



MICOR *KIR-drying- and heating systems

Practical examples – Opportunities of drying- and heating optimization

The continuous progress in the development of new, high- quality and durable floor coverings, high-gloss fronts, worktops and more bringing changes in production process and therewith often higher requirements on existing wood working machines. An always recurring single criteria is the performance of existing drying units. Connected to this aspect is limited performance or quality reduced performance like f.ex. due to insufficient drying of melamine resin coatings or ink drying on edges as well as associated therewith reduced production speeds.

For users, interesting and economic solutions always arise when already available, but adequate convective drying capacities can no longer be extended or modified through additional units so that they comply with the increased drying demands. MICOR *KIR-systems can also be delivered with air cooling whereby cooling air as drying air is blown forward on product to be dried. With this technique it is a replacement for existing systems.

In this respect MICOR *KIR- drying technology based on short-waved infrared radiation is a solution for drying support or as replacement.

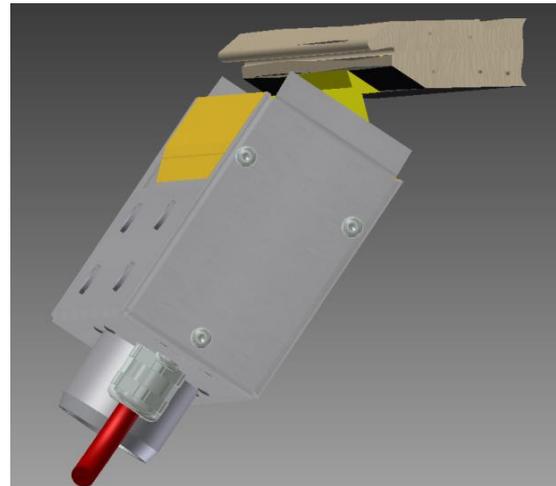
MICOR *KIR- drying systems due to their compact design are very space saving and therefore can be integrated unproblematically into existing machines. They are used at machined of many end users as well as several machines of machine manufacturers were production optimized with MICOR *KIR.

Process testing facilities on site

More important than theoretical drying optimization is the process control which must be provided to the user before machine upgrade or installation. Carrying out drying and heating tests on existing wood working machines are for the user as well as for the supplier an essential precondition. Test should be corresponding with planned optimization and is offered with adequate MICOR *KIR- simulation equipment.

Practical example: Drying minifase- coating

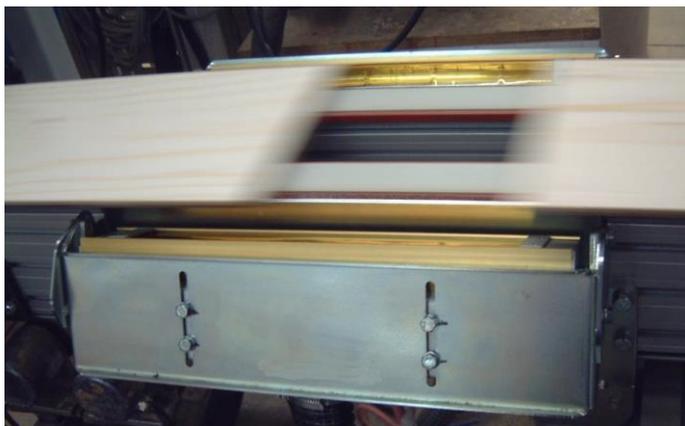
Problem: Drying performance on wood working machine in production of laminate is insufficient, an extended drying path is not possible due to confined space conditions in production. The edge drying is not finished after machine pass because the drying performance of the conventional middle waved infrared and convection driers is insufficient.



Schematic diagram of elliptical radiation path on edge drying

MICOR solved this problem by replacing existing drying units by MICOR *KIR- band radiators in the existing wood working machine. The MICOR *KIR- drying technology is based on a combination of „air and infrared radiation“. The outer dimensions comply with original drying unit. With integrating high-energetic MICOR *KIR- band radiator, the MICOR *KIR – radiation was focused on a 4mm band. As a result there was no radiation loss anymore. The insufficient drying results were a thing of the past.

Another example in ink drying on edges was a not satisfying speed. Existing drying capacity limited the speed of production process and was the bottleneck of machine. MICOR designed the MICOR *KIR – band radiators into existing machine, used already existing machine control unit and finally shortened the drying path from 1 meter to 0.6 meter while raising speed raise of 35%.



MICOR *KIR-band radiator type LE360 with 4mm high – energetic band for edge drying

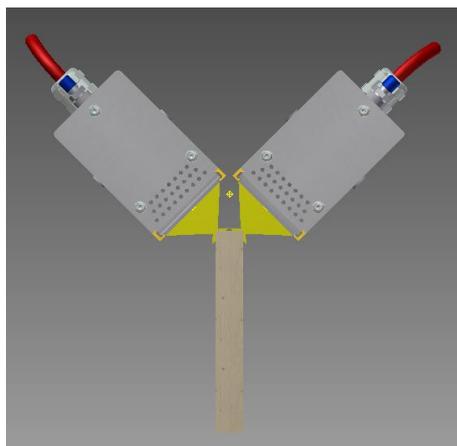
Last but not least with changing existing drying capacity by a MICOR *KIR- band radiator system corresponding to machine, at a laminate manufacturer energy consumption was reduced by 30% while drying inks.

Practical example: Edge wrapping optimization on thermo- laminating machine

Problem: Scraper blade occurs on edge wrapping with thermo plastic foil in production process of kitchen counters. To solve the problem machine speed had to be reduced.

Reason: Heating performance of hot air blower to heat up foil was insufficient.

Solution: By using a MICOR *KIR- band system instead of hot air blower before edge wrapping, foil temperature was optimized so that there did not occur scraper blade anymore and speed of whole machine was raised to optimum.



Schematic diagram of the MICOR *KIR-band radiator to optimize the post forming process.

A similar scenario occurred on an existing post forming machine while producing high-gloss fronts. Here edge heating and therefore the final quality result was insufficient. In this process edge quality was raised with MICOR *KIR- band radiators and at the same time an energy saving of 28% was received.

Very good results are also achieved at edge wrapping plants due to a pre- heating of chipboards and medium-density fibreboard on both sides. Speed was raised on an existing machine from 40m/min to 100m/min.

Practical example: Activation on hot melt adhesive on lamination machine

Problem: Due to just- in time board delivery to production, the afterwards applied glue did not reach needed temperature in desired time to achieve an optimum lamination process. Here the lack of glue activation lead to lamination problems. Due to additional installation of a MICOR *KIR- cassette production speed was raised by more than 100%.

Another example of foil lamination was realized at production of wall panels by using a MICOR *KIR- band radiator system. This system was installed for foil heating on both sides and was temperature controlled. Therewith production speed was raised and energy losses were minimized.

Conclusion

The optimization of existing drying units (f.ex. hot air dryers, middle-waved infrared) on edge wrapping, post forming and lamination machines with MICOR *KIR- drying technology can have positive economic effects.

By specific process tests on site under real production conditions all datas for economic conditions and process security are shown before optimization of drying or heating machine. For this tests MICOR uses MICOR *KIR- simulation equipment.



MICOR offers all process steps beginning with design of MICOR *KIR- systems in existing machines, integration to existing power control units and ending with commissioning on site.

*KIR (NIR) = kurzwellige Infrarotstrahlung