Forming Tomorrow. Today!

ElectroCNC

Electropneumatics & Hydraulics (India) Pvt. Ltd.

Drives and Controls Division

Electropneumatics

Electropneumatics has been designing and building sophisticated metal forming machines for more than forty-five years with total indigenous capability. Pioneers in several forming technologies and recipient of many technology awards in India, Electropneumatics has today more than 5000 machines around the world performing deep drawing, hot moulding, powder compacting, honing, bending and other forming operations. Modern design capabilities, strong R&D foundation, well-equipped, state-of-the-art manufacturing facilities and ISO 9001 certification assures best practices and quality in machine building and testing.

Drives and Controls Division

ElectroCNC is brought to you by Electropneumatics Drives and Controls Division whose technology has powered India's Akash/Prahaar missiles, naval ship simulators, ship-based nuclear missile launchers, the solar energy sector, energy-efficient hydraulics and more……

More than 20 years experience and competence in motion control

India's 1st indigenous AC servo drive in 1999

AC servo motors and drives up to 120 kW

Supplied more than 15000 servo drives for varied applications

Customised drives developed for military and export applications

Assembled in a state-of-the-art ESD-safe, dust-free environment

Well-equipped load and environmental testing facilities for cards, drives and motors

ElectroCNC

ElectroCNC is an all-inclusive complete CNC package for metal cutting. An outcome of the nation's need for an indigenous competent CNC controller package, it is designed and built to deliver precision and productivity in metal cutting processes. It is developed using in-house motion control expertise in servo drive, PLCs, CNC controls and software.

- **Indigenously developed. Made in India.**
- **Incorporating the latest hardware and software concepts**
- **Powerful and loaded with topnotch features**
- **User-friendly production functionalities**
- **Turnkey 3-axes package tested and available for CNC lathes and VMCs**
- **Expandable up to 9-axes and to other metal cutting operations**
- **Smart machining concepts. Industry 4.0 ready.**
- **Extremely simple to use, intuitive GUI and features**

An innovative controller with unique software features, an intelligent PLC, servo drives and motors, and remote IO modules, all communicating on a high-speed real time *EP_FST* servo network.

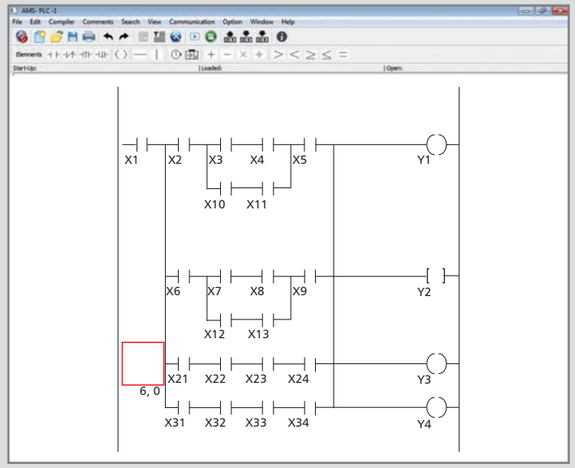
Features
Controller, PLC, Servo Drives and Motors

Controller

- PC based Linux system with unlimited capacity for program storage in Flash. No drip feeding of G-code.
- Retentive FRAM based memory access
- Uses *EP_FST* digital bus for fast and real-time communications with drives and IO modules
- Standard 24 isolated digital inputs and 24 digital high current outputs on controller
- Axis jogging interface via hard buttons as well as Manual Pulse Generator (MPG)
- Power Outage Safety. No moving parts.
- Large solid state disk. No moving platter based hard disks
- Front-panel accessible USB interface for transferring part programs
- RJ 45 Ethernet access for file transfer, remote logging and monitoring and statistical cloud computing
- Large remote IO card with 64 inputs, 48 outputs and a high speed quadrature encoder interface for spindle and secondary axes encoders

PLC

- User programmable PLC with easy to use ladder paradigm for OEM settings
- Fast execution (10 ms)
- Timers and high speed counters for encoder interfaces
- Extensive instruction set with special instructions for easy programming of tool and turret changers



Simple OEM PLC Ladder Programming

Digital AC Servo Drives and Motors

- Proprietary design with latest DSP and IGBT technology
- A full range of high dynamic synchronous brushless AC servo motors, perfectly matched to the servo drives
- Unique Electropneumatics dual-axes drive to control two axes independently and simultaneously
- Uses sophisticated 32-bit DSP controller to perform ultra-smooth sinusoidal commutation of AC servo, torque and linear motors
- Uses Field Oriented Control with space vector PWM for maximum torque utilisation of servo motor
- Proprietary *EP_FST* real-time high-speed servo bus interface

High-speed
Real-time *EP_FST*
Servo Network

Features
Machining and Programming

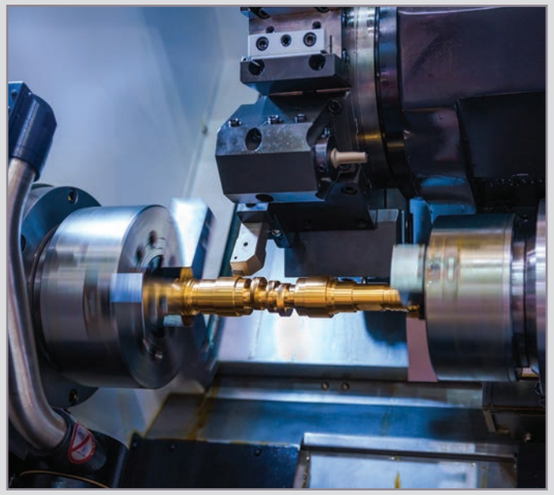
Machining

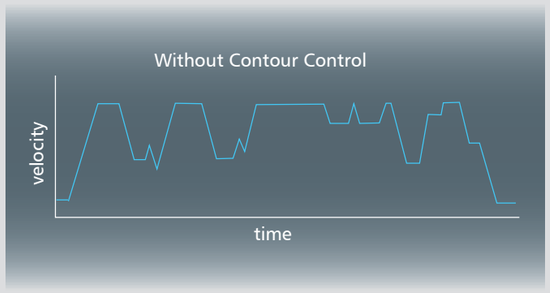
ElectroCNC incorporates all turning and milling functions available in standard CNC packages like

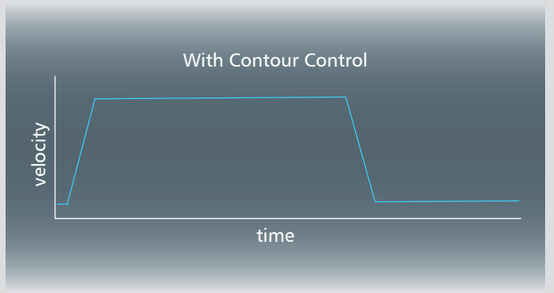
- Control 3 axes + spindle. Extendable to 9 axes.
- Good dynamic performance and precision
- Advanced contour control with programmable corner rounding
- Input G-code smoothening
- Large 500 block buffer look-ahead for uninterrupted high speed machining
- Linear, circular and helical interpolation
- Rigid tapping with both spindle motor and external spindle encoder
- Probing cycles and spindle synchronised moves
- Axis over-travel and out-of-bounds detection
- Feed types include: distance per minute, inverse time, feed per revolution and constant surface speed
- Joint-wise pitch error compensation with smooth application during motion
  - Simple backlash correction
  - One-sided pitch error compensation
  - Bi-directional pitch error compensation
- Easily settable compensation and wear parameters available for tool length, tool diameter (milling) and tool nose radius (turning)

Programming

- Standard ISO EIA-RS274D syntax with guided G-code builder
- User defined G-codes and M-codes for setting up special functions
- Powerful programming environment with user defined variables, subroutines, program jumps and branches, arithmetic, trigonometric and logical functions, control structures like IF-ELSE-ENDIF, WHILE-ENDWHILE, REPEAT-ENDREPEAT, DO-WHILE, etc.
- Standard canned cycles for milling:
  Drilling- G81, G82, G83
  Floating Tap- G84, G74
  Boring- G86, G88, G89
- Standard canned cycles for turning:
  Roughing- G71, G72
  Finishing- G70, G73
  Grooving- G74, G75
  Threading- G76
  Drilling- G81, G82, G83
- CONVERSE- Simplified Conversational Programming integrated into ISO G-code with cycles available for Face milling, Drilling/ Tapping, PCD Drilling, Pocketing, Profiling, Engraving
- 2.5 D on board CAM for DXF, PLT and HPGL
- Easy access to PLC memory from part programs through memory and IO interface

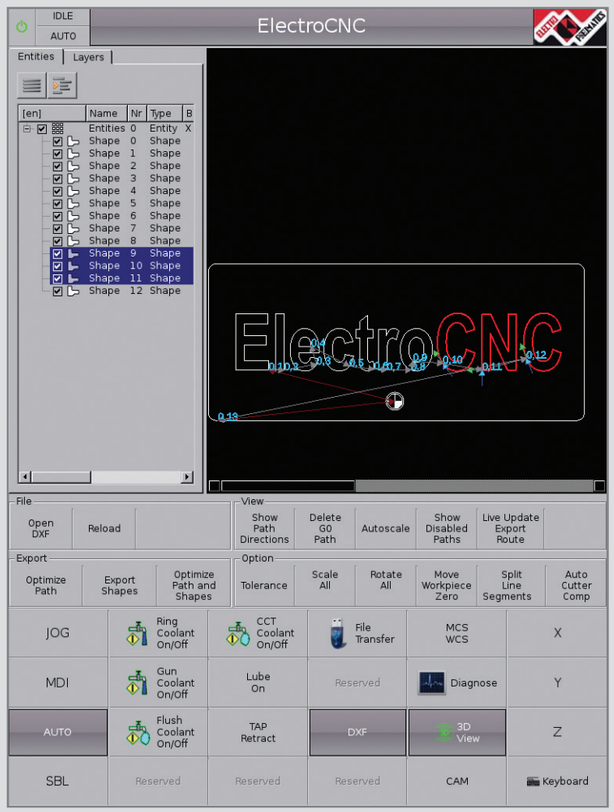






Advanced Contour Control

Conventional CAM

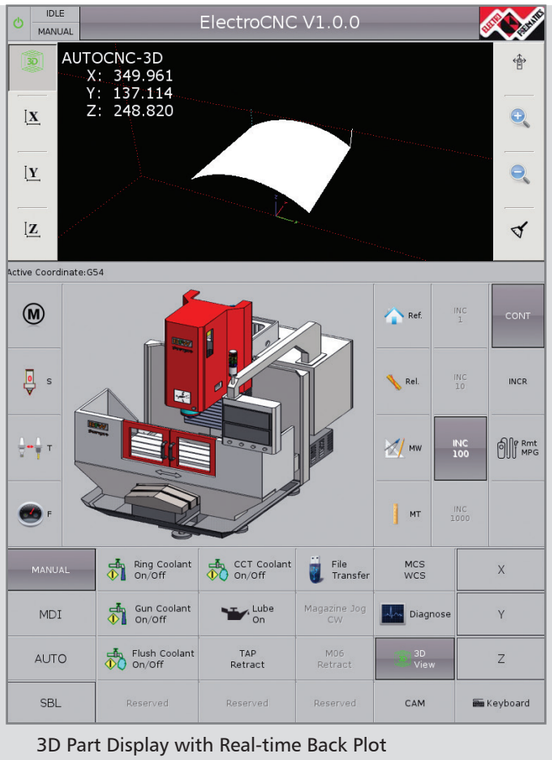


DXF CAM

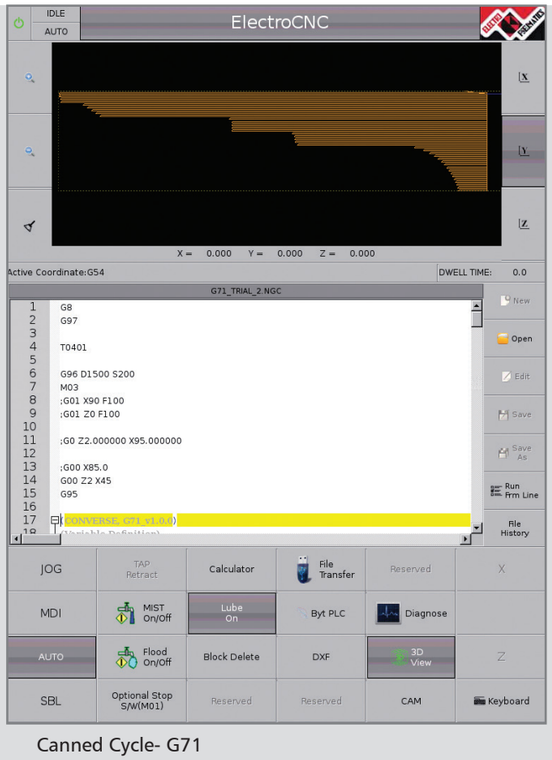
Features
GUI and Software

Graphical User Interface and Software

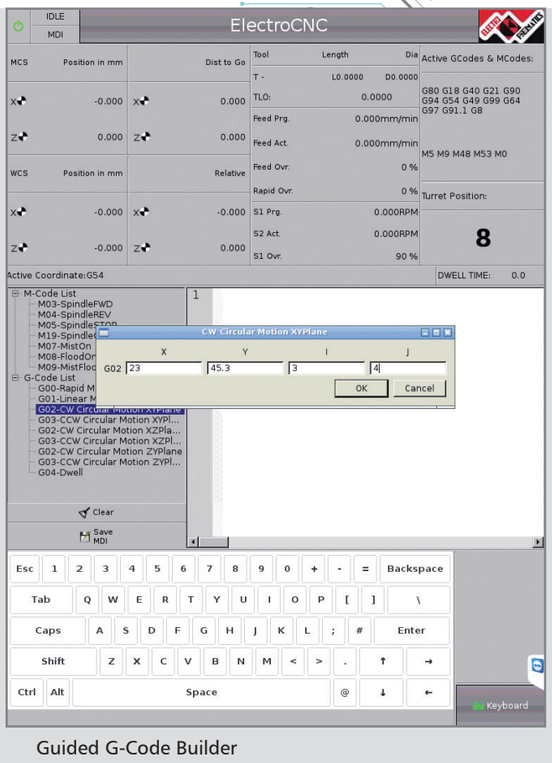
- Large 15.6” 1024x768 XGA resolution display with touch screen
- Simplified user interface with anchoring and location persistence to increase operator efficiency and reduce operator fatigue
- Smartphone-like access requires no manual for operation and a maximum 2 level clicks to get to any feature you want
- Operate and manage files like a PC with easy zoom, swipe, drag and drop features with USB and Ethernet file transfers
- 3D wire frame display of part program with 3D real time back plot display
- Job out of boundary recognition without dry-run or pressing cycle start
- Easy setup of work coordinate offsets with single button press using both centre distance and edge distance
- Programmable base coordinate offset
- Tool length offsets with programmable wear, supported on X, Y and Z axes
- Easy setup and measurement screens available for setting up tool parameters like tool length and wear offsets, diameter offsets with wear information (milling) and nose radius/orientation with front and back angles (turning)
- DNC and remote monitoring facility with data collection and logging
- Jog wheel for quick program scrolling
- Easy access to file history
- Advanced diagnostics screens for easy trouble shooting and repair
- PC based simulator available for learning, training, part program prove-out and offline programming
- Industry 4.0 ready with ability to connect to statistical cloud computing infrastructure



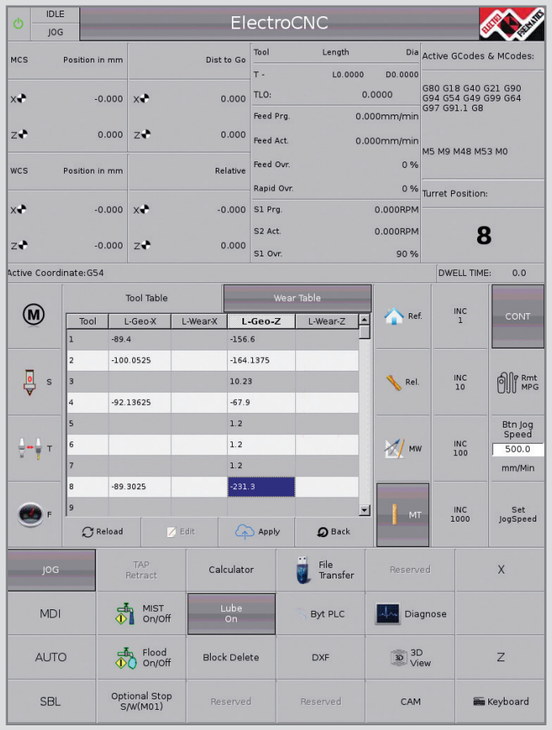
3D Part Display with Real-time Back Plot



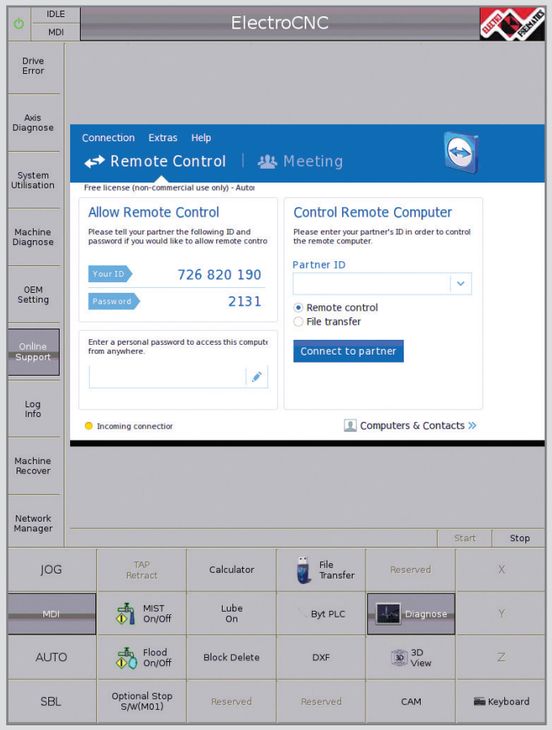
Canned Cycle- G71



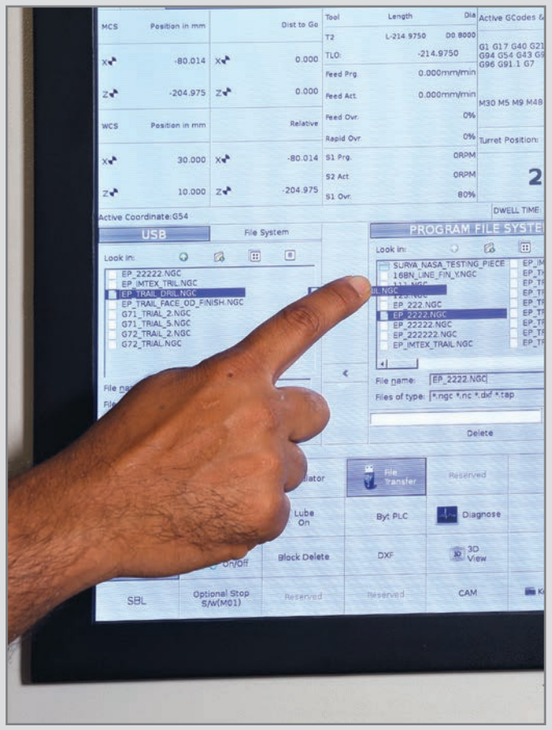
Guided G-Code Builder



Tool Offsets



Remote Diagnostics



PC-like File Management

Electropneumatics & Hydraulics (India) Pvt. Ltd.

Gat No. 254/255, Kharabe Wadi, Chakan-Talegaon Road,
Chakan, Pune 410501, India.

Tel. : +91 2135 667500
Fax. : +91 2135 667502

cnc@electropneumatics.com
epchakan@electropneumatics.com
www.electropneumatics.com

design@synergydesign.in • Jan 2017