FICEP CORPORATION

A 162
CNC Punching and Shearing System for Angles

TECHNICAL DESCRIPTION

Size of the material to be processed

Angle capacity based upon		
A-36 material	minimum maximum	1-1/4” x 1-1/4” x 1/8” 6” x 6” x 5/8”
Maximum punching capacity		73 tons
Maximum shearing capacity		202 Tons
Diameters available for each leg of the angle		1
Maximum diameter with standard tooling		1-1/4”
Diameter through thickness in A-36 material Grade 50 material		1-1/4” through 5/8” 1-1/8” through 5/8”
Maximum speed of the angle		131 FPM
Gauge line positioning speed		23 FPM
Length of section to be processed	minimum	33-1/2”
CNC axes		3

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TECHNICAL DESCRIPTION (continued)

Minimum programmable increment	X axis	± 0,01 mm [1/25”]
	Y axis	± 0,01 mm [1/25”]
	Z axis	± 0,01 mm [1/25”]
Positioning tolerance within (*)		
Within holes or hole pattern positioned at **L** distance (**L** measured in **meters**)		± 0,3 + (L x 0,14)

L in meters and accuracy in millimeters

Accuracy between two holes at L distance = ± 0,3 + (L x 0,14)

Considering a 49 ft. bar: 49 ft. = 14,9 meters — we will consider 15 meters
Accuracy = ± 0,3 + (15 x 0,14) = 2,4 mm = 0.0944" = ± 1/10"

Considering a 61 ft. bar: 61 ft. = 18,59 meters — we will consider 19 meters
Accuracy = ± 0,3 + (19 x 0,14) = 2,96 mm = 0,12" = ± 1/8"

EXAMPLE

(*) The above accuracies apply only to properly adjusted machines with sharp and correctly fitted tools and do not consider possible distortions of the section occurred during the working operations.

SYSTEM CONFIGURATION

WU WORKING UNITS

WU-01 Main Base for Working Units

This base can hold the two punching units, the shearing unit and the optional marking unit or versa press unit.

WU-02 Punching Units

Two fixed mounted hydraulic punching units — one unit to punch the one leg of the angle and second unit to punch the second leg of the angle. Each unit is equipped with quick-change punching holders to permit a punch and die change in seconds.

The positioning of each punching tool is accomplished with a ball screw and a servomotor to achieve an infinite number of gauge lines by selection from the program. Each press is fixed mounted to the table for maximum rigidity. Only the inner c-frame that contains the punch and die is positioned to the programmed gauge line. Each punching unit is equipped with multiple hydraulic hold-downs and strippers to clamp the angle securely during punching.

Main specifications of each punch station:

►Capacity		73 tons
►Throat depth		5-3/4”
►Stroke		1-1/8”
►Maximum diameter with standard tooling		1-1/4”
►Maximum thickness		5/8”
►Gauge line stroke with respect to the inside of the angle leg	minimum	0.4”
	maximum	5.31”

Each punching unit is provided with one punch and die for the maximum hole diameter within the machine capacity.

Gage Line Limitations with Standard Tool Holders

Angle Size Range	*Minimum Gage*
1-1/4” to 2”	.63” plus the angle leg thickness
2-3/8” to 4”	1.04” plus the angle leg thickness
4” to 6”	1.2” plus the angle leg thickness

Gage Line Limitations with Optional Tool Holders

Angle Size Range	*Minimum Gage*
1-1/4” to 2-3/8”	1/2 the punch diameter plus 1/32” for a maximum hole size not to exceed .82”
1-3/8” to 2-3/8”	.65” plus the leg thickness for hole sizes from .82” to 1-3/16”
2-3/4” to 4”	1.02” plus the angle leg thickness
4” to 6”	1.2” plus the angle leg thickness

This special close gage line tooling holder uses American Punch style APS-7564 punches and F317 dies.

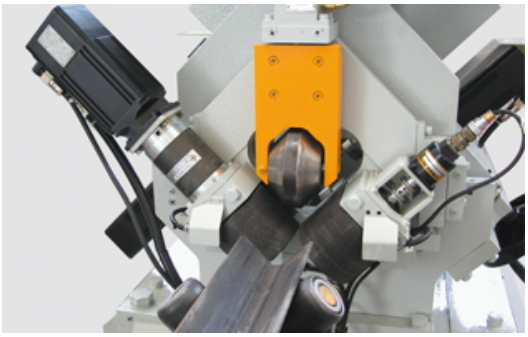
WU-03 Shearing Unit

The shearing unit is made of one hydraulic single cut shear complete with hydraulic hold-down. The infeed side of the shear also contains a lift roller assembly to maintain clearance between the advancing material and the shear knives. The shear is furnished with one set of angle blades.

Shearing capacity

►Maximum available shearing capacity 202 Tons

WU-04 Angle Positioning and Measuring System



The longitudinal angle positioning system is CNC controlled and composed of two devices (one at the infeed side of the punch units; one at the infeed side of the shear). Each device adjusts automatically to the material according to its mill tolerance and consists of rolls to support and transfer the angle and vertical hold-downs to ensure the angle is clamped securely and is always a true 90 degrees when measured to ensure accuracy as angle material can vary significantly. The roller feed drive and measuring systems float both vertically and horizontally to accommodate rolling mill deviations that differs from one bundle of angle to the next. This engineered solution eliminates the need to calibrate the measuring system when changing from one bundle of material to the next which has different characteristics. A servomotor controls the movement of the positioning roll with encoder feedback from the measuring rolls.

OC MATERIAL HANDLING

OOC-01/2 Idler Infeed Table for 40 ft. Long Angles

Idler infeed table for the manual conveying of angles having a maximum length of 40 ft. The conveyor assemblies are complete with leveling screws for simple adjustment and installation. No field welding is required.

HY HYDRAULIC AND PNEUMATIC SYSTEM

HY-01 Hydraulic Power Pack

The system includes:

- Hydraulic power pack to generate the high and low pressure for the press cylinders and for the auxiliary circuitries.
- Hoses and connections.
- Cooling system with air/oil heat exchanger.
- Hydraulic system complete with solenoid valves and required hoses.

►Working Pressure (high)	3770 PSI
►Working Pressure (low)	725 PSI

EL ELECTRIC SYSTEM

EL-1 Interconnecting Machine Wiring

EL-2 Electrical Cabinet

The electrical cabinet contains the power and control equipment for the unit's positioning axes and for the auxiliary services.

The standard equipment is manufactured according to established standards. Specific requests requiring both special rules and regulations will be considered upon the customer's request.

The power supply is **460 V – 60 HZ – 3 Phases.**

Note: Our equipment as quoted complies with the CE electrical code which is required for European manufactured machine tools. In the event that you require compliance with a special local electrical code, please provide the specifications so we can respond accordingly.

CN FICEP PEGASO CONTROL SYSTEM

The new generation control unit, with seven controlled axes, is based on a fieldbus CAN (Computer Area Network) open technology.

The CNC is positioned on a pedestal in a mobile control panel so that the operator can have a complete view of the machine.

All the input and output cards are connected to the bus and located on the machine. Also the electromechanical components and the drives (which enable the connection from the bus to the CNC) are located on the machine. In this way, the initial connection and start up are reduced to the minimum.

The CNC is equipped with:

- digital inputs (24V - optoisolated)
- digital outputs (24V – protected transistors)
- analog inputs, analog outputs

The control system is an industrial PC that hosts the CNC, the PLC and the HMI. The power supply and the three CUPs (HMI, realtime and CANbus) are all mounted on a single board. Mass storage relies on solid state technology (flash memory) and the operating system image is write-protected against voltage dips or power losses.

Specifications:

HMI section (Human Machine Interface)

- 1.6 Ghz CPU dual core
- 2 GB DDR3 RAM with 512 kB x 2 L2 cache
- 8 GB compact flash
- 6 USB ports
- Touch screen color video LCD TFT 15”
- 10/100/1000 Mbit/s RJ45 Ethernet port
- Serial port RS232
- WINDOWS 7 embedded operative system

Realtime section

- Processor 800 Mhz ARM RISC 32 bit
- 1 MB PC dual port memory
- 128 kB CANbus dual port memory
- 128 MB RAM DDR2 memory

CANbus section

- Fujitsu processor with 3 CANbus controllers
- 1 MB flash memory

Programming

- Simplified data input (with tables and workpiece on-screen graphics)
- Base line and hole to hole dimensioning
- Diameter input
- Simplified data input for symmetrical hole patterns

Processing

- Tool position tracking
- Automatic system offset
- Quantity tracking

Execution

- Automatic cycle stop for setup, modification and on-screen indication of the tools to be changed

3D Graphics

- Display of the piece in 2D
- Display of the piece in 3D. With this modality, operations such as pan and zoom are possible.

All the indications are clearly displayed on the screen, for example:

- Current program indication with a clear description of the program running at the moment
- CNC inside and outside alarms
- Registration of the date and time of the last 100 alarm messages
- Diagnostic messages to the operator

Diagnostics

- The Pegaso control system incorporates extremely comprehensive diagnostic software that is uniquely tailored to the FICEP product line and their applications.

  The user can utilize this capability directly or the system can be connected via the internet to FICEP Corporation's technical support team located in Forest Hill, Maryland. From this remote location, our support staff can perform all the testing routines as if they were standing in front of the control such as:

- Review ladder logic
- Analyze past alarm messages that were generated
- Verify the part program
- Check hardware functionality at the board and component level
- Place remotely an oscilloscope on the respective servo drives to analyze their performance
- Remotely activate specific components such as valves to isolate and identify a faulty component

This diagnostic capability of the Pegaso system translates into quick resolution of problems to reduce your downtime and to eliminate the time and cost after the warranty period to have a service technician visit your facility to diagnose a problem. This service is without charge for as long as you own the FICEP product.

PA STANDARD PAINTING

The system is painted in the following standard colors:

●Light Grey	RAL 7035
●Black Grey	RAL 7021
●Yellow	RAL 1028

TD TECHNICAL DOCUMENTATION

The system is supplied with the following technical documentation:

- ●Programming, maintenance, operator and instruction manuals
- ●Electric schematics
- ●Pneumatic schematics

SP SAFETY PROTECTIONS

SP-1 Protections on the Machine (Included)

SP-2 Outside Protections

Proper protection barriers, suitable to prevent the access of people to the working and material handling areas must surround the system. Such barriers need to be determined according to the system location inside your plant. Once you have determined what perimeter guarding would be desired, we are prepared to render an appropriate quotation.

SUPPLIED WITH FOLLOWING OPTIONAL FEATURES

OWU-08/1 Device for Processing Flats

Device to process flats having the following technical specifications:

►Minimum width	2” x 1/4”
►Maximum width	6” x 5/8”

OCN-04 Air Conditioning for Electrical Equipment

This accessory is necessary to use the system in extremely hot and humid climates.

INSTALLATION & TRAINING

CO INSTALLATION

(TRAVEL, MEALS AND LODGING EXPENSES ARE INCLUDED)

The supply includes services of our personnel to supervise the installation, initial start-up and training at the customer's site. This includes the supervision of the electric, electronic, hydraulic and pneumatic connections.

Excessive installation hours due to reasons beyond our control will be paid for by the customer in accordance with standard FICEP Corporation rates applicable at the time.

The following costs are not included:

- The customer must provide skilled personnel to assist our service engineer during the installation and operation of the system as well as the necessary rigging.
- All required foundation work is to be completed by the customer's personnel in accordance with the drawings supplied by FICEP Corporation.

The supply of the following is excluded:

- Material and parts for the electric, hydraulic and air connections
- Air compressor for the air-operated equipment
- Oil and lubricants
- Customer specific materials for parts that are to be processed on the line are not included in the quote price.

Parts Manager Software PT-2
Remote Installation & Training Included

GENERAL DESCRIPTION

- Create, manage and organize parts for production
- Create and distribute appropriate CAM data for FICEP machine
- Import CAD data (DSTV, DWG, DXF, STEP, etc) – **one** import included
- Basic/manual linear nesting
- Easy to use and configure
- Install on multiple standalone PCs
- Remote installation and training
- Maintenance/SMART program is optional

BENEFITS

- ✓ Save time
- ✓ Reduce errors
- ✓ Improve visibility and management of production
- ✓ Accelerate CNC programming
- ✓ Maximize investment in CNC machines
- ✓ Streamline workflow

FEATURES

Parts Management

- Create and edit parts/components
- Visualize in 2D/3D
- Set up project administration
- Standard reports

CAD Import

- Import CAD files – one import included - select from DSTV, DXF, DWG, STEP
- Additional import types optional
- Multiple imports to a single project

Drawing Package

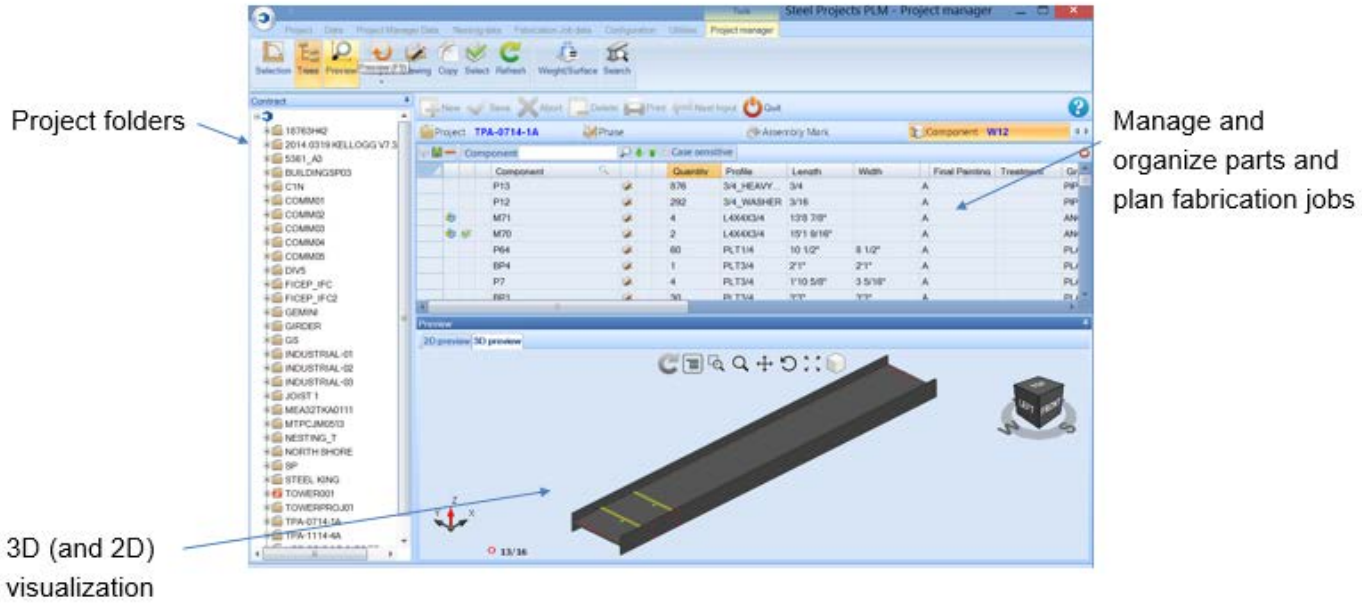
- Add new parts, or edit existing parts
- Add operations and geometry – holes, copes, scribing, milling, etc.
- Essential and typical CAD commands
- Print drawings

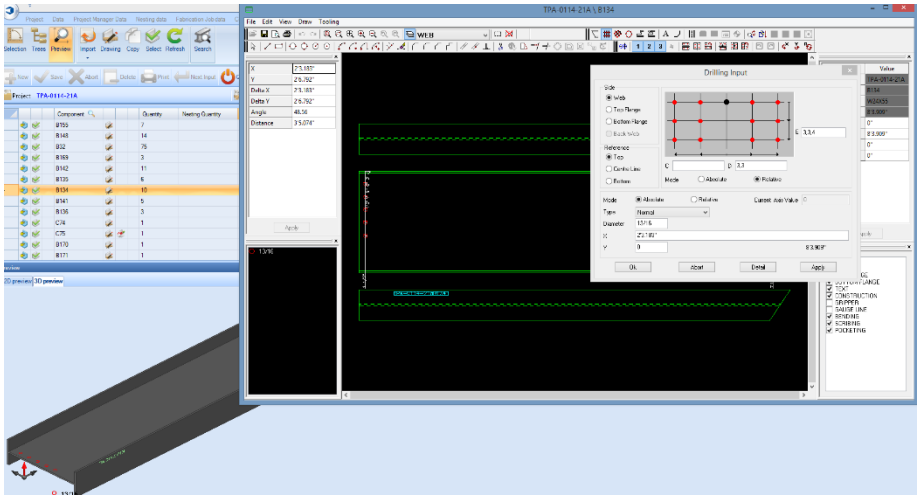
Automatic and Manual Profile Nesting

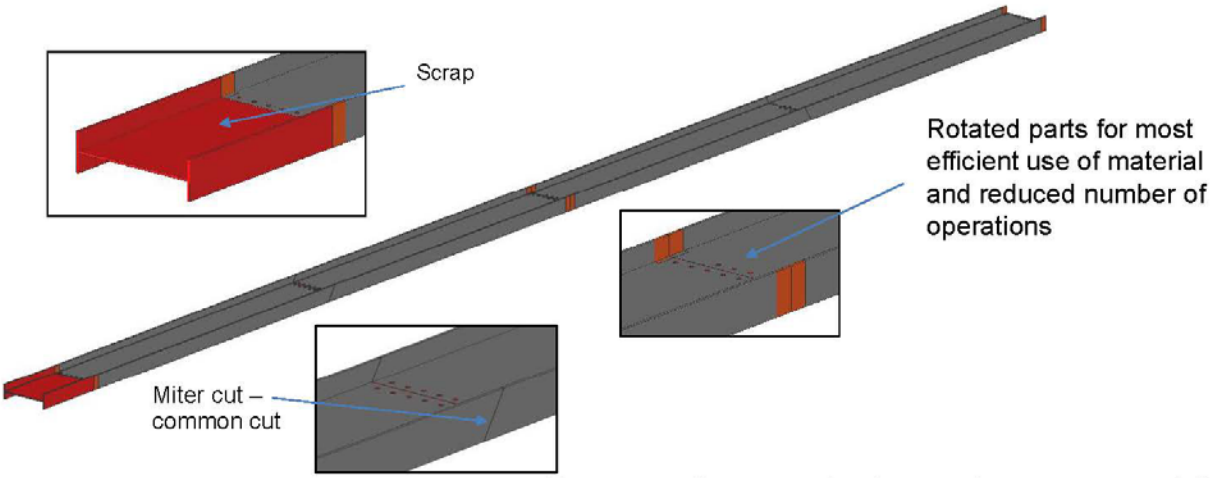
- Basic/manual linear nesting
- Automatic linear nesting
- Nest across projects
- 2D/3D visualization of nested solutions
- Automatic cut lists, pull lists, purchase lists
- Fully configurable for optimum material usage
- Advanced notching library (for angle machines)
- Stock import (XLS)

Post Processing

- Create and export (post process) CAM/FNC data







- Nest according to production requirements, material usage, optimal time, stock versus purchase requirements, supplier stock lengths, etc
- Nest according to equipment constraints, configurations, capability and user preferences
- Fully configurable for kerf, clamps, offcuts, trim, etc
- Common cuts and part rotation maximizes material

PRICE of A 162 equipped as described above ----------$198,500

SOFTWARE MAINTENANCE

Steel Projects software includes updates and support for one year from the date of installation. Additional support can be secured for an annual fee.

Photos are for reference only and may not be provided or reflect what is furnished based upon final machine configuration.

CONDITIONS OF SUPPLY

W ***WARRANTY***

Labor — 6 months

Parts — 12 months or 2000 hours whichever comes first

Our warranty requires the exclusive use of original FICEP spare parts.

Note: Our ability to provide tech support is greatly enhanced by having an internet connection to the CNC control on your FICEP equipment. It is for this reason that we can only extend our service warranty as stated if we have the ability to make a remote connection to the CNC control on your FICEP equipment through an internet connection.

Throughout the life of the system there maybe situations which extend beyond the warranty period where it could be advantageous to enter your CNC control as part of our remote "TeleService" diagnostic process. This tech support is without cost to you even after the warranty period, thus we strongly recommend that this link be established at the time of the installation of the FICEP line to minimize any downtime that could occur during the useful life of the CNC system.

D ***DELIVERY TIME***

Stock – subject to prior sale

DT ***DELIVERY TERMS***

CIF Forest Hill, Maryland

Ownership of the machine will be transferred to customer at the date of the bill of lading.

PT ***PAYMENT TERMS***

40% with order

55% prior to shipment

5% net 30 days