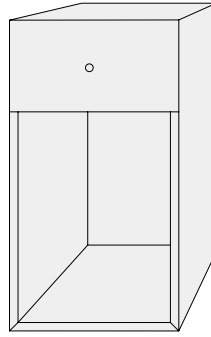


The procedure

To obtain comparable data, it was necessary to calculate the setup and operating times for the common machining operations (crosscutting, ripping, mitre cutting and grooving). A test

piece was designed for this purpose and was produced using various configurations of an Altendorf F 45 sliding table saw.



The test piece

- Computer cabinet with drawer
- All joints of the cabinet were mitred and glued (MDF; 19 mm)
- Back panel grooved in (MDF; 8 mm)
- Grooves for drawer guides (MDF; 19 mm)
- Laminated particleboard drawer front (19 mm)
- 45° bevel front edge of the cabinet



The project team

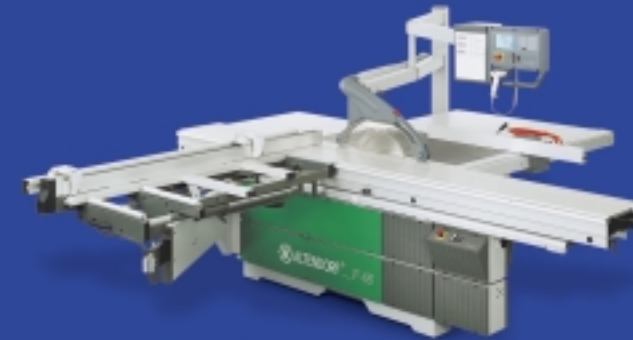
Markus Lingnau, Sebastian Diestelmann, Stephan Erkens, Marc Fliege, Karoline Golabeck, David Sauermann, Florian Voß

The FH Lippe und Höxter and the project team would like to thank the company of Wilhelm Altendorf GmbH & Co. KG in Minden for their friendly cooperation and assistance.

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Efficiency evaluation of different sliding table saws.



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This study was conducted by the Department of Production and Business at the FH Lippe und Höxter as part of a student project.

The problem

When purchasing a sliding table saw, it is often difficult for consumers to determine what would be the most efficient machine configuration for their production needs based on estimated cost-effectiveness of individual models. Our aim is to facilitate such comparisons.

The objective

The purpose of this study was to evaluate the differences of various sliding table saw models with different configurations or with additional functions as it relates to:

- time savings
- and cost savings

Measuring times

In order to measure the time taken in real-life conditions to produce the computer cabinet the following Altendorf sliding table saws were used:

- F 45 (manual fences, analogue scales)
- F 45 with DIGIT X (manual fences, digital display on the rip fence)
- F 45 ELMO III (motorised rip fence, eye-level control panel)
- F 45 ELMO III-Plus with DIGIT L (motorised rip fence, digital display on the crosscut fence, eye-level on-screen user guidance)
- F 45 ELMO IV-Plus (all fences motorised, eye-level on-screen user guidance)

All setup and retooling times as well as the operating times were calculated using the REFA standard.

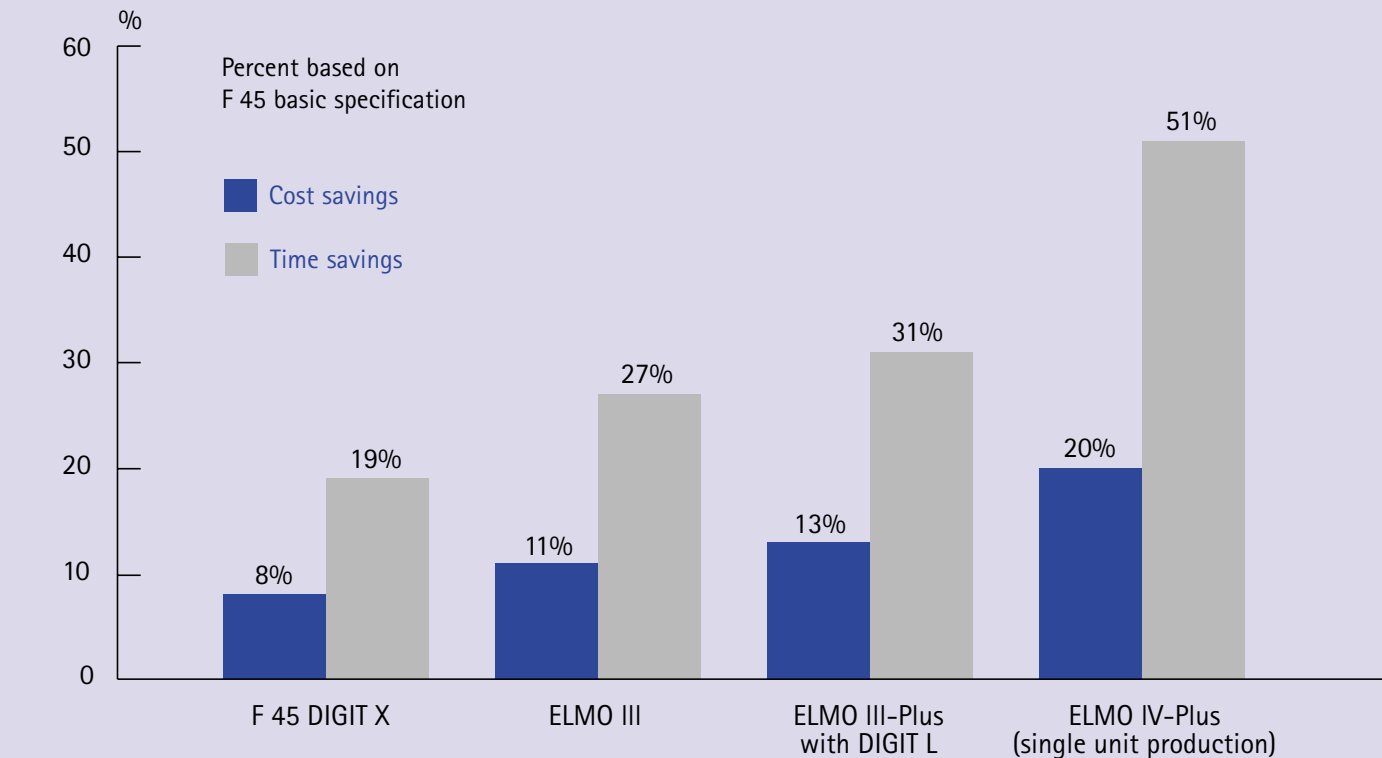
Comparing costs

Def.: Comparative cost calculation is a method of economic efficiency analysis used to determine which of at least two alternatives is more cost-effective.

(REFA, 'Methodenlehre des Arbeitsstudiums' [Methodology of Work Studies], Volume 3

Kostenrechnung Et Arbeitsgestaltung [Cost Accounting and Work Design], 1985)

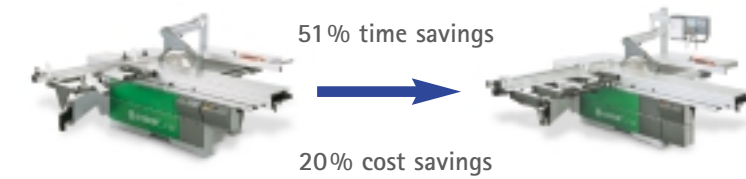
Using the comparative cost calculation method we calculated the cost savings for all the various models of the F 45's tested, taking the purchase price and the recorded times into account.



The values are based on the production of items of furniture, such as the computer cabinet for example, in a flexible manufacturing system. Cost savings of over 30% are achieved by series production on the F 45 ELMO IV-Plus.

The result

Our study showed conclusively that there is a direct correlation to machine features and cost-effectiveness. When comparing F 45's to F 45's with additional features there was substantial improvement of effectiveness in terms of cost and time advantage.



The conclusion

There is a direct correlation between the level of additional machine features in relation to the effectiveness gained. It is therefore recommended, to equip the machines with additional options, which increase the productivity of the machine.