Pfiffner AT 115/10 CNC
The Modular Automatic Pallet Transfer Machine

Pallet transfer system
Multi-functional machining
Ultimate precision

Model Brochure
AT: flexible performance

The AT 115/10 CNC automatic pallet transfer machine from Pfiffner provides a solution to complex, high precision, ever-changing machining tasks – because flexibility is the decisive element in this new machine concept.

Solutions to the most demanding production tasks can be provided by nine machining stations, working independently of each other and CNC controlled, and a freely configurable load/unload station. Rotationally symmetric machining operations with the CNC controlled motor spindles are just as possible as complicated drilling and milling operations. All axes are continuous path controlled which produce the most complex workpiece geometries.

The workpiece to be machined is loaded outside the machine at the so-called “pallet station”. Together with its clamping device, the part to be machined is then fed to the machine as one unit via the pallet gate.

The rotary transfer table, integrated into the machine and fitted with a direct drive, is used solely for the purpose of transferring the pallet clamping fixtures to the next following machining station. It does not perform any positioning tasks. The accuracy of the pallet position is thus exclusively assured by the extremely precise EROWA Pallet System between the machining cell and the plate clamping system. For this reason there are, from a systems technical point of view, no losses in accuracy caused by heat.
Utilizing the standardised pallet interface, it is possible, to integrate upstream and/or downstream processes such as grinding, measuring etc. within the machining sequence without unclamping the part.

The information contained on the coded pallets, such as the number of workpieces to be produced, zero point corrections in relation to the master pallet etc., are read in automatically by the SINUMERIK 840D machine control system during loading. This reduces set up times to almost nothing during product change-over. Even chaotic manufacturing processes, in which several different workpieces are present in the machine simultaneously, are possible.

It has been possible to increase the machine’s accuracy significantly by reducing the function of the transfer table exclusively to transporting the pallet. Together with the individual machining units, the clamping pallets in their locked state form an extremely compact, rigid and thermally stable machining cell.

**Performance data for the Machining Unit:**
- C-axis, max. 6,000 rpm
- X-axis, 60 mm stroke
- Y-axis, 200 mm stroke
- Z-axis, 200 mm stroke

**Machining Unit with a triple-spindle drilling head**
- HSK-32 manual
- Max. 10,000 rpm

**Machining Unit with 360° swivel milling head**
- HSK-25 manual
- Max. 10,000 rpm

**5-axis-module**
- Swivelling triple-spindle drilling head
The machining cells, which are completely CNC controlled, form the heart of the machine. By virtue of their compact, modular construction and the enormous functionality of up to 5 axes that can interpolate freely with each other, solutions to the most complex machining tasks can be provided. Depending on the production order, the units can be equipped with a wide variety of machining heads in a modular fashion. The selection of heads extends from the simple milling spindle to the revolving head. The CNC controlled motor spindle of the C-axis permits rotational machining as well as continuous path motions of the remaining axes.

Each individual machining unit is operated as an autonomous turning/milling station, a feature which significantly simplifies programming and dramatically reduces changeover times between different products.
Pallet clamping system

The machine interface of the plate system is based on the proven EROWA Pallet System. The change-over precision of the clamping plates is guaranteed to an accuracy of max. 3 μ. The actual workpiece-related clamping equipment is placed on top of the EROWA pallet. "Smart chips" can be inserted into the pallet supports, in which information is stored about both the workpiece to be manufactured and the zero point corrections of the pallet in relation to the master pallet. Using the SINUMERIK 840D control system, workpieces can therefore be produced with extreme precision, and errors in chuck geometry can be completely eliminated.

The pallet clamping system employed here makes it significantly easier for the machine to be tooled up. The clamping equipment can be changed over within a very short period of time in the event of a product change. This reduces the economic batch size to a previously inconceivable minimum level.
### AT 115/10 CNC

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Number of stations</td>
<td>10</td>
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<tr>
<td>Number of machining stations</td>
<td>Horizontal max. 9</td>
</tr>
<tr>
<td>Rotary transfer table</td>
<td>Transfer Time 2.0 seconds</td>
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<tr>
<td>Diameter of pallet fixture</td>
<td>120 mm</td>
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<tr>
<td>Machine weight</td>
<td>Approx. 12,000 kg</td>
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<tr>
<td>Machine dimensions</td>
<td>Length 5.3 m, Width 3.5 m, Height 3.4 m</td>
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