



iNTEL MAKiNA
INDUSTRY AND TRADING CORP.

FC 550-A

Automatic Aluminum Profile Cutting Center

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Description

A CNC-controlled production system developed for cutting PVC and aluminum profiles with high precision. Thanks to its servo-controlled motion structure, it can cut profiles at all angles. Angled and straight cutting operations are applied automatically according to the program. Operations are performed sequentially according to the defined operation sequence, and transition times between operations are minimized. All movements are managed by the CNC control system, thereby ensuring dimensional accuracy and process standardization.

The machine consists of three main sections: an input conveyor, processing and cutting unit, and output conveyor. Up to 9 profiles can be loaded onto the input conveyor at the same time, and profiles are automatically transferred to the processing cabin via an integrated robot system.

This structure is designed to create continuous material flow in the production line.

The servo-controlled saw system in the cutting unit can be positioned at angles between 30° and 150° and can perform serial cutting operations within the specified angle range. Angular positioning is achieved via CNC control, and cutting precision is maintained.

Profiles that have completed cutting operations are transferred to the output conveyor via a robot arm. The profile pushing and sorting mechanism in the output section ensures that processed profiles are arranged in an orderly manner. This orderly flow allows the operator to systematically perform labeling and subsequent production stages.

Labels from the barcode printer within the system are applied to the processed profiles. Through this labeling, the welding unit can automatically identify the profile and transfer profile information in the production process digitally. Thus, profile mix-ups and time losses from manual tracking are prevented, and traceability and operational continuity in the production line are ensured.

Highlights

- ✓ 0.1° cutting and processing precision
- ✓ Servo-controlled angle and movement application
- ✓ Automatic, precise, and serial cutting capability at all angles between 30° and 150°
- ✓ Minimal profile scrap
- ✓ 1 piece Ø550 mm saw
- ✓ 21" high-performance industrial PC
- ✓ 9-profile stacking capacity (max. 7 m.)
- ✓ Barcode printer (integrated with welding and corner cleaning machines)
- ✓ Angled automatic chip conveyor
- ✓ Centralized lubrication system
- ✓ Technical support option via remote connection
- ✓ USB input
- ✓ Automatic horizontal and vertical clamping systems
- ✓ 1400-1600 m.linear / 8 hour profile cutting capacity
- ✓ User-friendly interface integrated with drawing programs
- ✓ Automatic operation capability in cutting lists
- ✓ Profile recognition system
- ✓ Integrated air pressure sensor
- ✓ Data transmittable via internet
- ✓ Integration with four-corner PVC welding, cleaning, and screwing line
- ✓ Low energy consumption LED lighting inside cabin

Optional Features

- + Chip extraction system
- + Spare Ø 550 mm saw

Machine Components



Computer Control

Cutting operations are managed through a 21" touchscreen industrial PC with Intel processor. The user-friendly interface with multi-language support provides easy operation. By entering the cutting parameters of profiles, cutting operation lists can be prepared, and thus all operations can be performed fully automatically without operator intervention. Additionally, parameter settings and operation management can be performed via remote connection; this feature also enables fast and efficient technical support. Profile scraps in the sent cutting lists can be automatically optimized and evaluated. Data transfer can be performed via USB input.



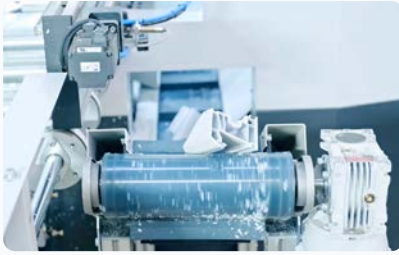
Input Conveyor

Up to 9 profiles can be loaded onto the input conveyor. It has loading capacity for profiles with a minimum length of 80 cm and maximum length of 700 cm. Thanks to the profile recognition feature, profiles are automatically transported and positioned. A servo-controlled transfer robot grasps the profiles precisely and transfers them to the processing cabin.



Cutting Unit

A Ø550 mm saw specially designed for PVC profiles that can rotate to all angles between 30° and 150° is used. The vertical movement of the saw is provided by a servo motor. This allows precise control of positioning and feed rate. There is a safety system that prevents the saw unit from dropping down in case of power loss. During cutting, there is a clamping system with 2 horizontal and 2 vertical clamps that secure the profile, increasing cutting quality and saw life.



Chip Conveyor

The conveyor transports waste pieces and chips produced during cutting to the chip cart. The automatic performance of this operation provides a cleaner working environment and time savings.



Output Conveyor

Completed profiles are transferred to the output conveyor via a robot. The profile pushing and sorting mechanism in the output section ensures that processed profiles are arranged in an orderly manner. This orderly flow allows the operator to systematically perform labeling and subsequent production stages. So that the sorting belts have a long service life, profiles are first transported on rollers, and when they reach position, they are transferred to the belt.



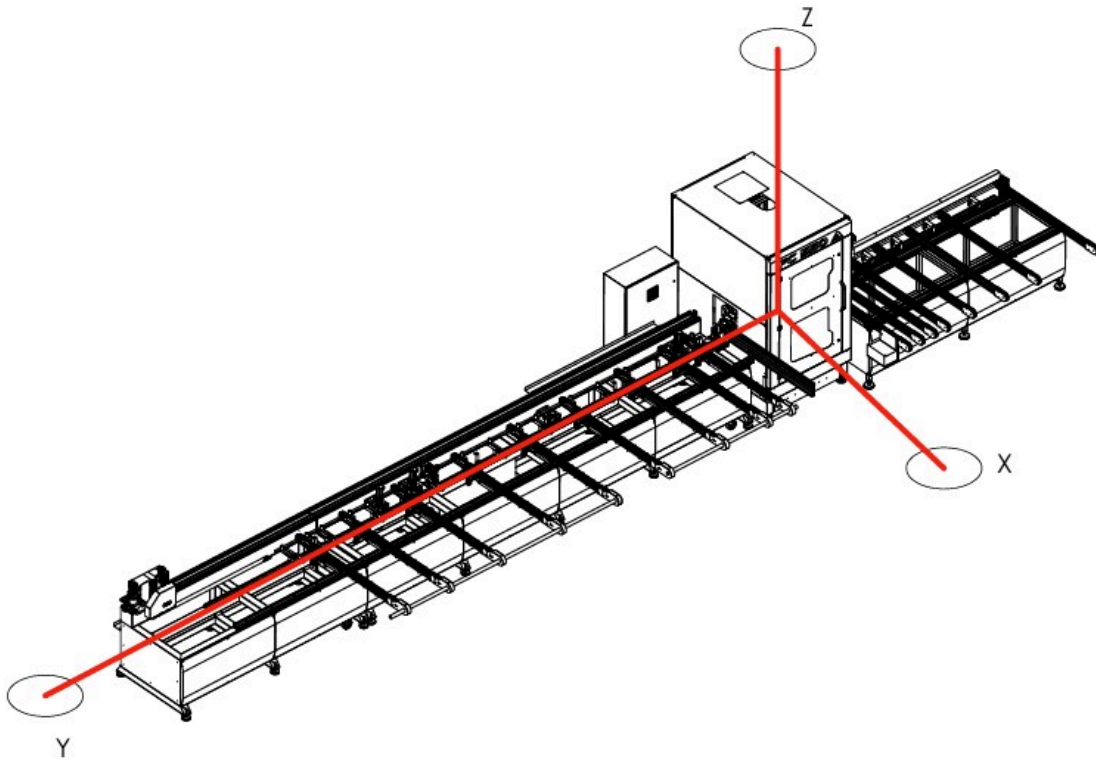
Safety

All cutting operations are performed inside a closed cabin. When the cabin door is opened, the machine stops working. The integrated air pressure sensor stops operations and warns the user when insufficient pressure is applied. The profile recognition system provides a warning when an incorrect profile is placed, preventing incorrect operations.

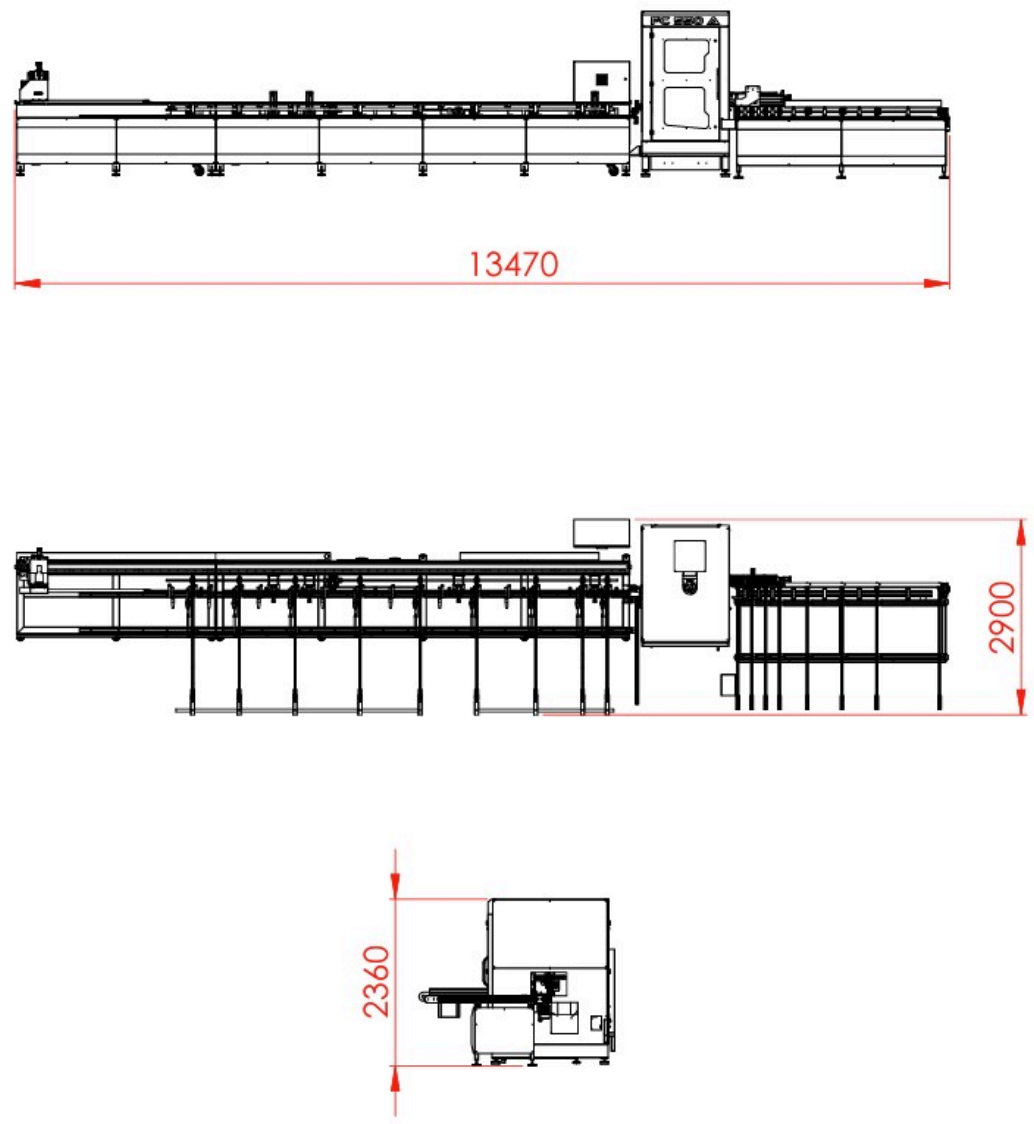


Barcode Printer

The industrial label printer enables each profile to be labeled according to the properties defined in the operation list. Through this labeling, the welding unit can automatically identify the profile, and profile information in the production process is transferred digitally. Thus, profile mix-ups and time losses from manual tracking are prevented, and traceability and operational continuity in the production line are ensured.



Axes



Technical Specifications

Saw Motor	
Power	1.5 kW
Rotation Speed	3000 rpm
Voltage	380 V
Frequency	50 Hz
Quantity	1

Input Unit Servo Motor

Power	0.75 kw
Rotation Speed	3000 rpm
Voltage	VAC 110
Torque	2.4 Nm
Quantity	1
Power	0.4 kw
Rotation Speed	3000 rpm
Voltage	VAC 110
Torque	1.27 Nm
Quantity	2

Output Unit Servo Motors

Power	0.4 kw
Rotation Speed	3000 rpm
Voltage	1.27 Nm
Quantity	1

Saw

Quantity	1
Saw Inner Diameter	30 mm
Saw Outer Diameter	550 mm
Saw Thickness	4.2 mm
Saw Tooth Count	132

Cutting Unit

Maximum Loadable Profile Length	7000 mm
Maximum Cuttable Profile Height	160 mm
Maximum Cuttable Profile Width	140 mm
Cutting Precision	+/- 0.2 mm
Cutting Angle Range	30° - 150°
Vertical Clamp	2 Pieces
Horizontal Clamp	2 Pieces
Precision Reducer	✓
Scrap-Free Cutting Feature	✓

Saw Unit Servo Motors

Power	0.75 kw
Rotation Speed	3000 rpm
Voltage	VAC 110
Torque	2.4 Nm
Quantity	2

Control

Industrial PC	✓
Operating System	Windows
Touchscreen	21.5"
Remote Connection	✓
USB File Transfer	✓
'mdb' and 'csv' format support	✓
Cutting List Creation	✓

Safety

Safety Cabin (Safety Switch)	✓
Integrated Air Pressure Sensor	✓
Profile Recognition System	✓
Current Protection (Leakage Current)	✓
Motor Protection (High Current)	✓
Phase Protection (When Motor Direction Changes)	✓
Emergency Stop	✓
Servo Motor Torque Protection	✓
Input Unit Mechanical Safety Barrier	✓

Technical Specifications

Air Pressure	6-8 Bar
Total Air Consumption	250 l/min
Voltage	400 V
Total Power	15 kW

Machine Dimensions

Machine Height	2360 mm
Machine Length	13470 mm
Machine Width	2900 mm

Machine Weight	3300 Kg
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Packaging Dimensions

Machine Height	2300 mm
Machine Length	13000 mm
Machine Width	2300 mm



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