

FRYER

MACHINE SYSTEMS

Precision Built Solutions



Fryer / Siemens 828-HS

CNC Control for Milling and Turning

The Fryer / Siemens 828-HS CNC provides world class technology and ultra-advanced features in an intuitive user interface. Milling in vertical or horizontal and turning all use the same platform with up to 4+1 axis capability. Fast set-up cycles, one button hot keys and built in probe cycles speed the set-up process. Shop floor programming, G code programming, large program storage and Ethernet connectivity speed the programming process. 3D solid model graphic verification, handwheel run and easy interrupt speed the first article process.



Ease of Use

- One touch keys control many functions
- Shop floor conversational programming
- Manual Mode with Do-One cycles
- Animated cycles with graphics and help
- Handwheel run
- One button tool changes
- Advanced Intuitive tool and part probing cycles
- 3D Shopfloor simulation with cycle time display
- Selectable level lockout key

Powerful Features

- Mid-program restart
- Multiple Clamping
- High speed machining
- Collision avoidance
- Adaptive feed
- Compatible with tool presetters to import tool data automatically
- In-process measuring
- DXF Import
- Mindsphere



1. LCD Screen

10.5" screen features a high-resolution, digital color monitor.

2. USB Port

High-speed USB port for file transfer via standard flash drive.

3. Mode Select

Provides easy navigation for set up, programming and operation.

4. Set-up Hot Keys

Buttons such as Next Tool/Previous Tool simplify set-up and operation of the machine.

5. Soft Keys

Each screen has individualized touch activated function keys. Alpha-numeric keyboards and directional keypads also pop up when needed

6. Function Keys

Feed rate and spindle speed override dials, axis jog keys and keys for spindle direction and coolant.

7. Edit Lockout Key

Edit Lockout Keys allow controlled access of editing programs and machine operations.

MANUAL OPERATION



MANUAL HANDLES

Manual handles are provided for the table, saddle and head. These feature full digital readout (DRO) of position. No CNC experience is needed to use the manual handles.

ELECTRONIC STOPS

Allows you to set a stop position for any axis. Crank the handles and you can't move past the stop position.

TAPERS AND CHAMFERS

Set the angle required and by turning one handle both axis move at the desired angle.

4 POSITION JOYSTICK

Simple joystick feed control allows positioning of the axes with a steady feedrate. The feedrate is adjustable with either the course/fine switch or the feedrate override knob.

FINE/COARSE SWITCH

Allows you to easily switch between fast or slow movement of the handles or joy stick.

NO CNC EXPERIENCE NEEDED



TAPER TURNING

Set the angle required and by turning one handle both axes move at the desired angle.

REMOTE ELECTRONIC HANDWHEEL

Machine movement is manually controlled by the available remote handwheel or by the axis pushbuttons. Resolution of .010", .001" or .0001" movement per click or keystroke is set through the selector switch or on the control. Includes remote cycle start and feed hold buttons.



OTHER MANUAL FEATURES

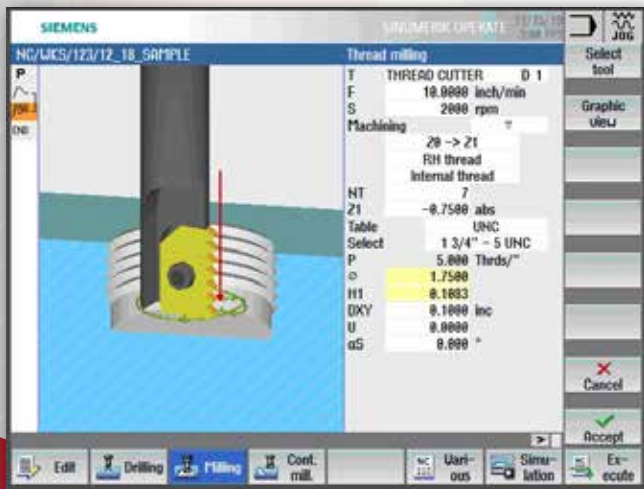
- Axis position is displayed on control as a Digital Readout
- Manually run spindle in either RPM or Constant Surface Speed
- One button tool selection for easy tool changes.
- Teach mode

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DO-ONE MODE

DO-ONE OPERATIONS

The Do-One Operations allow you to quickly drill, bore or tap holes automatically by filling out a simple screen. Once the operation is completed the machines returns to manual mode. Mill cycles include pocketing cycles, thread milling, facing, engraving and keyway slots. Lathe cycles include simple turning and boring, various grooving cycles, single point OD and ID threads, thread repair and others.

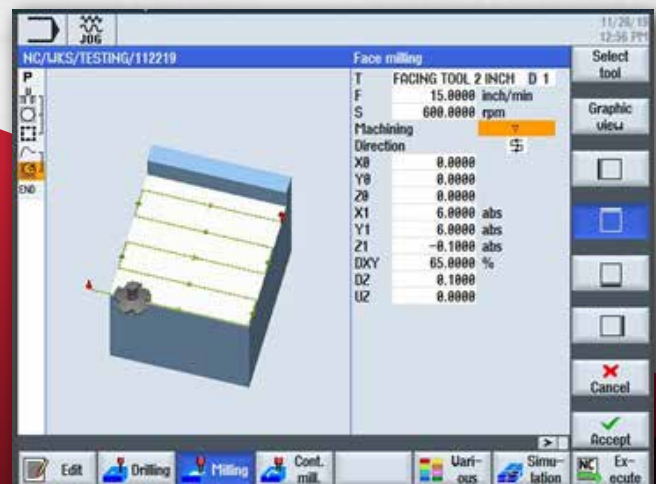


THREAD MILLING

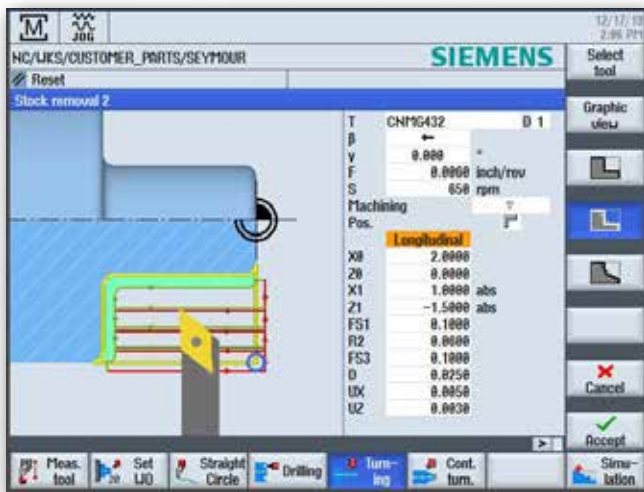
What is usually a tricky programming operation becomes a simple fill in one box procedure. The Thread Mill cycle can run by itself in Manual Mode without having to write an entire program. External/internal threads, inch/metric, right hand/left hand threads are all there in the same do-one cycle.

FACING

A common milling procedure is Face Milling. The 828-HS lets you define a few parameters and it will run the facing cycle as a Do-One operation. You control the direction of cut and can add boundaries to define wide slots or to notch out corners.



SINGLE STEP OPERATIONS

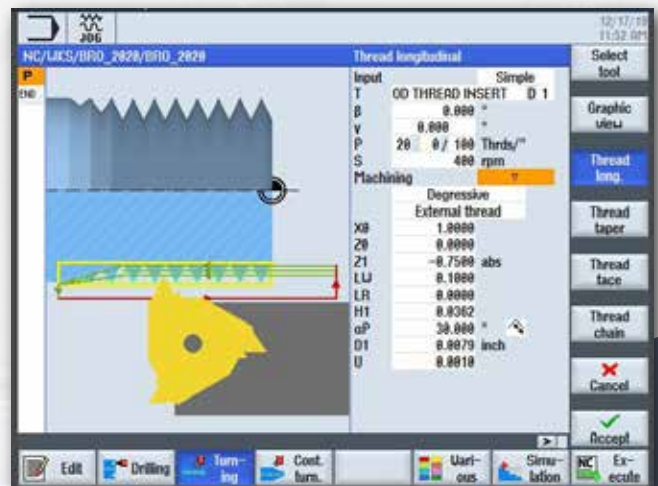


STOCK REMOVAL

You just need to make one simple turned part so why write an entire program? In Manual Mode all turning cycles are available to run by themselves with no program required. You choose your tool, speeds and feeds, depth of cut and the cycle does the rest. Corners can be chamfered or radiused and OD or ID turning can be easily configured.

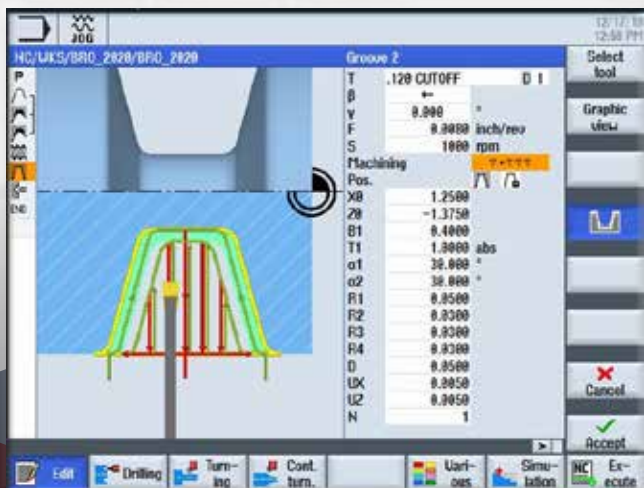
THREADING

This operation becomes a simple fill in one box procedure. Tapered, external/internal threads, inch/metric, right hand/left hand threads are all there in the same do-one cycle. The threading cycle also does thread repair with another click of a button.



GROOVING CYCLE

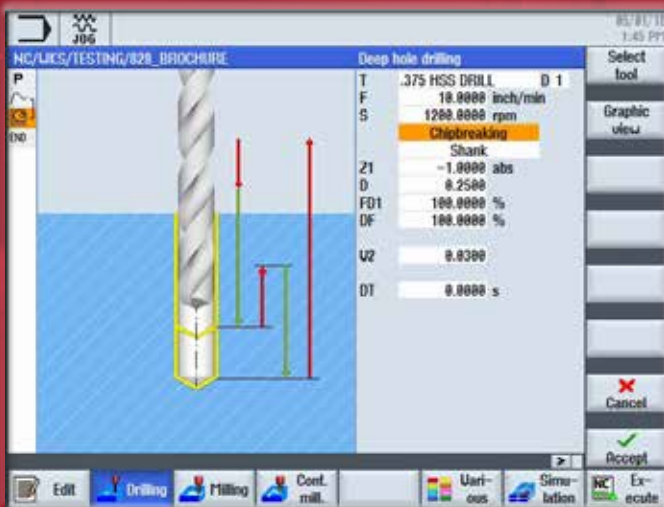
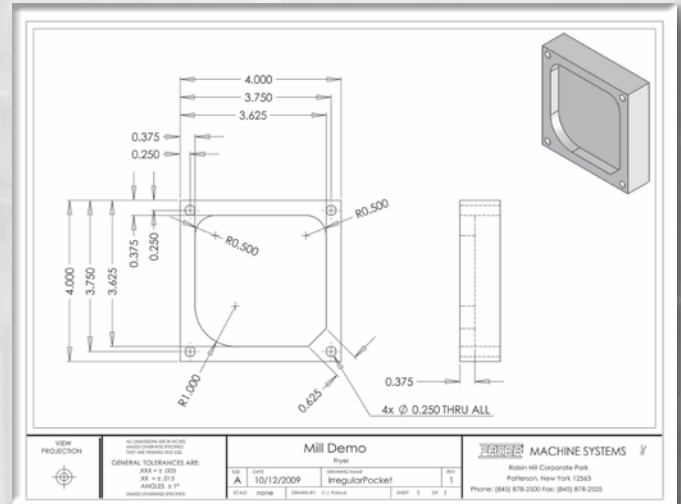
3 different grooving cycles lets you create custom grooves that work in do-one mode. Straight grooves, V-grooves as well as tapered grooves can be created on the OD, ID or Face.



PROGRAMMING

PART PRINT

Programming in ShopMill on the Fryer / Siemens 828-HS control is straight forward with no need for G codes. Enter dimensions directly off the print.

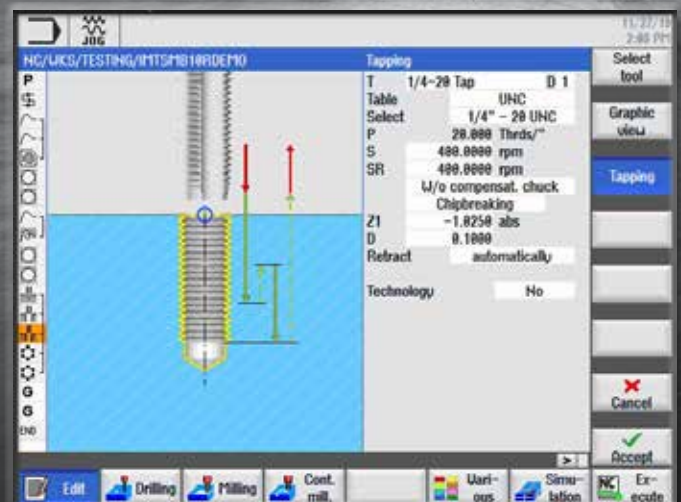


DRILLING CYCLES

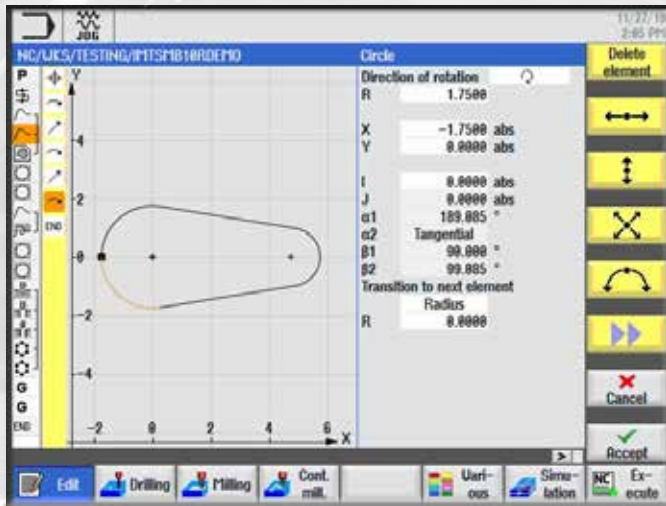
Several drill cycles are available, chip breaking, chip removal, center drilling, reaming etc. All canned cycles retain the last numbers entered saving you time and money.

TAPPING CYCLE

This cycle has several tap forms in inch and metric pre-defined. Tough material? Select Chipbreaking or Chip Removal. Rigid tapping, not usually found on bed mills, is also available. Enter the RPM and the control automatically calculates the feed rate.



FROM DRAWING TO FINISHED PART

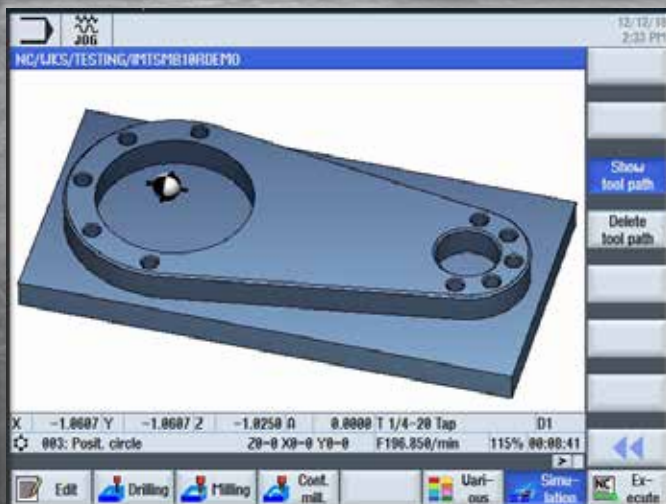
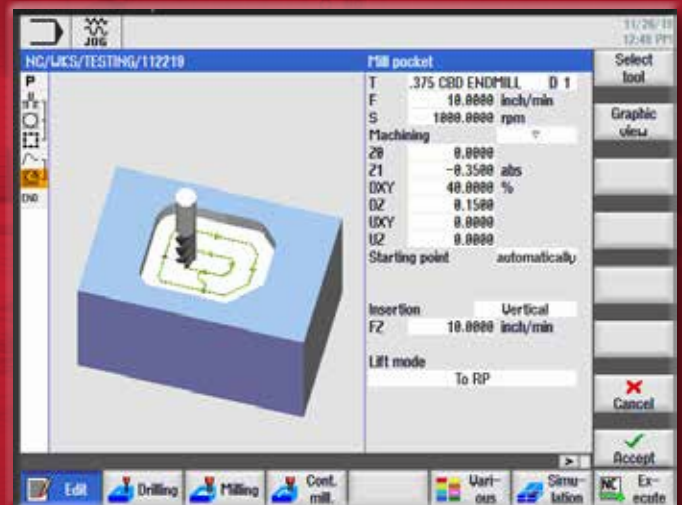


CONTOUR EDITOR

The Contour Editor lets you create simple or complex tool paths. As you enter dimensions the path is visually generated. Don't know an end point? The editor will fill-in missing points.

MACHINING THE CONTOUR

Once the contour is created you link to a cycle to machine it. Pocketing, Path Milling or Spigot all let you control how you want to machine the part. This cycle has a finishing operation and can also chamfer the edge of the part.



SIMULATION MODE

Before making any chips the full featured simulation mode lets you see the part in 3D to check if everything is correct compared to the print. Part can be rotated, zoomed and cut to see into different areas of the part. Hole in the wrong place? Fix it before you actually machine it. Simulation even shows cycle time.

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SETUP AND OPERATION

TOOL TABLE



Graphic display shows the type and name of the tool. You can also control spindle direction and coolant. Tool life monitoring is also standard for time in cut or part count.

AUTOMATIC TOOL PROBE

Tool probe automatically sets your tool length offsets. Includes predefined table locator with magnetic mount for fast use.

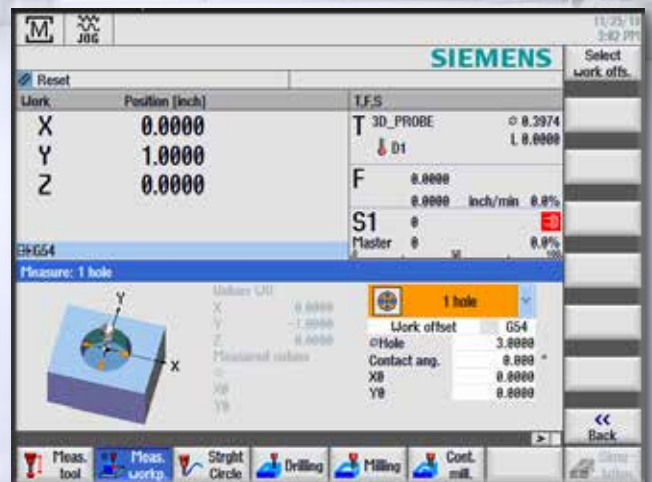


AUTOMATIC PART PROBE

Affordable Fryer wired part probe works on holes, pockets, angled parts etc. to quickly set work offsets



PART PROBING/ MEASURING CYCLES

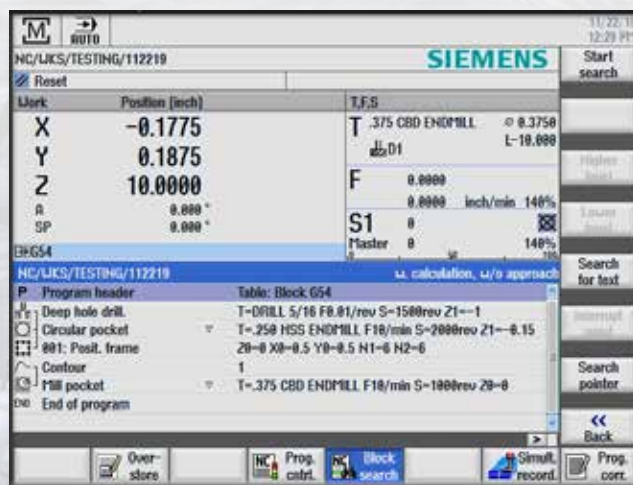


Several standard cycles are available to find centers of holes, part edges, and bosses. Cycles can also be used to measure finished parts and display the reading.

FASTER, SIMPLER & MORE PRODUCTIVE

RUN PROGRAM

After the program is proved out in simulation you are ready to run. The Auto screen Block Search function lets you start anywhere in the program. Part counters and run times are also included.

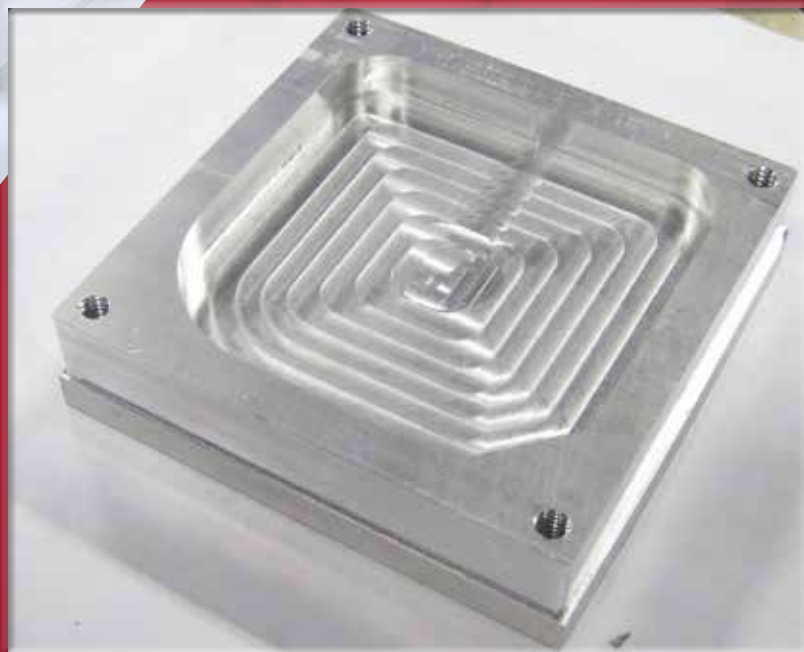


HANDWHEEL RUN

This feature allows you to control your program execution with the optional electronic handwheel. Turning the handwheel causes the program to run with you in charge of the axis feed. Turn it slow or speed things up by cranking faster. When you stop turning the axes stop moving, turn the handle the opposite direction and the axes move backwards though the program. Designed to make proving-out programs easier with safety and confidence. (optional)

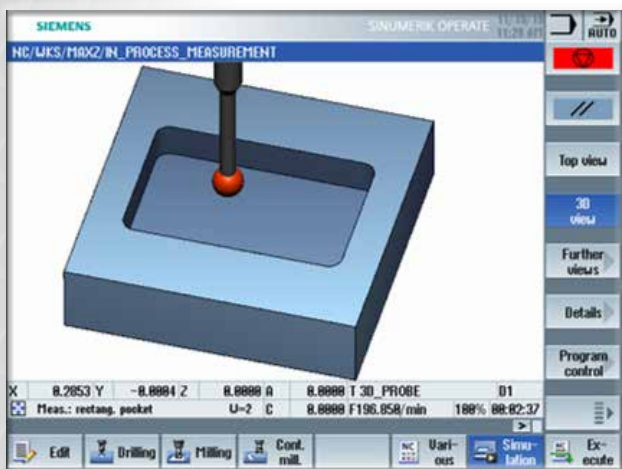


FINISHED PART



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Advanced Features

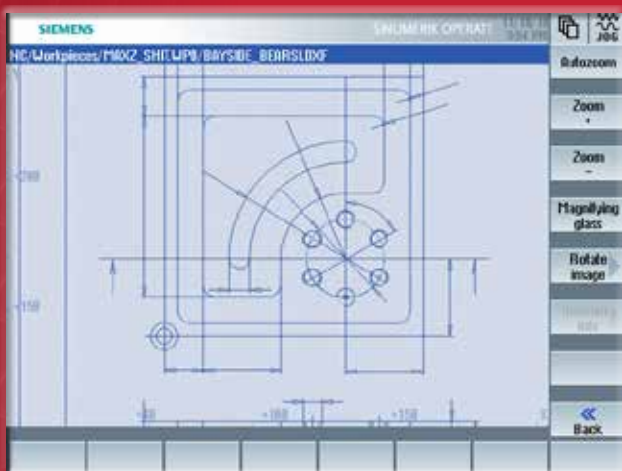
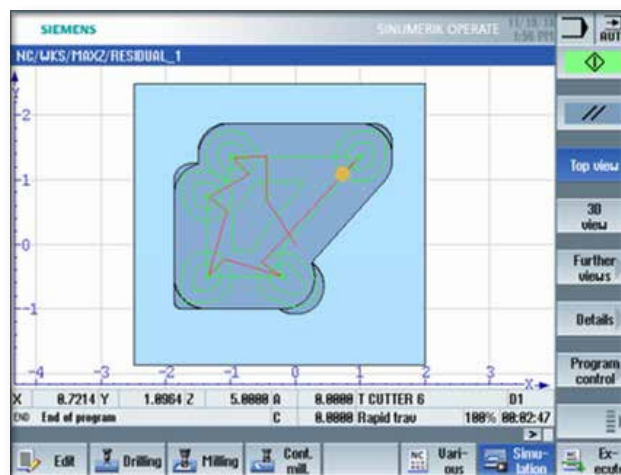


IN-PROCESS PROBE MEASUREMENT CYCLES

This feature allows you to measure part features during program execution. Can also be used in MDI mode after cutting the part to then measure certain features and display the measurement.

RESIDUAL MATERIAL DETECTION

This software option allows re-machining of pocket milling contours with a tool smaller than the original tool. The control will remember where material has already been machined and will cut only the residual material.



DXF FILE IMPORT FEATURE

Allows you to import DXF files and quickly convert to a conversational program. Automatically create points for drilling operations or contours for milling.



LIVE TOOLING AND 4TH AXIS

Both mill and lathe versions of the 828-HS easily handle 4th axis applications. 4th axis rotary tables on mills or live tool turrets on lathes allow programming in simple conversational or posted G code. Surface Transformation software visually lets you define a pocket on a cylinder for example. Tell the control what diameter the blank is and it will automatically wrap the pocket around it. Control graphics will show the part rotating and tools cutting in a 3D simulation.



3D HIGH SPEED MACHINING

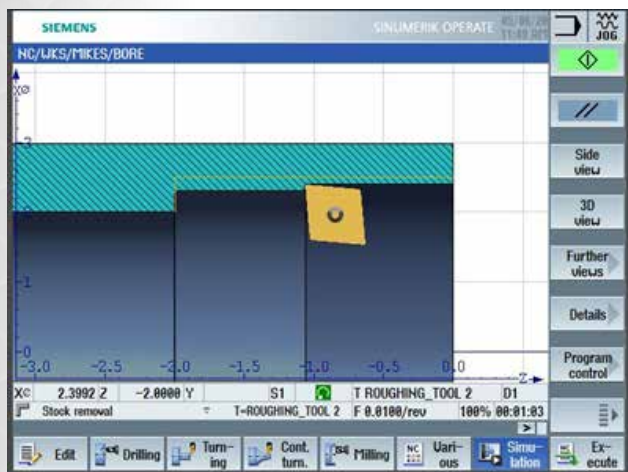
Features high speed 1.5ms block processing and 500 block look-ahead. Advance Surface features jerk control and nano smoothing with a compressor mode which determines optimal velocity for programs containing circular and linear blocks. High speed roughing parameters and lower speed finishing parameters provide incredible surface finish at lowest possible cutting time.



MULTIPLE CLAMPING - MILLING

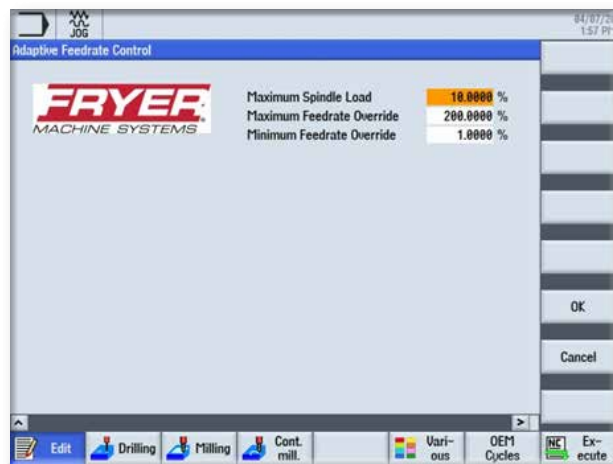
This unique standard feature lets you setup multiple parts on the machine. It re-writes the program to reduce the number of tool changes to produce parts faster. For example when a drill is called up it will drill all the pieces before going to the next tool. Can also be configured to run multiple sides of a part.

Advanced Features



HARMONIC OSCILLATION CYCLE – TURNING

When machining long and slender workpieces or boring operations which are often very sensitive to vibrations, the speed in critical areas can be set to a harmonic oscillation. The control will vary the RPM up and down to eliminate chatter and vibration.



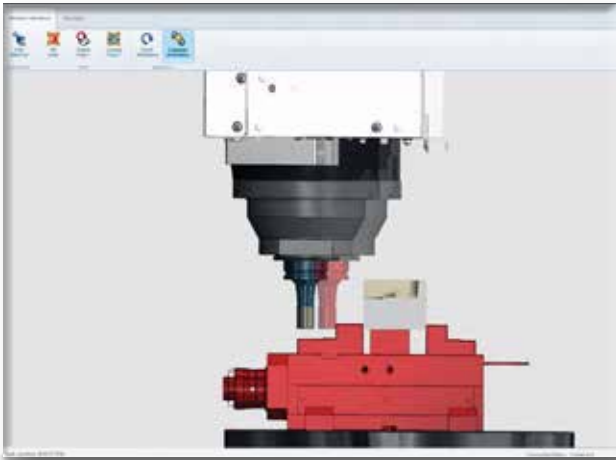
ADAPTIVE FEED CONTROL

The Adaptive Feed Control cycle monitors the spindle load and varies the feed rate accordingly. By entering the maximum spindle load and then entering a range of minimum and maximum feedrate override values, the control monitors these settings and adjusts the feeds automatically. When approaching corners and radii the feed rate will slow down, during straight line moves the feedrate increases to shorten the cutting time and help produce more parts per hour.



SIEMENS OFFLINE PROGRAMMING SOFTWARE

Easy-to-use software package that installs on a standard desktop PC and duplicates the control functions. Allows full programming and part verification. Single package for lathe and mill.



COLLISION AVOIDANCE - REAL-TIME, 3D PROTECTION MONITORING PROTECTION YOU CAN USE

828-HS Collision Avoidance provides protection by monitoring the static machine tool components in 3D and in real-time. Works in every operating mode including Jog, MDI and Automatic. With Collision Avoidance, the potential for machine components colliding is greatly reduced or even eliminated, making the process more cost-efficient.

SWIVEL CYCLE FOR MBQ MILLS

This available feature for the tilting head MBQ series Bed Mills lets you set any head angle in the cycle and the machine will synchronize X and Z axis together to mill or drill into the part at that angle. Cycle can be used manually or within a program.



OTHER AVAILABLE FEATURES

REMOTE MONITORING

Allows monitoring of the CNC from any remote location where internet access is available.

Check cycle times, spindle load, feedrate override position, program being run and more.

EXTENDED OPERATOR FUNCTIONS

Includes an automatic teach function to save positions to an MDI program. You can also save tool data and tool offset data, MDI programs and other features.

HIGH SPEED NETWORK INTERFACE

High speed Ethernet port is the ideal way to connect your machine to your LAN (local area network). Features a drip feed option that allows you to run large part programs.

FRYER / SIEMENS 828-HS FEATURES AND TECHNICAL DATA

PROGRAMMING MODES

Graphical Conversational Programming:

- Simple fill-in-the-blank menus
- No G-Code knowledge needed
- Graphical help screens ease learning curve
- Simple adding, deleting or modifying of work steps
- Simultaneous verify draws each step as you program
- Multi-lingual menus standard

G-Code Programming:

- Large standard memory for lengthy programs
- Includes search, replace, cut, copy & paste functions
- Translator for Fanuc G-Code
- Merge both conversational & G-Code in the same program

Contour Programming:

- Automatic calculation of partially defined geometry
- Powerful contour calculator for creating contours on the peripheral surface of cylindrical work pieces
- True-to-scale representation of contours with up to 255 contour elements
- Import DXF files via an optional CAD reader

MACHINING CYCLES

Milling:

- Machining of contour pockets with up to 12 islands
- Machining of contour bosses with up to 12 islands
- Automatic detection and follow-up machining of residual material
- Face milling cycle with safe zones
- Rectangular & circular pockets with different insertion methods
- Rectangular & circular bosses
- Linear & circular grooves
- Rigid tapping
- Thread milling and engraving cycle

Turning:

- Single point OD and ID threading
- Pipe and API OD and ID threading
- One button thread repair
- Multiple grooving cycles
- Basic stock removal cycles
- Plunge and face turning
- Live tooling and C axis

Drilling:

- Centering, reaming, boring
- Boring with chip break or pecking function
- Rigid tapping with chip break or pecking function

High-Speed Machining:

- Mold making cycle for the selection of the machining type & contour tolerance

Position Pattern:

- Position patterns such as a line, circle or grid
- Deselection of individual position in position patterns

Cylindrical Surface Machining:

- Drilling & milling operations on cylindrical surfaces
- Features conversational milling & drilling cycles on a live tool lathe

Swivel:

- Drilling & milling synchronized on swivel head machines
- Flexible input of swivel angle makes changing from vertical to horizontal or any angle in-between easy

GRAPHIC VERIFY

- 3D solid model view
- Wire frame graphics view
- Special 3-side view with 3D elevation
- Verify both conversational & G-Code programs
- Run verify draws the part while machining in real time

TOOL MANAGEMENT

- Tool table graphically shows tool type & geometry
- Workpiece count & tool-life monitoring with sister tools
- Tool radius compensations with approach & retract strategies
- 3D tool radius compensation
- Look-ahead detection of contour violations
- Tool management with extensive functionality such as empty location search & place positioning, tool loading/unloading, tool life & workpiece count
- Connection to RFID tool identification system - MOBY E

SET-UP FUNCTIONS

- Graphic menu for setting tool lengths & diameters, milling & turning
- Simple menu for automatic tool setting with optional tool probe
- Menu driven part probe cycles

AUTOMATIC FUNCTIONS

- Block search to an interrupted point in a program
- Block search to a specific point in a drilling pattern with all modal data automatically activated

HIGH-SPEED MACHINING

- Velocity feed-forward reduces following error to near zero
- Jerk limitation for creating smooth ACC/DEC profiles
- Spline interpolation featuring on-line compressor
- Polynomial formatted programs can run directly without conversion to G-Code

HARDWARE SPECIFICATIONS

- 10.5" color monitor
- High-speed CPU control up to 4+1 axes
- Standard memory 6MB expandable to 100MB
- Profibus I/O expandable to 4,096 digital inputs/outputs
- Sinamics compact digital drive system
- Absolute encoders – no homing needed
- Regenerative drive system saves 40% electrical consumption
- USB port for standard memory stick
- High-speed Ethernet port -- wired or wireless
- Linux based platform