



OERTLI 

Excellence in solid wood

**High-performance
tools and window
know-how**



Performance that leads to success

High performance cutting tools for the industrial woodworking industry

Due to the extensive know how and international experience, OERTLI can provide tooling solutions that help customers reduce production cost and improve cut quality in a wide variety of machining applications. Among others, Windows and Door, as well as Furniture and Cabinet Manufactures can all profit from our skilled engineering staff with their problem solving skills and OERTLI's state of the art manufacturing facility. On site consulting and distribution is available in many European Countries as well as the United States. Over 350 qualified employees are working for the OERTLI Group.

OERTLI window technology

Acquiring a new machine for manufacturing windows or changing profiles on an existing manufacturing plant are complex projects: Machine producers, tool manufacturers, a software company and different accessories suppliers are involved. The tool manufacturer deals with every detail of the window profiles; therefore, he is a very important project partner. OERTLI has specialized in those partnerships, disposes of the necessary knowledge in window manufacturing and has the respective contacts with machine producers and the software company. With OERTLI, you receive not only first-rate tools, but also window engineering, which is just as important and leads your project to success.



No matter where your location, OERTLI provides reliable and cost-saving tooling solutions for all wood machining applications.



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Machinery technology

Windows for residential buildings – passive house windows – lift and slide doors – windows for Historical buildings – window partition – security windows – timber-frame – aluminum windows

Modern windows have more rounded features. But on which machines should all those variations be produced in the future?

In order to answer those questions, topics such as company size, system variety, flexibility and output come up for discussion. There are three different production concepts:

- Machine and angle plants
- CNC machining centers
- CNC machine plants

Classical: the angle plant

The following features distinguish the angle plant: Little space requirement, high productive capacity, reliability, easy handling and diversity of products.

All-rounder in all areas: the CNC machining center

The advantages of a CNC-Router are flexible production, precise machining, simple handling with multifunctionality.

All in one: the CNC machine plant

Special machining and a high capacity set this production unit apart. Furthermore, this production unit is highly flexible due to the automatic handling and positioning of the workpiece (1).

Flexibility versus capacity

Especially on CNC-Router the flexibility can be highly increased due to the splitting of tool sets. Possibly, tool costs can be reduced.

A tool concept with full sets of tools which enhances the performance of every single tool.

Corner joints and special machining

Choosing the right corner joints is based on different criterias which are assessed differently in every company. All the joints presented are functional if good workmanship is applied.

The classic: the slot and tenon joint (2)

This joint has large glue surfaces, which leads to a high strength. No special press or other special machines are required.

Dowel joints (3)

Dowel joints are highly suitable for single manufacture on a CNC-Router. The necessary counter profile tools can be kept small in diameter. The joint has high seam tightness and can be used very flexibly.

Screwed connection (4)

The corner profile of this joint is screwed together. The guidance of the parts is ensured by the screw and additional dowels. It is ensured that screwed parts can be loosened. Moreover, the connection has high seam tightness; the connection is especially suited for the complete individual machining on a CNC-Router. The machined glazing bar or a six-sided coating are interesting options.

Stopped rebate joints (5)

The modern tool and machinery technology opens up new possibilities. One example is the rebate joint as a transition from a frame with a sash to a fixed-glazing within the frame. More glass, more air, more light – and technically well built.

Let's play it safe! (6)

The feasibility and accuracy of the process of machining can be controlled with a 3D CAD-program. This program shows errors and insolvable details in advance.

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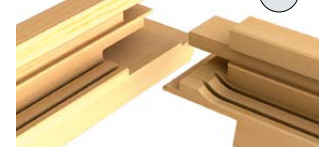
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Routing and Drilling

Especially in window closures, precise drilling and counter profiles in the correct position at the right time are very important. Stable, low-vibration solid carbide tools meet these requirements and prolong life times.

Flying wood-shavings produced by aggressive cutting geometries!

No more problems with jammed and overheated tools (6).

Pin sharp...

The family of solid carbide TURBEX Spiral Router cutters proves its worth for precise routing/ drilling and are available in different dimensions and cutting depths (7).

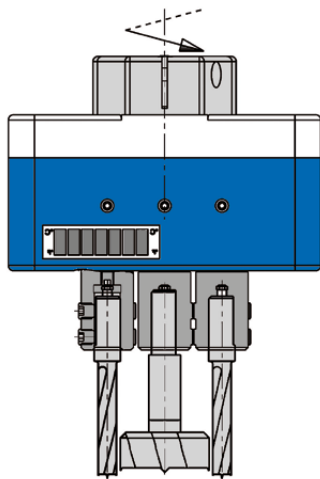
All in one hub...

Several bores in one step can be done with combined boring aggregates. Thus, precious machining time can be saved at the bore station and the processing time can be optimized (8).



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Drilling Tool technology

Better results and higher feed rate

With the SP technique, OERTLI developed a clamping system without play, which stiffens the tool set and completely eliminates the play between bore and spindle. Therefore, the tool is perfectly centered on the shaft without play and forms a whole with it. The result is an excellent concentric run as well as a constant, high balance. Thus, the RPM and the feed rate can be increased and the surface quality and the performance of the machine can be considerably improved (10).

Balance

The precondition for perfect operating is the meticulous balancing of the tools. A tool consists of several single tools; therefore, exchangeable pieces (such as pressure jaws) are counterbalanced before mounting. Afterwards, every single tool as well as the completely mounted set is dynamically and highly precisely fine-balanced on two levels. The results are tools that turn practically without any vibration, that reach an excellent surface quality and that maximally preserve the spindle and the bearing.

Divided cut – the solution of problems with extreme machining

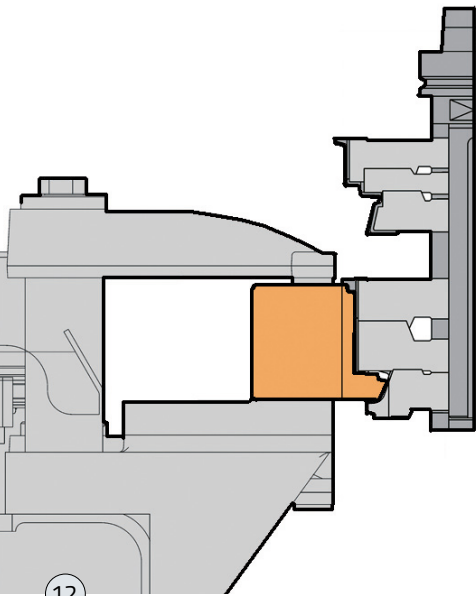
Usually, linear Router work without the use of backers traditional used in slot- and tenon machining. For those machine concepts, tools with divided cut that minimize the cutting pressure are of special importance. For many years, OERTLI has been using the wellknown win knife system with divided cut. Micronex cutters are available for very delicate profile parts. With these tool solutions, a corner joint without tear-outs is possible, even without wood-support (11).



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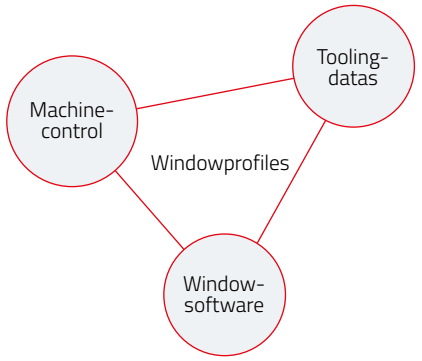
Machine programming

Very often, the topics of machine control and programming are not taken enough into consideration (12). As tool manufacturer, we are able to assist with the whole procedure by providing electronic data sets for the programming of the machine. With wood profile drawings («wp-drawings»), the possibilities and limits of machining can be shown (13). The wp-drawings are the basis for creating the data sets. Via suitable interfaces, they are included into the control of the machine or the separate window software.



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Project flow

Based on experience, the procurement of new tools for window production units consists of 5 steps. A purposeful procedure is crucial for the success of a project.

1. Concept phase/Offer

Defining the window system and window types (has to be present in detail for further project steps). Clearing up questions concerning construction and procedure (corner joints, single part production, rebate joints etc.) (14).

Then, we develop the following data:

- Profile matrix with all wood profiles for machining.
- Clarifying the feasibility concerning the provided machine concept (new or existing).
- Rough machining concept.

Afterwards, the tool proposal is prepared with an exact description of the expected performance.

2. Detail-engineering

After the placement of order, the technical elaboration takes place.

- Detailed machining concept including the spindle configuration in consultation with the machine manufacturer.
- Tabulating short forms for all wood profiles in consultation with the software provider.
- Construction of the tools.
- Wood profile drawings as basis for the programming data.
- Tool changer layout (15).

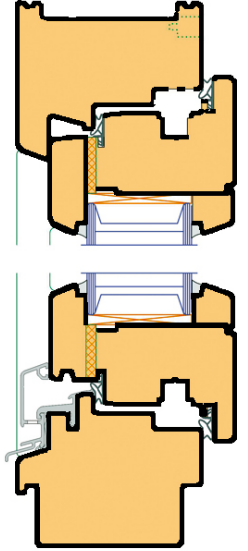
3. Manufacturing the tools

4. Creating the documentation for the customer and the programming data for the machine

5. Putting into operating and customer training



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