

FMS - Flexible Manufacturing System

minitek 1

Definition of the production lots that are executed automatically. The robot is responsible of loading and unloading the parts of the lathe. The operation of the robot and the lathe, as well as the availability of space in the table and the management of the parts are functions that are made by the cell controller.

minitek 2

The operation and the management of this cell is identical to the previous one. The difference lies in the parts. When replacing the lathe with the machining center, the parts have prismatic shapes instead of revolution shapes.

minitek 3

The integration of two m/cs with a robot and the table store, allows a bigger flexibility in the type of parts to be produced. Lots of can be defined with prismatic geometry, of revolution or mixed; since the route of the parts to be produced can have operations in both machines and as many phases as desired.



minitek 4

The inclusion of a rotating table allows the introduction of an additional concept of the CIM philosophy, which is the management of the parts storage. This rotating warehouse is controlled by the program of control of the AS/RS (Automatic Storage/retrieval System) cell.

minitek 5

With this configuration, a new concept (transport concept) is introduced, and on the other hand, the capacity of the warehouse is enlarged. Besides, this configuration provides a pallet or part fixturing system managed in a automatic way by the software control of the cell.

minitek 6

This configuration introduces the assembly like one more operation to be made with a group of parts in order to build a mechanical assembly. The assembly concept has been consigned to flexible systems or assembly cells (FAS/FAC). This cell combines the possibilities of the flexible manufacturing cells (FMS) with the assembly cells (FMA).



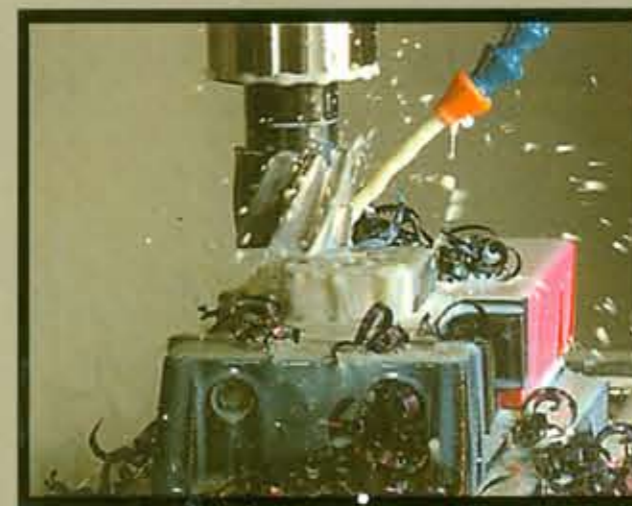
CONTACT

SHIV MACHINE TOOLS
102, ARMENIAN STREET
CHENNAI 600 001
INDIA

PH: 91 044 2522 3473 / 2522 7305
FAX: 91 044 2522 7954

Website
www.shimato.in

E-mail
info@shimato.in



CNC MACHINES EXCLUSIVELY FOR EDUCATIONAL PURPOSE

Shiv Machine Tools

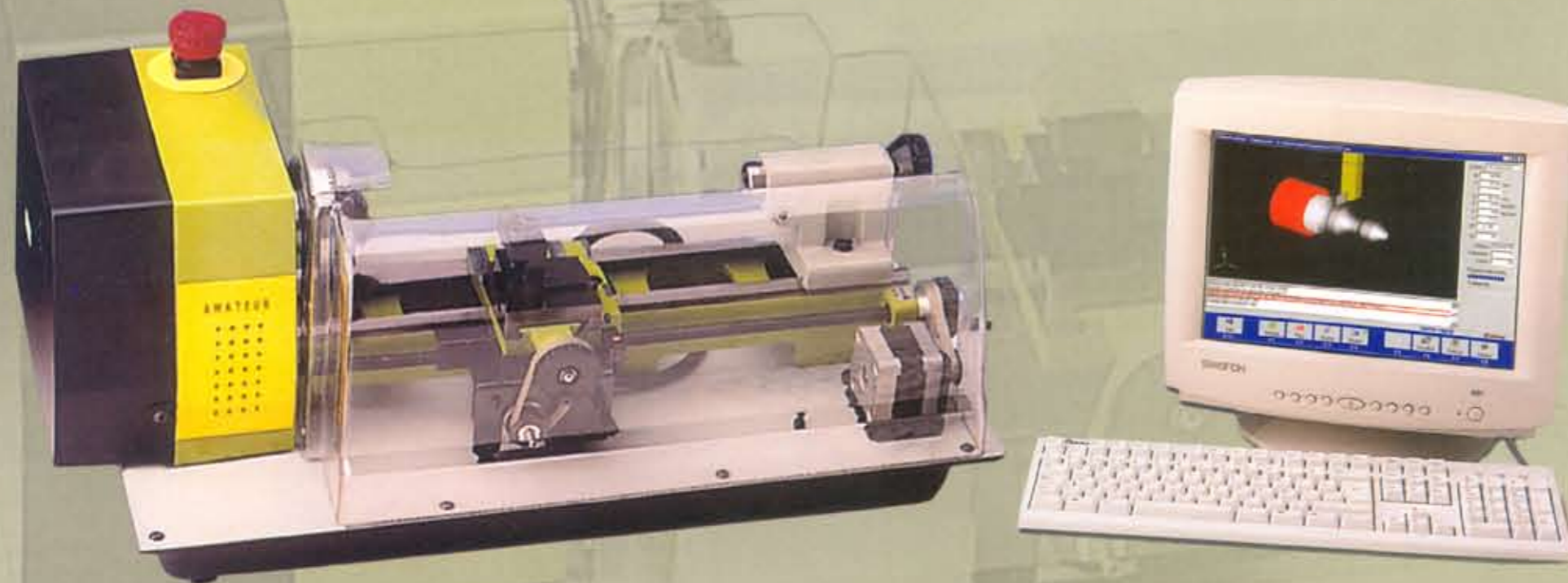
UNDERSTANDING EDUCATIONAL VALUES

The machine is included with Fail-safe cut out switches and totally enclosed guarding to provide safety levels for students

The **AMATEUR** lathe is an extremely practical resource to provide students with a basic knowledge of stock removal processes with computer-controlled devices.

Skill development:

- Introduction to machining technology.
- Editing, simulating and running CNC programmes.
- Getting to know the different CNC operating modes.
- Selecting tools and workpiece clamping elements.
- Introduction to workpiece design and manufacturing using CAD-CAM systems.



STANDARD ACCESSORIES



- Fully enclosed working area with built-in safety devices.
- 3 jaw manual chuck.
- 1 Tool conventional turret.
- Installation and Programming manuals.
- User Friendly Software with 3D graphical simulation and automatic error checking.

OPTIONAL ACCESSORIES



- Encoder for automatic threading.



- HSS Tooling package.
- Set of tool holders and tips.



- CNC edition and simulation program **WinUnisoft**.



MAIN SOFTWARE FEATURES

Work on projects. Every project contains the part drawing, the machining process, the machine data, the part size, the tools to use and the CNC program.

- Use project templates to create new projects.
- Graphic aid function for the programming of all G and M functions.
- Analyse syntax during edition of blocks and of the whole program.
- Open edition with options Cut-Copy-Paste from Windows.
- Definition the data of machine on which machining operations are performed.
- Definition of different types of tool geometry.
- Definition of the part with jaw chuck.
- Printing of all data, including CNC program and the 3D simulation.
- Simulation of different 3D views with tool display.
- Representation of jaw chuck.
- Collision detection of the tool with the part and the vice clamp.



Apart from its performance, the excellent graphic quality of its simulator makes a rapid comprehension possible of the performed machining operations on the part.

SPECIFICATIONS

Swing over bed	100 mm
Swing over carriage	58 mm
Distance between centres	210mm
Tail spindle travel / taper	30mm / MT-2
Carriage longitudinal travel	166 mm
Carriage cross travel	58 mm
Main spindle speed	100 to 2000 rpm
Spindle motor	AC Motor, 80 W
Jaw chuck	Diám. 68 mm
Axes motors	Stepper motor 200 s/rev
Rapid traverse rate	400 mm/min
Dimensions	490 x 270 x 280 mm
Weight	12 Kg
Mains supply	50/60 Hz Single-phase 115-230V 0,1 KW

Especially aimed basic educational levels

The EXPERT lathe is designed to work as an automatic machine tool with numerical control as far as conventional manual-machine by feed handles included in the transversal and longitudinal axes.

All essential sequences in the modern production sequence can not only be explained but also followed true-to-life.

- Editing, simulating and running CNC programmes.
- Getting to know the different CNC operating modes.
- Selecting tools and work piece clamping elements
- Introduction to cutting parameters and their effect on machining quality.

The machine has full perimeter guarding with fail-safe switches, in the positive (safety) mode, on all access doors and guards, which stop spindle rotation and axes movements on opening.



STANDARD ACCESSORIES



- Fully enclosed working area with built-in safety devices.
- 3 jaw 85mm manual chuck.
- 1 Tool conventional turret.
- Installation and Programming manuals.
- User Friendly Software with 3D graphical simulation and automatic error checking.

OPTIONAL ACCESSORIES



- HSS Tooling package.
- Set of tool holders and tips.
- Detachable cartridges.



- Quick change 4 position tool holder.
- CNC edition and simulation program WinUnisoft.



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SPECIFICATIONS

Swing over bed	150 mm
Swing over carriage	96 mm
Distance between centres	360 mm
Tail spindle travel / taper	45 mm / MT-2
Carriage longitudinal travel	250 mm
Carriage cross travel	65 mm
Main spindle speed	100 to 3000 rpm
Spindle motor	AC Motor, 470 W
Jaw chuck	Diám. 85 mm
Axes motors	Stepper motor 200 s/rev
Rapid traverse rate	400 mm/min
Dimensions	760 x 440 x 320 mm
Weight	45 Kg
Mains supply	50/60 Hz Single-phase 230V, 700 W



Industrial Design
Educational machine

Quality and a commitment to improvement have always been strongholds in our vast experience in offering educational solutions.

This allows us to be pioneers in the design of machines and didactic resources that combine the performance of production equipment with the practicality required for training human resources, who are the future protagonists of the production sector.



Now with
SIEMENS / FANUC
Controller



STANDARD ACCESSORIES

- Fully enclosed working area
- 3 jaw 125 mm. manual chuck
- 8 tool conventional turret
- Control software form PC WinControl
- Interliking cable (machine to computer)
- Installation and Programming Manuals



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- . Representation of vice clamp and jaw chuck.
- . Collision detection of the tool with the part and the viceclamp.
- . Inspection of the geometry in the machined part.
- . Interconnection with an unlimited number of programming posts.



OPTIONAL ACCESSORIES

- Manual tailstock
- Coolant system
- 3 Jaw 110 mm. pneumatic chuck
- VDI tool disk. Num. tools: 8 int. . ext.
- Enclosed guard with pneumatic opening
- Tooling and workholding accessories
- Supporting table for the machine and PC
- Licences for edition and simulation classroom software



SPECIFICATIONS

Swing over bed	230 mm
Distance between centres	530 mm
Longitudinal travel Z	275 mm
Cross travel X	96 mm
Spindle motor Asynchronous three-phase	1,5 Kw
Spindle speed	100 - 3500 rpm.
Axes motors X, Z	Stepper motor 200 s/rev
Rapid traverse rate	1500 mm/min
8 - station indexable turret	(12 x 12 mm)
Electronic resolution	0,01 mm
Door opening	Manual
Mains supply	50/60 Hz Single-phase 220V
Dimensions	1190x615x700 mm
Approximate weight	300 Kg

Industrial Design
Educational machine

Now with
SIEMENS / FANUC
Controller



A Bench top CNC, training, 3 axis Vertical Machining Centre. The machine should be capable of cutting brass, aluminium, plastic and wood with appropriate attachments. The machine should have full perimeter guarding with safe switches, in the positive (safety) mode, on all access doors and guards which stop spindle and axes movements on opening.

Capable, with optional equipment, of integration with a Lathe into a Flexible Manufacturing (FMS) or a Computer Integrated Manufacturing system (CIM).

STANDARD ACCESSORIES

- Bench mill with built-in safety devices
- Control software from PC WinControl
- Interlinking cable (machine to computer)
- Installation and Programming Manuals



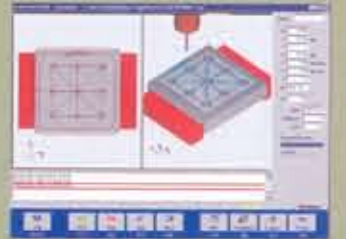
OPTIONAL ACCESSORIES

- Automatic 8 positions Tool Changer (ATC)
- Workpiece clamping devices (manual and pneumatic)
- Collet-holders ISO-30. Collets and mills
- Support table for machine and PC
- Coolant system
- Silent compressor
- Licences for edition and simulation classroom software



MAIN SOFTWARE FEATURES

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- Interconnection with an unlimited number of programming posts.



SPECIFICATIONS

X (longitudinal)	200 mm
Y (cross)	200 mm
Z (vertical)	200 mm
Working Table area	450 x 180 mm
Distance spindle to table	320 mm
Pneumatic clamping for tooling	6 bar
Spindle motor Asynchronous three-phase	1,5 Kw
Spindle speed range	100-4000 rpm
Axis motors Stepper motor	200 simv
Rapid traverse rate	1500 mm/min.
Tool-holder spindle cone	ISO 30
System resolution	0,01 mm
Door opening	Automatic
Mains supply	50/60 Hz Single-phase 220V
Dimensions	970 x 750 x 900 mm
Approximate weight	310 Kg

Co-ordinate Measuring Machine (CMM)

Accuracy in measurement

The QM-Measure system delivers accuracy of $E=(3.0+4L/1000)\mu m$. This means you can measure 300mm volumetric length with an indication error of less than $4.2\mu m$.

Specifications

Model No.	QM-Measure 333	QM-Measure 353
Measuring X-axis	300mm	300mm
Range Y-axis	300mm	500mm
Z-axis	300mm	300mm
Length standard	Precision linear encoder	
Resolution	0.0005mm (.00002")	
Guide Method	Air bearing for each axis	
Clamping method	Clamping screw	
Fine feeding device	Optional (10mm/.4" stroke)	
Z-axis balance	Counterweight	
Workpiece Loading	Maximum height: 410mm (16.14")	
	Maximum mass: 30kg (66 lbs.)	
Air pressure	0.35MPa or 51PSI	
Dimensions W	825mm	825mm
(QM Measure) D	690mm	690mm
H	1345mm	1360mm
Mass** QM-Measure	130kg	170kg
QM-Data 300	1.2kg	1.2kg



For Technical Training



CNC Machining centre



Slant Bed CNC lathe



Industrial CNC options adaptable to the machine depending on the needs

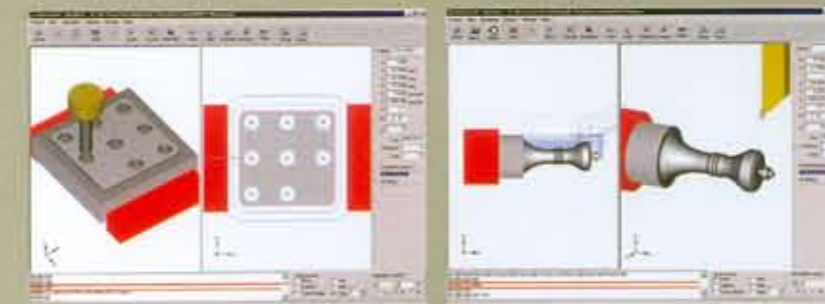


The students obtain virtual real machining of CNC programs writes in ISO codes in the editor module or makes by a CAD/CAM system

WinUnisoft has been designed to train in programming of numerical control units and virtually approaches industrial reality. WinUnisoft makes it possible to edit and simulate the CNC programs FAGOR 8025 and 8050, and furthermore tool definitions and other necessary parameters for part machining on a lathe and milling machine.

The main software features as mentioned in Armoni and apolo including

- Section of part in different planes.
- Selection of different colours for different tools.
- Obtaining of machining time.



Apart from its performance, the excellent graphic quality of its simulator makes a rapid comprehension possible of the performed machining operations on the part.

TEACHING APPLICATION

WinUnisoft makes it possible to carry out the main tasks in the definition of a CNC program based on the part drawing and process. These tasks are included on the software and it is designed so that its learning will be rapid and the acquired concepts can easily be applied in the real world of CNC manufacturing.

The processes are:

- Using the programme assistant and the graphic aid, witch provides the parameters for each ISO code.
- Each time you proceed to the next line, the software performs a syntax analysis of the modifications.

Write the CNC program (with the programme assistant)

- In order to define the machine on which the part will be machined, enter all data: type of machine, numerical control, courses, position and time of tool change, feed and headstock speed, etc.

Definition of data machine, part, outils and origins

- The display of the vice clamp allows the detection of possible tool collisions.
- The geometry of each tool is defined (type and parameters) and its correctors.
- Defined the appearance of the display: number of views, axes position, light spot, plane, size (Zoom), sections and a transparent view.

Obtain a virtually real machining simulation

- Before beginning the simulation, an analysis of the programmed geometry will be performed to check for errors and inform the programmer.

Geometry inspection of the workpiece

- Geometry inspection of the workpiece (point coordinates, distances, arcs, straight lines, .), display of the toolholder and different colour definition for paths and solids.

NEW CNC CLASSROOM

WinUnisoft software can be installed in a CNC classroom configuration to shared all the CNC and printer in the classroom. The configuration is based on a local network (Win95/98/ 2000/XP) to permit the interconnection of an unlimited number of programming post to different CNC machines and peripherals.

The main features are:

- Unlimited number of programming posts.
- Unlimited number of CNC machines.
- Unlimited number of peripherals.
- Access controlled from any programming post to any machine installed in the classroom, in DNC mode.

