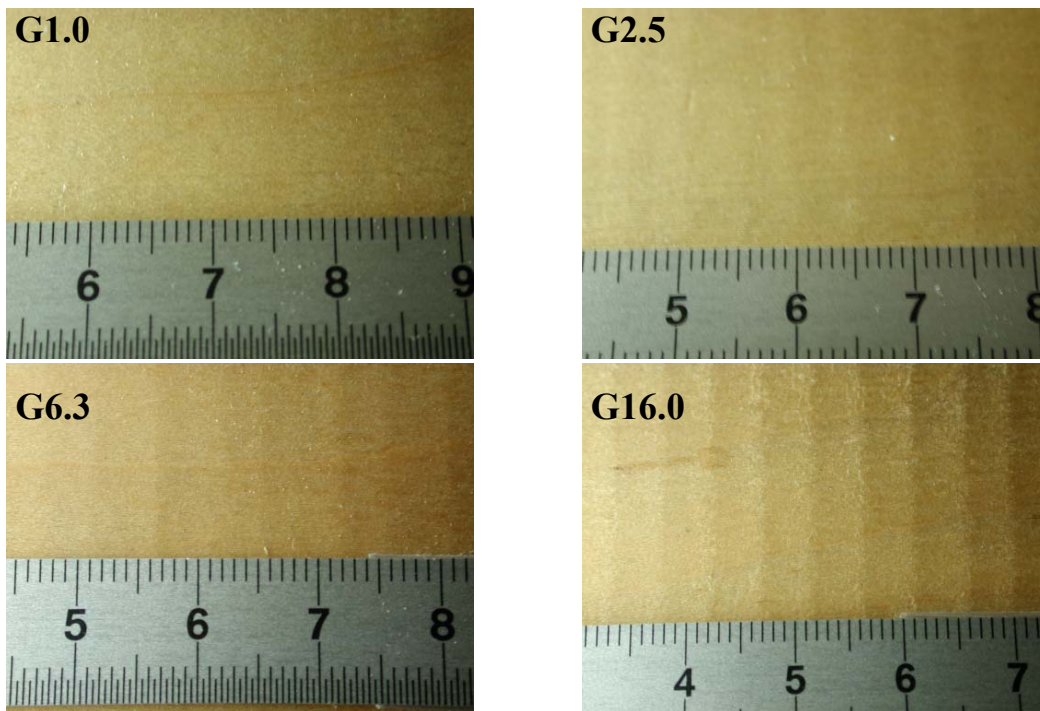


WOOD MACHINING & TOOLING RESEARCH

MACHINE DYNAMICS RESEARCH – Effect of Cutterhead Unbalance on Workpiece Surface Quality for Moulders

Unbalanced cutterheads are a significant problem in planers and moulders. For unjointed machines, unbalance forces cause the cutterhead to trace an eccentric path, which results in uneven knife marks, even for a perfectly ground and centered cutterhead. This results in an increase in the amount of sanding required. For jointed applications, cutterhead unbalance causes irregular joint widths, which create irregular “heal” marks on the finished surface. Unbalance also results in heavier initial joints required to touch all knives, which results in reduced tool life (reduced intervals between regrinding due to excessive joint width). The effect of unbalance on surface quality for an unjointed moulder cutterhead is shown below for unbalances corresponding to ISO 1940 Grades G1.0, G2.5, G6.3, and G16.0.



Effect of balance grade on waviness of surface finish

The Wood Machining & Tooling Research Program (WMTRP) is a multidisciplinary program involving the fields of Mechanical Engineering, Industrial Engineering, Manufacturing Engineering, Material Science, and Wood Science. The program mission is to provide the woodworking industry with personnel educated in machining and tooling technology and provide applied research results aimed at improving efficiency and wood utilization. Major program support is provided by the U.S. Department of Agriculture.

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