



# M V G R COLLEGE OF ENGINEERING(A)

Chintalavalasa, Vizianagaram-535005

Accredited by NAAC with 'A' Grade & Listed u/s 2(f) & 12(B) of UGC

(Approved by AICTE, New Delhi and Permanently Affiliated by JNTUK-Kakinada)

## 3.5.2.

### **Total amount spent on developing facilities, training teachers and staff for undertaking consultancy during the last five years**

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Any additional Information: List of Research Equipment

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1	List of Research Equipment	1-17

**1. List of Research Equipment Used from Electronics & Communication Engineering Dept. :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	Vector Network Analyzer	Model no: E5071C	Measurement of S-Parameters, SWR, Impedance, Polar Chart, Smith Chart, Group delay etc	30,42,633/-	20/12/2010
2.	NI LabVIEW equipment	1) NI my RIO-1900 2) NI my RIO Starter kit 3) NI my RIO MECHATRONICS KIT 4) NI my RIO EMBEDDED KIT 5) PITSCO TETRIX® Prime 6) PITSCO TETRIX® Prime Battery 7) NI my DAQ Kit	For improving research capabilities of faculty and publish papers in reputed journals.	9,28,627.95/-	28/12/2016
3.	PCB Fabrication Machine	Model no: MITS ELEVEN	Used for Microstrip Patch Antenna Fabrication.	10,00,000/-	20/07/2017
4.	Academic Research Ansys HFSS software	HFSS Ansys software ver.17	Used for Simulation.	4,00,000/-	20/07/2017
5.	VLSI Hardware and software Tools	1) Xilinx Vivado design Suite-Latest 2) Analog Discovery Kit 2 3) Pynq Z2 development Board 4) Zynq Ultrascale MpSoc ZCU102 kit 5) ) Zynq Zed development board 6) PmodOLEDgrb 7) PmodWiFi: WiFi Interface 802.11g 8) PmodBT2: Bluetooth Interface 9) PmodSSD: Seven-Segment Display 10) PmodAD2: 4-Channel 12-bit A/D Converter 11) PmodDA2: Two 12-bit D/A Outputs	To Enhance the research Capabilities of faculty.	9,78,064/-	29/10/2020
<b>Total</b>				<b>63,49,324.95</b>	

**1. List of Research Equipment Used for Consultancy Works from Computer Science Engg Dept :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	Wirless Routers for TARE Project of Dr.G.Suvarna Kumar(assoc.Prof)	TP-Link Router AC1200 Archer C6	TARE Project	91,800	30-11-2020
<b>Total</b>					

DEPARTMENT OF CHEMICAL ENGINEERING  
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**1. List of Research Equipment details from chemical Engg Dept :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	Atomic absorption spectrophotometer	Perkin Elmer (India) pvt limited Model no: N3180011PinAAcle 500	Used for metal analysis present in waste water	17,71,261	12/12/2016
2.	Orbital shaking Incubator	Make and Model: REMI	To carry out batch adsorption experiments at various temperatures	2,11,776	22/03/2017
<b>Total</b>				<b>19,83,037</b>	

**1. List of Research Equipment Used for In-house Research from Physics Dept:**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	High Temperature Furnace	1200 Muffle Furnace-Ants Ceramics	Sintering and annealing of the powder, compounds and alloys for solid state physics research	1,15,500.00	02/11/2020
<b>Total</b>				<b>1,15,500.00</b>	

**DEPARTMENT OF CHEMISTRY**  
**MVGR COLLEGE OF ENGINEERING (A)**

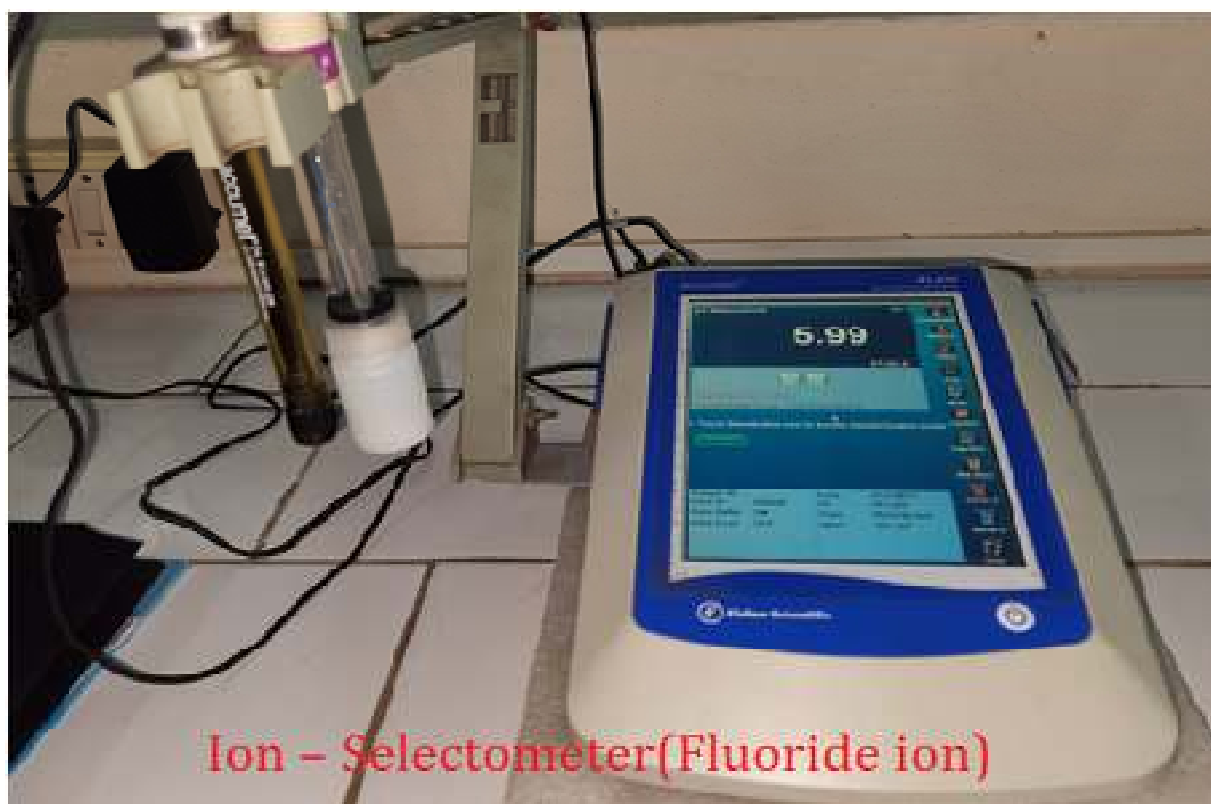
**List of Research equipment available in dept. of Chemistry**

S.No	Name of the Equipment	Specifications (Make and Model Number)	Purpose	Approx. value	Date of installation
1	Rotary Shaker	REMI RS 12 PLUS AC/DC Universal motor with max. speed of 180 rpm	For gentle mixing of fluids in test tubes & glass vessels of different capacities	19,528/-	23-7-2014
2	Spin Coater	Apex spinNXG – P1 Speed Range: 100-10,000 R.P.M. with <math>\pm 1\%</math> Error across the Full Speed Range & Acceleration: 40-5,000 R.P.M./sec	Nano-scale & Micron-scale Uniform & Homogeneous Thin Film Preparation	1,00,000/-	2-1-2016
3	Ion - Selectometer	EUTECH Cyberscan pH2100 <b>pH Range</b> -1.000 to 14.000 pH <b>Resolution &amp; Accuracy</b> 0.01/0.001 pH & $\pm 0.01/0.002$ pH <b>Ion Concentration Range</b> 0.001 to 19999	High Resolution and Accuracy (Up to $\pm 0.002$ pH Accuracy) for precise measurement Direct Ion Concentration measurement with use of many Ion Selective Electrodes	12000/-	
4	Ion – Selectometer (Fluoride ion)	Thermo ACCUMET XL 250 Accuracy (ISE) 0.5% full scale (monovalent ion), 1% full scale (divalent ion) Accuracy ( $\pm 0.2$ Mv) With pH Resolution 0.1/0.01/0.001	Provide advanced pH and ion measurements with simple operation and offer a large, vivid color touch-screen display.	184345/-	30-7-2015
5	UV – Visible Spectrophotometer	JASCO V – 750 Optical System for Single monochromator and fully symmetrical double beam type with a	For any spectroscopic or colorimetric determination of nutrients like N, P, K, S, Na, Mg, Zn, B, Mo in the liquids and solids	11,50,000 /-	3-4-2015

		Light Source Halogen lamp, Deuterium lamp Wavelength range 190 to 900 nm			
6	Water Bath	KEMI KCB – 210A provides temperature from 5 °C to 80 °C with +/- 1 °C accuracy	Chemical reactions can be perform done at ambient temperature	20706/-	8-1-2013
7	Constant Temperature Water Bath	KEMI KCTB – 1 Controls temperature from 5 °C to 80 °C	Chemical reactions can be carried out at ambient constant temperature	22,759/-	4-8-2014
8	Digital Analytical Balance	METTLER TOLEDO ME 303	<i>Balance for essential needs: 320 g capacity, 1 mg readability</i>	62698/-	2-3-2015
9	Digital Analytical Balance(0.00 mg)	METTLER TOLEDO ML 104	<i>Advanced Level Analytical Balance: 120 g capacity, 0.1 mg readability</i>	102948	14-7-2014
10	Visible Spectrophoto meter	ELICO SL 177 Automatic wavelength selection with 6 position holder cuvettes of 10mm path length	For any spectroscopic or colorimetric determination of nutrients like N, P, K, S, Na, Mg, Zn, B, Mo in the liquids	79200/-	24-11-2014









**JASCO V-750 UV-VISIBL SPECTROPHOTOMETER**  
Sponsored by Department of Science and Techonology, New Delhi



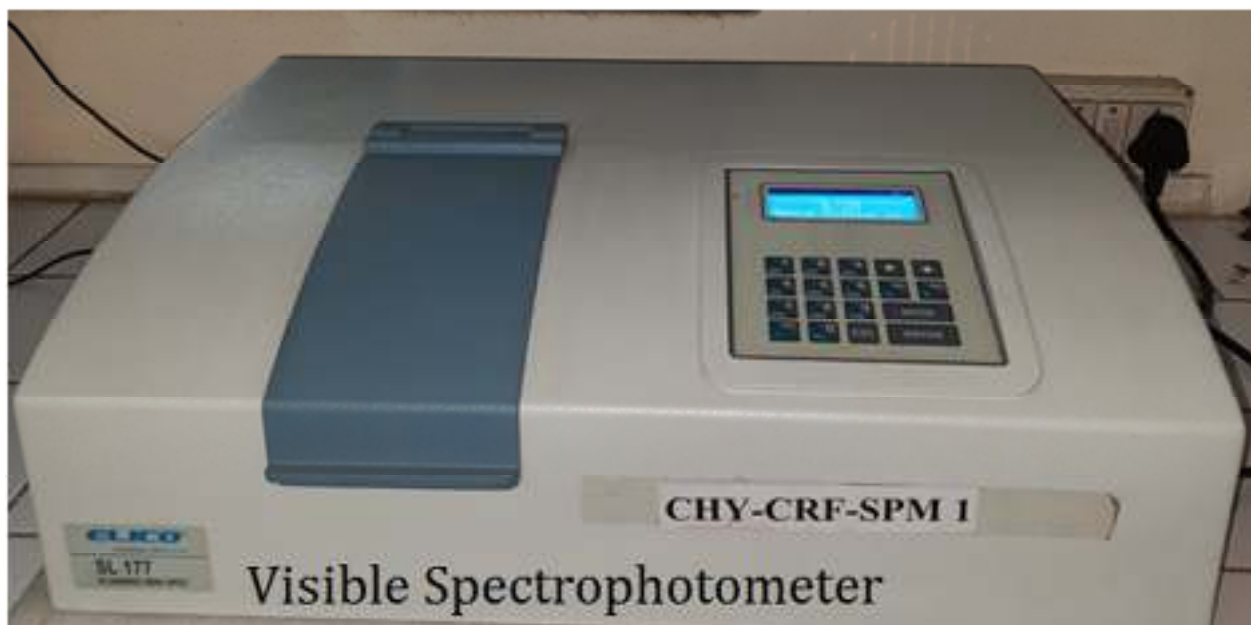
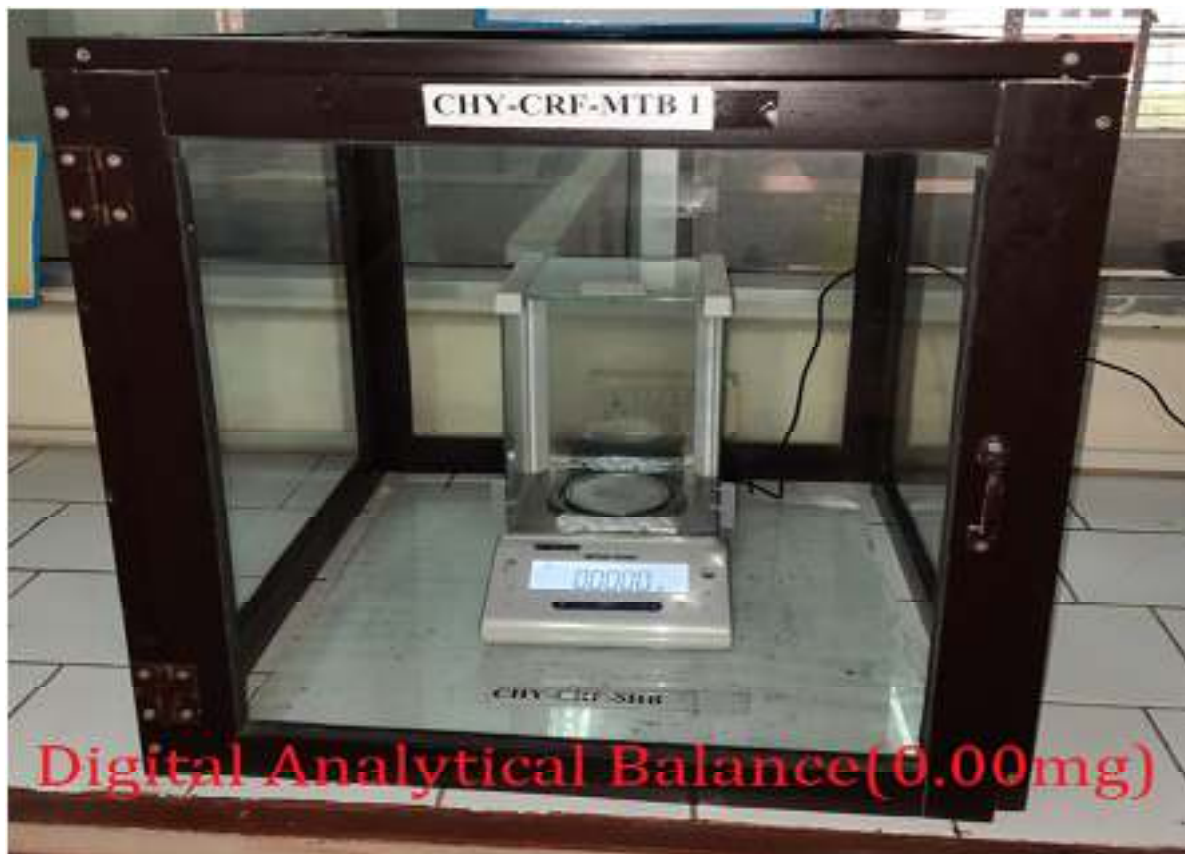
**Water Bath**



Constant Temperature Water Bath



Digital Analytical Balance





**1. List of Research Equipment Used for Consultancy Works from Civil Engg Dept :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	Signal Stacking Resistivity Meter	SSR MP1	Ground water exploration Bed rock investigation	2,14,549	16.10.2017
2.	Concrete mixer pan type	3cft capacity	Cocrete mixing	1,10,880	28-06-2012
3.	Vibrating table		Concrete vibration	55,424	30-06-2012
4.	Compression testing machine	300 kN	Concrete compression	5,83,368	30-06-2012
5.	Los Angeles Abrasion Machine	with 12 steel balls	Aggregate abrasion	1,02,879	02-07-2012
6.	Ductility Testing machine	with water bath	Bitumen ductility	51,600	20-01-2017
7.	Marshall stability test Set up		Bitumen mix design	54,000	20-01-2017
8.	Consolidation apparatus		Soil consolidation	96,301	31.12.2011
9.	Direct shear test		Soil direct shear	85,930	31.12.2011
10.	CBR apparatus		Soil CBR	82,967	31.12.2011
11.	Swell test apparatus		Soil swelling	64,575	31.12.2011
12.	SPT test		Bore hole sample	52,919	31.12.2011
13.	Unconfined Compression Tester		Soil UCC	79,999	07.06.2012
14.	Schmidt's Rebound Hammer		Non destructive testing	78,468	06.05.2012
15.	Ultra sonic Pulse Velocity testing equipment		Non destructive testing	3,40,031	06.05.2012
16.	Concrete core drilling machine		Core cutting	1,26,000	20.01.2017
17.	Auto Level PENTAX	Powder coated Aluminium Metal body, 1mm accuracy	Land Surveying	60,800	07.01.2010
18.	Sokkia Electronic Total Station Total Station	Keypad Display, 5" Accuracy, Auto save option, Single display	Land Surveying	3,08,000	13.11.2010
19.	Data Acquisition System	with 16 channel, and LVDT sensor		8,76,740	05.02.2018
20.	Loading Frame (100 Tonne) for testing Beams for flexure (Fabricated)			3,00,000	
21.	Two Cell RCPT	2 Cells	Chloride permeability of concrete	1,09,000/-	15.06.2020
22.	Triaxial test			1,76,086	17.01.2012
<b>Total</b>				<b>40,10,516/-</b>	

**List of Research Equipment Used for Consultancy Works from Electrical and Electronics Engineering (EEE) Dept :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Year of Installation</b>
1.	cRIO-9118, 8-slot Virtex-5 LX 110, Reconfigurable Chassis for Compact RIO, cRIO-9022,	cRIO-9118, 8-slot Virtex-5 LX 110 Real-Time PowerPC Embedded Controller for cRIO, 533 MHz, 2 GB storage, 256 MB DRAM	PG projects and research	12,41,534/-	2017
2.	MATLAB (100 user)		UG, PG projects and research	11,54,471/-	2014
3.	3-Phase power and Harmonic Analyzer	Yokogawa make 5/600V,1/20Arms,13-31 harmonics	PG projects and research	3,96,700/-	2014
4.	SIEMENS PLC, HMI and AC Drives Lab: (11 Kits)	(i)SIEMENS PLC -SIMATIC S7 1200 and Accessories (ii)Win CC Basic SINAMICS G 120 for 3AC 400Volts	UG and PG projects	17,62,043/-	2014
5.	PSCAD (25User) Power System Software tool	X4 Academic Network License (MUL), Manitoba Hydro International Ltd, Manitoba, Canada	UG, PG projects and research	4,41,975/-	2014
6.	DSP based BLDC motor BLDC motor with hall sensor		UG and PG projects	2,58,100	2014
7.	v/f control of 3-phase Induction motor		UG and PG projects	2,07,870	2014

	using DSP controller				
8.	Microcontroller and MATLAB based servo and stepper motor drive		UG and PG projects	1,00,000/-	2014
9.	Rotor control of Slip ring Induction motor using DSP controller		UG and PG projects	1,17,275/-	2014
<b>Total</b>				<b>56,79,968/-</b>	

**List of Research Equipment Available in Mechanical Engg Dept :**

<b>S. No</b>	<b>Title of the Research equipment</b>	<b>Specifications</b>	<b>Purpose of the equipment</b>	<b>Approximate value of the Equipment (Rs)</b>	<b>Date of Installation</b>
1.	Vacuume Vowen & Vacuume pump	350mm/350mm/350mm volume, 250° C Max Temperature, 760 mm of Hg pressure	Heating and drying of samples	1,18,310	26/8/2019
2.	Critical Heat flux Setup	12 kW (Heat input power), 1m length pipe	To estimate the critical heat flux of downward fluid flow in a tube	2,00,000	12/09/2019
3.	ICP Array Microphone (Noise Sensor)	Model no: 130F20, 0-100 dB, Sensitivity-40 Mv/Pa	Noise measurement	39,625.00	02/07/2018
4.	Impulse force hammer	Model no: 086C03	Used for modal analysis	88,122.00	02/07/2018
5.	FFT Analyser	COCO-80, 24 bit input, one 24 bit output	Vibration analysis can be done	8, 92,500.00	01/05/2017
6.	Pin on Disk Testing Machine	Sliding Speed Range : 0.26-10 m/sec Disc Rotation Speed : 100-2000 rpm Maximum Normal Load :200 N Frictional Force : 0-200N Wear Measurement Range :Up to 2 mm	Wear testing of metals	583,216.00	15/09/2016
7.	Micro Hardness Tester	Model no:VHS-1000, Serial no: 0891	Hardness testing	3,25,500.00	23/08/2016
8.	ICP Triaxial Accelerometer	Sensitivity 5	Used for	1,41,000.00	11/07/2014



		mV/g,	vibration measurement along three mutually perpendicular directions		
9.	Single Axial Accelerometer	Sensitivity 9.5 mV/g,	Used for vibration measurement in single direction	35,000.00	07/02/2013
10.	NI Lab view Data Acquisition Card	NI 9234, 4 CHANNEL A/D Converter	Programming for data acquisition and analysis	1,70,843.00	07/02/2013
11.	Computerized Variable Compression Ratio Multi-Fuel Engine test Rig	Make : Kirloskar – AVL Bore : 87.5 mm Stroke : 110 mm Power : 5 hp @ 1500 rpm	Engine performance can be tested by using different fuels like diesel and petrol	7,58,000-00	17/06/2012
12.	Exhaust Gas Analyzer	Make : AVL Power supply : 110V-220V 25 W Operating Temperature: 5-45 oC	Emission analysis can be done where the amount of H <sub>2</sub> , CO <sub>2</sub> ,CO,NO <sub>x</sub> and O <sub>2</sub> in the exhaust gas is measured	3,62,205	17/06/2010
13.	Smoke Meter	AVL437C,Serial No: 2678	Smoke analysis can be done	214,258.00	17/06/2010
14.	EGR System	Make: Legion brothers	This system can be used for exhaust gas recirculation into the engine	169,850.00	17/06/2010
15.	Surface Roughness tester (Handy Surf)	Handysurf, Model no: 35A	Roughness measurement	115,000.00	05/07/2010
16.	Computerized Variable Compression Ratio Engine test Rig	Make : Legion Brothers Bore : 80 mm Stroke : 110 mm Power : 5 hp @ 1500 rpm	Engine performance can be tested by using different fuels like diesel and	7,75,000	08/06/2008

			biodiesels		
17.	6 AXIS ROBOT	ARISTO 6XT, Pay load 3 kg including gripper, Tip speed 0.2 m/s	CNC Machining	6,20,000.00	01/04/2008
18.	Metallurgical Image Alalysis System	Make: Dewinter, Input Voltage:210-260 V, Frequency: 60Hz	Microstructure of the metals can be analysed	1,35,000.00	27/02/2008
19.	CNC MAX MILL (MTAB) Vertical machining centre, Servo motors –with/without brake-2nos, Encoder and thermo couples-32 nos	Maximum loading capacity: 200kg, Feed rate X Y Z: 10/10/10 m/min, Size: 2100/1650/1350 mm	Can be used for Machining	20,45,828.00	24/08/2007