90-110
Height		Mm	≈50-70
Sealing			Adequately protected
Mass		kg	7-8

Compact design, high resolution, great rigidity, high natural frequency, insensitivity to temperature influences, corrosion resistant, protected against the ingress of spray water and cutting fluid. Cutting force measurement during turning, milling, grinding etc., adequately protected from coolant and heat.

CONNECTING CABLE: Connecting Cable with both end Connector, Length- 5 Meter Length

TOOL HOLDER: Tool holder- Suitable for Lathe application

Specifications of Multi-channel charge amplifier:

No of channels		8-10
Connections		Compatable
Measuring range (charge)	pC	±200…….200000
Frequency range	kHz	≈0……>45
Output signal	V	±10
Supply	V AC	100…..240
Interface		Compatible with laptop/desktop

Specifications: Data Acquisition system with analysis software

Hardware:

PC Bus: PCI

No of measuring channels	8-10, analog, differential
Resolution	16 Bit
Measuring range	±10V
Sampling rate, 1 measuring channel active	80-120 kHz

Software:

Windows software for data acquisition and evaluation. It should be a universal and easy to operate software, which is particularly suitable for force measurements with dynamometers or single and multi component force sensors. For signal analysis, it should have facility online visualization of the measuring curves in combination with useful calculation and graphics functionality. In addition to simple configuration of the most important measuring instruments, it should supports documentation of individual measurements and storage of configuration and measurement data.

4. Infrared Thermometer:

Specifications:

Spectral response	8-14µm
Temperature range	0 to 800^{o}C
Response time	less than one second

Distance to spot	30:1
Accuracy	±2°C
Display resolution	0.1°C
Adjustable emissivity	0.1 to 1.0
Display	4 ½ digits with LCD back lighted display
Power supply	9V battery
Operating humidity	max of 80% RH
Operating temperature	0°C to 50°C
Temperature display	°C or °F selectable
Memory	20 temperature values

5. Specifications of Hydraulic Deep Draw Press:

55 TON HYDRAULIC DEEP DRAW PRESS WITH BLANK HOLDER complete WITH HYDRAULIC POWER PACK & PLC CONTROL ELECTRICAL PANEL (HAVING COMPUTER INTERFACE), Which should have the major technical details and specifications:

01.	TYPE OF THE PRESS	:	PILLAR TYPE (DOWN STROKE)
02.	TOTAL CAPACITY OF THE PRESS	:	55 TON
03.	MAIN RAM CAPACITY	:	30 TON
04.	BLANK HOLDER RAM CAPACITY	:	25 TON
05.	MAIN CYLINDER STROKE	:	450 MM
06.	BLANK HOLDER RAM STROKE	:	300 MM
07.	DAY LIGHT GAP	:	600 MM
08.	BED SIZE	:	600 X 600 MM
09.	T-SLOTS SIZE	:	T-13
10.	TABLE HEIGHT FROM FLOOR LEVEL	:	600 MM
11.	EJECTOR	:	HYDRAULIC
12.	CYCLE CONTROL	:	THROUGH PLC
13.	MODE OF OPERATION	:	PUSH BUTTON HAVING “AUTO” & “INCH” CYCLE

Pillar type press having pillar material out of EN-9 material with hard chrome plated for long life.

Pumping unit should have the motor of 5 H.P, High and Low pressure pump with Sol. Directional Control Valve, Non-return valve, Relief valve, unloaded valve, Press to read valve, Pressure gauge, Prefil Valve, Manifold, Pressure Switch.

Oil reservoir should have the capacity of 250Ltrs.or more with hydraulic circuit, Oil Level Indicator, Drain Plug, Filter, Breather.

The cylinder assembly should have Rod seal, wiper seal, piston seal and 'O' ring to give leak proof operation.

Blank holder cylinders should be provided to achieve uniform pressure on Blank holder slide.
With following addition for safety and ease of operation

Photoelectric safety guard

Bigger size PLC with Touch Screen display

Encoder should be provided for the precise stroke measurement & stroke control. Encoder should be sensing through PLC & analog card & display in TOUCH SCREEN. The accuracy/least count of encoder should be at least 0.1 mm.

Load cell for main cylinder should be provided to sense the load through PLC and Analog Card with Digital Display of Load in TOUCH SCREEN. The least count & Load Cell should be at least 0.01 Ton.

Load cell to find out blank holder load should be provided with least count of 0.01 Ton.

Pressure transmitter should be provided for sensing the pressure of main cylinder and blank holder cylinder through PLC & ANALOG CARD with digital display of pressure in TOUCH SCREEN.

It should be interfaced with a computer to get the load displacement curve and data file in XL Format so that one can take the data and plot the curves.

6. Automated MIG Welding System

Metal Inert Gas(MIG) welding system should consists of

1. One tractor mounted MIG welding torch. With Variable speed the tractor should move during welding.
2. One clamping arrangement for job with motorized slide to travel the job with variable speed.
3. Control panel to adjust the travel speed of tractor & motorized slide, speed display, welding On/Off.
4. MIG welding power source, MIG welding torch mounted on tractor, MIG wire feeder.

TECHNICAL SPECIFICATIONS FOR MIG WELDING MACHINE

Mains Voltage	:	Ph x V, 3x400, 50Hz
Fuse slow	:	A 25
Setting range, MIG/MAG,	:	Amps / Volts: 16-400 A / 8-60 V

Setting range, MMA DC,	:	A 16-400
Setting range, TIG DC,	:	A 4-400
at 35% duty cycle MMA,	:	A/V 400/36
at 60% duty cycle MMA,	:	A/V 320/33
at 100% duty cycle MMA,	:	A/V 250/30
Open circuit voltage,	:	V 55-90
Energy save mode	:	(400V), W 60 50
Apparent power,	:	kVA 18.6
Power factor at maximum current	:	0.9
Efficiency at maximum current,	:	%86
Control voltage	:	42v, 50/60 Hz
Dimensions l x w x h, mm	:	625x394x496
Enclosure class	:	IP23
Insulation class	:	H
Operating temperature, °C	:	-10 to +40
Weight, kg	:	63.5
Application class S Standards	:	IEC/EN 60974 -1,

SPECIFICATIONS OF WIRE FEEDER

Technical Data

Mains supply,	Ph x V, Hz 1 x 42
Drive system	4- Roll Drive
Max. Diameter of wire spool,	Mm 330 / 440
Wire feed speed, m/min	0.8 to 25M/min
Wire type	MS / Al / FC
Wire diameter	0.6 to 1.6mm
Enclosure class	IP23
Standards of compliance	IEC/EN 60974 -5/-10
Weight, Kg	15kg
Cooling System	Forced air cooling/Water cooling

SPECIFICATIONS OF MIG TORCH

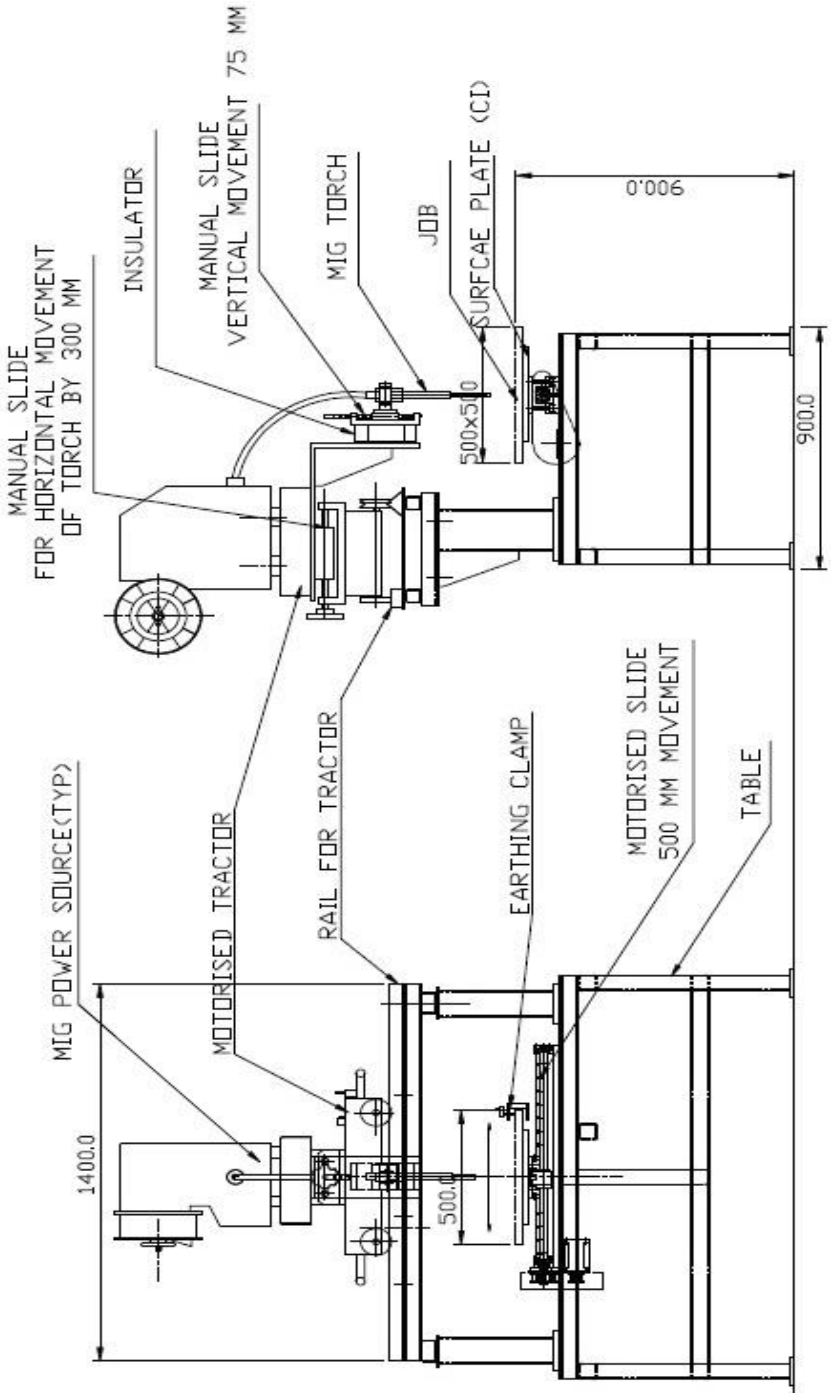
Torch Type	GMAW Welding
Type of Cooling	Air or Cooling gas
Torch Cable length	4 meters

Tool Kit consisting of Nozzle Cleaner, Alley keys, Pliers for cutting wire

SPARES AND ACCESSORIES

ITEM	**QUANTITY**
Feed Roll	2 (0.6/0.8 mm hard & 0.9/1.2 mm hard)
Collet Body	5
Collet	5
Nozzle	4
Back Cap Long	5
Back Cap short	5
Argon Flow Meter Regulator	1
Argon Gas Cylinder	2
Wire Brush	5
Chipping Hammer	5
Hand Gloves	5
Apron	5
Auto darkening helmet DIN 9213	1
Ordinary welding helmet	5
Welding Cable with Holder, 3m	1
Cylinder Key	2
Spanners	2
Filler wire for MS welding, 2sizes	2kgs (1kg each)
Filler wire for SS welding, 2sizes	2kgs (1kg each)
Filler wire for Al welding	1kg

CONCEPTUAL DESIGN OF THE AUTOMATED MIG WELDING SYSTEM



NOTE: Dimensions are approximate

1. Welding can be done in two modes, either by moving of the tractor, job remains stationary
2. Movement of job by motorized slide, torch on tractor remaining stationary.

7. Automated TIG Welding System

Tungsten Inert Gas(TIG) welding system should consists of

5. One tractor mounted TIG welding torch. With Variable speed the tractor should move during welding.
6. One clamping arrangement for job with motorized slide to travel the job with variable speed.
7. Control panel to adjust the travel speed of tractor & motorized slide, speed display, welding On/Off.
8. TIG welding power source, TIG welding torch mounted on tractor, TIG wire feeder.

Note: The TIG machine should also join Aluminum alloys by varying the AC power.

TECHNICAL SPECIFICATION FOR TIG WELDING MACHINE

Input Supply	400V, 3ph, 50Hz
Mains Cable	4x1.5Sq.mm
Fuse	20A (Slow)
Power in No - load	30 Watt
Open Circuit Voltage	54-64 Volts
Power Factor at 100% in TIG mode	0.72
Operating Temperature	-10 to +40 degree C
Enclosure Class	IP23C
Standards	IEC/EN 60974 – 1, 3,-10
Insulation Class	H
Dimensions in mm LxWxH	652x412x423
Weight	42Kgs
Cooling System	Forced air cooling/Water cooling

Current setting range	
MMA	16-300Amps
TIG	4-300Amps
Maximum output in AC/DC TIG	
At 35% duty Cycle	300A/22V
At 60% duty cycle	240A/19.6V
At 100% duty cycle	200A/18V
Slope UP	0-10sec
Slope DOWN	0-10sec
Gas Post Flow	0-25sec
Pulse frequency DC	0.01-2.5sec
Frequency AC	10-150Hz

AC Balance	50-98%

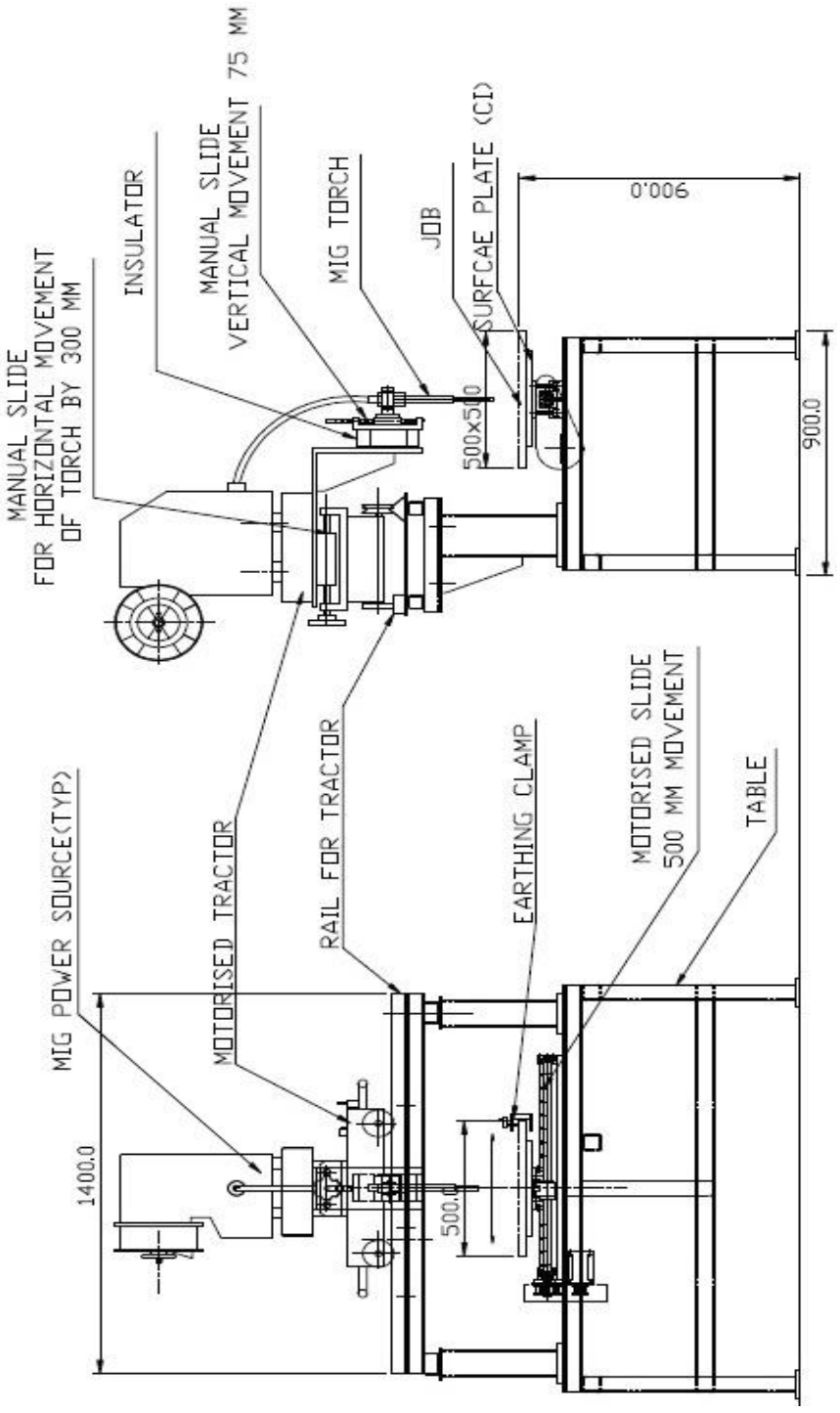
TIG TORCHES – SPECIFICATION

Type of Cooling	Gas
Type of Connection	OKC – Quick Connector
Size of TIG rod,	1 - 4mm
Rating	A @ 35% 200
Length	4M
TIG torches conform to international standard	IEC/EN 60974-7

SPARES AND ACCESSORIES

ITEM	**QUANTITY**
Collet Body 2.4mm	5
Collet Body3.2mm	5
Collet 2.4mm	5
Collet 3.2mm	5
Gas Nozzle Standard, 9.8mm	10
Gas Nozzle Standard, 11.2mm	10
Gas Nozzle Standard, 12.7mm	10
Tungsten Electrode2.4mm	10
Tungsten Electrode3.2mm	10
Back Cap Long	5
Back Cap short	5
Argon Flow Meter Regulator	1
Argon Gas Cylinder	2
Wire Brush	10
Chipping Hammer	5
Hand Gloves 1pair Apron	5
Auto darkening helmet DIN 9213	2
Ordinary welding helmet	5
Welding Cable with Holder, 3m	1
Cylinder Key	2
Spanners	2
Filler wire for MS welding, 2sizes	2kgs (1kg each)
Filler wire for SS welding, 2sizes	2kgs (1kg each)
Filler wire for Al welding	1kg
Cold Wire Feeder	Suitable for 0.8, 1.0, 1.2, 1.4 mm

CONCEPTUAL DESIGN OF THE AUTOMATED TIG WELDING SYSTEM



NOTE: Dimensions are approximate

3. Welding can be done in two modes, either by moving of the tractor, job remains stationary
4. Movement of job by motorized slide, torch on tractor remaining stationary.

8. Specifications of Spot Welding Machine:

Capacity	150 KVA @ 50% duty cycle
Throat depth	450-500 mm
Throat height	200 mm (adjustable)
Max. short circuit current	65,000 Amps.
Frequency	50 Hz
Main supply	415 Volts, 2 lines of three phase
Control unit power source	110 Volts AC
Stroke	150 mm (adjustable)
Electrode tip dia	19 mm (beryllium copper & chromium zirconium)
Tip holder dia	40 mm (beryllium copper & chromium zirconium)
Horn Diameter	100 mm (copper chromium zirconium)
Air-compressor	10 HP double cylinder type with motor and starter
Water tank/coolant tank	500 ltr S.S fabricated (with 1 HP)
Controller	Microprocessor based controller with constant Current facility (Secondary feedback)
Transformer	Modular (latest) Copper wound, high efficiency High output CRGO type, water cooled and epoxy encapsulated with thermostatic protection
Main cylinder dia	250 mm
F.R.L	½" BSP
Solenoid valve	½" BSP
Flow Control Valves	½" BSP
Surge Tank	30 liters
Foot-switch	Toe operated (electrical) low voltage
Differential switch	IPS70
Electrodes	Copper chromium zirconium electrode tips (50 nos) Beryllium copper electrode tips (50 nos.)

9. Equipment for Arc Length Measurement

Technical Specifications

01. LVDT with Digital Indicator

Range +/-20mm,
Resolution 0.01mm
4.5 digit LED display,
Mains operated
Mounting Clamp
Zero balance with Push Button throughout the range
Indicator Mounting Table top

02. Arc Image Magnifier

Magnification 10Times
Trolley Mounted wheel based
Minimum Height (Magnifier centre) 3.5feet
Vertical Height adjustment 150mm
Left to Right movement 100mm
Longitudinal movement 100mm
Angle Rotation (left to right) +/-10degree for Magnifier only
Angle Vertical Up and Down +/-10degree for Magnifier only

10. Sand Testing Equipment:

S.No	Item Description	Quantity required
1.	**Sieve Shaker with Sieve Set** Consists of sieving mechanism, to accommodate 10 Nos sieves of 200mm Dia & 35 mm Height Supply:1Ph 230 V 50 Hz AC Default Sieve set includes (Sizes in Microns) 1700, 850, 600, 425, 300, 212,150, 106, 75, 53 Sieves, Lid & Receiving Pan. Timer: 0-15min. Motor - 1/8 Hp Single Phase, Cycles – 50,	3 No.
2.	**Sand Muller** Consists of one Muller, two ploughs, Rollers and basic accessories, Batch Capacity: 5 Kgs. Motor with Gear Box - ½ Hp Single Phase,	3 No.

3.	**Sand Mixer** Used to Mix core sand for testing purpose. Consists of two ploughs, Capacity - 10 Kg (Batch), Motor with Gear Box - ½ Hp Single Phase.	3 No.
4.	**Rapid Moisture Meter** Consists of single pan balance, spoon, 500gms of absorbent compound in polythene bottle, moisture meter capacity 10% complete in carrying case.	3 No.
5.	**Sand Rammer** Used for preparing a standard specimen of 50 mm Diameter 50 mm Height. It consists of 1) Calibrated sliding weight actuated by cam, 2) Specimen tube, 3) Cup and 4) Stripper **Attachments:** Base Block Tube Filter Tensile Core Box Transverse Core Box Split Specimen Tube Compatibility Tester Flowability Tester	3 No.
6.	**Permeability Meter** Consists of air tank, water tank, manometer unit, permeability chart, 2 Orifices, rubber seal and siphon unit. **Attachments:** Mold Permeability Tester Core Permeability Tube	3 No.
7.	**Universal Strength Machine Digital** Consists of loading frame, loading mechanism, load cell, motor etc. Facility to accommodate various accessories, digital strength indicator, set of compression pad, compression range up to 15 kg/cm2, **Attachments:** High Dry Strength Attachments Shear Strength Attachments Tensile Strength Attachments Transverse Strength Attachments	3 No.

8.	**Mould Hardness Tester** Consists of dial indicator to read hardness of green mould from 0 to 100. Generally used for Hand ramming and/or jolt squeeze molding practice.	3 No.
9.	**Digital Balance : Based on Load cell Technology** **Capacity : 300grms** **Accuracy: 0.01gm** **Pan Size: 125 mm** **Display: LED**	3 No.
10.	**ELECTRIC HOT AIR OVEN** **Chamber Size : 600 x 600 x 800 mm^3** **Max..Temp. : 300˚c** **Controller : PID digital controller and cum Indicator with A sensitivity of +/- 2.deg.c** **Air circulation : fan 1 nos** **Triple walled chamber, Inner made out of S.S. 304 grade heavy gauge to withstand 300^{o}C and outer made out of M.S. duly finished with Siemens white. The walls fitted with high grade glass wool with nickel chrome heating element.**	3 No.

11. Pillar Type Drilling Machine

SPECIAL FEATURES:

- Important Parts are made from Close Graded Casting
- Main Spindle made from EN STEEL
- All the main parts are Ground Finish at Close Tolerance

TECHNICAL SPECIFICATIONS:

1) Drilling Capacity in STEEL: 30 mm or better
2) Column Diameter: around 106 mm
3) Centre of Spindle to Column: around 285 mm
4) Taper in Spindle: MT – 3
5) Spindle Travel: around 225 mm
6) No. of Speed / Range: 8 / 17 to 2000 RPM
7) Table Size: 405 x 405 mm to 420 mm x 420 mm
8) Over All Base Size: 630 x 420 mm to 650 x 440
9) V-Belt Section: B-58
10) Electric Motor: 1.25 HP or better

ACCESSORIES:

1) Electric Motor
2) V-Belt R/F Switch
3) Drill Chuck
4) Motor Pulley
5) Drift Key
6) Tapping Attachment
7) Coolant Pump
8) Machine Lamp
9) Machine Vice 100 mm Jaw Size
10) Oil Can
11) Set of Spanner, Allen Key

7. General Requirements & Qualification Criteria

- Bidding Firm offering the product should have ISO 9001 Accreditation certification.
- Bidding Firm, offering the product, should have supplied similar type of test systems for a several years to government establishments, defense organizations & National higher learning institutions like IITs, IISC etc., in India
- Bidding Firm offering the product should submit list of supplies made by it, during last two years with complete contact details of the end users such as phone number, fax number, e-mail ID etc. It should submit copies of order placed by such organizations and user certificates for goods of same/similar nature.
- Bidding Firm offering the Product should have a Local Service Support Facility, preferably in Hyderabad, and should submit address and contact details
- Bidding Firm should give an Undertaking that, un interrupted service support will be given for a minimum period of 10 years with unbroken availability of spares supply.
- Bidding Firm should give an undertaking that, the Software upgrades if any, during the warranty period of three year, should be supplied free of charge
- Bidding Firm should offer pre-dispatch inspection free of charge at their factory premises for 2 users for 3 days and post installation training at our three laboratories in different campuses to 2 users for 5 days.

NOTE

A complete set of bidding documents may be purchased by interested bidders from the RGUKT contact person upon payment of the bid document price which is non-refundable. Payment of bid document price should be by demand draft/ cashier's cheque or certified cheque drawn in favour of "Registrar, Rajiv Gandhi University of Knowledge Technologies" and payable at Hyderabad (India) from any Nationalized Bank.