

General Information about thick veneer edges for CNC machining centres with edge gluing equipment, such as BAZ

As the multitude of board forms, which can be worked on in machining centres, is almost unlimited, the demands of a veneer edge/thick veneer edge can only be defined for each particular case. However, it is important to know that the major demand of an edge does not depend on the shape of the board's profile, but it highly depends on how obtuse or acute the angle between the edge and the BAZ's press roll is.

Generally said, the thick veneer edges which are glued together with urea resin adhesives are not flexible enough with regard to the board profiles mostly required. In our opinion thick veneer edges which are suitable for machining centres should have veneer plies glued together with PVAc systems.

As this type of edge and this type of adhesive is used by Furwa, Furwa's edges are relatively highly flexible. However, the problem is that the moisture content of such an edge is between 12%-17% at the time of delivery because of the raw veneer's moisture content and the moisture emerging from using PVAc adhesive.

Especially, a high moisture content causes flexibility; however, it can cause problems as well:

Problem 1: Poor bonding properties with hot melt adhesive:

As the edges are roughened by us, the bonding properties have been changed to the better. If the edge consists of more plies, the surface on which the next edge is put is said to be roughened, too.

Problem 2: Cracking/Fissuring:

According to the high moisture content in the edge, it may happen that the edge can perfectly be processed in a machining centre and that even the gluing quality is sufficient. However, fissures may appear later on. These fissures can be found either in form of cracks in the lacquer, or it may be that the plies or the entire composite ply separates from the board. The edge might even shrink by this loss of moisture.

As the piece of furniture or the produced board is exposed to a climate of 20%-50% relative air moisture during the production process, but certainly afterwards when used, a change of the moisture in the edge is unavoidable, so that problems might still occur even later.

I kindly ask you to take note of the essay "Problem Holzfeuchte" (moisture problem) published in BM in 1993. The statements made therein refer to thin veneer edges which are too dry as a rule. The best temperature to process edges, which is marked in blue colour in my essay, is also the ideal field of temperature for processing thick veneer edges.

General Problems:

It has to be taken into consideration that the edges' thickness will be optimised because of the small inner and outer radius of the board, but also because of the necessary arc of contact at the machining centre's press roll. It is important to never neglect the moisture content of the wood/edge. Strictly speaking, all thick veneer edges for the machining centre should be air-conditioned correspondingly. The edges should be stored at a corresponding climate (55% humidity) for at least 1 week before processing. In order to store them the rolls must be isolated and not stacked in a pile on a pallet, because then the time of adaptation would be considerably increased.

According to our experience in managing a machining centre we have come to the following conclusion:

We do not produce thick veneer edges thicker than 2.0mm for the use in machining centres, because the arc of contact and the press roll whose diameter has been chosen to be small, cannot be defined separately, so-to-say. We have to point out that it makes more sense for the customer to put 2 adjusted edges on top of each other than to process one edge with which problems might occur afterwards.

The additional step of gluing an edge is certainly easy to grasp, i.e., it is certainly more inexpensive than a subsequent treatment in the machining centre or even later.

Furthermore, it is important to know that the multilayer structure, which is useful as such, shows problems in the adhesive field with some wood species. That means that the gluing quality between the layers pressed together by us is better with, e.g., beech than with birch rotary-cut veneer. Additionally, the wood's own flexibility differs as well. That means in detail that a certain radius can still be processed without any problems with a beech thick veneer edge, whereas this procedure may lead to problems with birch or any other wood species.

If the finished thickness of an edge is requested to be stronger (e.g. 3mm) than the edge to be processed, different edges are possible.

Example: edge 1.5mm, 3 layers, pure ply structure, reverse roughened, surface roughened is the edge which is being processed at first.

Edge 2 also has the same material thickness; however, it has the quality of a top layer and is surface-sanded (see the edge sketches and edge summary below). Such edges are supplied by different magazine feeders as a matter of necessity, so-to-say.

According to the indicated reasons, the edge technology should at least be partly agreed upon with the edge manufacturer when it comes to the edge's profile. We can supply a huge variety of thick veneer edges, however, we need to know the requirements.

With this article we have tried to make a summary of the possibilities and problems, and would like to ask you to use the following pages as the basis for further discussions.

Please do not hesitate to contact us at any time for further individual advisory service.

Walkertshofen, in the year 2002

Signed by Roland Reigbert