

State-of-the-Art Controls Give New Life to this 1950s-era Ingersoll Planer Mill

Paul Schurman Machine (PSM) of Ridgefield, Washington purchased a well worn 1950s-era Ingersoll planer mill to satisfy a growing demand for large-scale machining. The planer mill required a complete mechanical rebuild which PSM undertook to restore the machine's mechanical components. However, they weren't sure what could be accomplished when it came to upgrading the machine's control system.



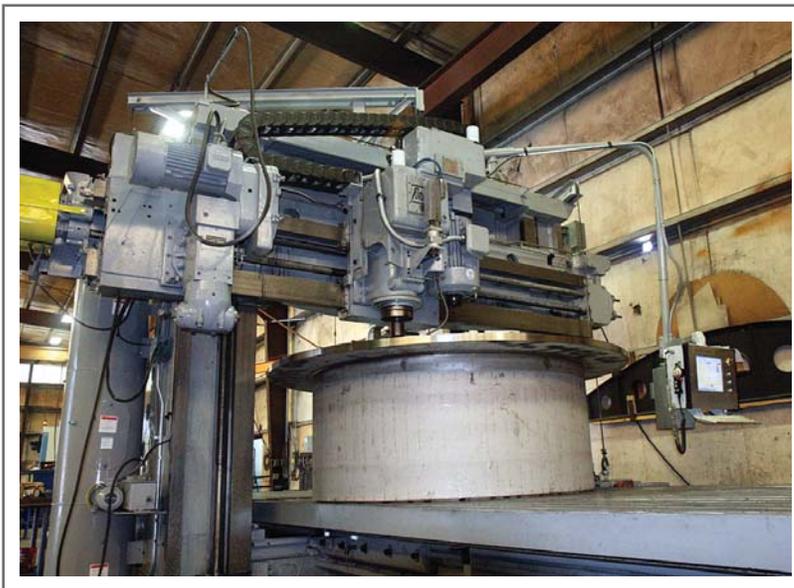
Can Old and New Work Together?

PSM asked Applied Motion Systems for a cost-effective solution that would allow them to run canned milling, drilling, and tapping cycles. The planer mill was designed and manufactured before the advent of CNC controls. All axis controls were fully manual and none were capable of close tolerance positioning, a feature required for a typical CNC controller today.

Solution Development

Applied Motion engineers worked with Greg Somero, PSM's CNC specialist, to determine the range of intended uses for the machine. After considering the list of requirements, AMS recommended a flexible CNC controller with custom servo capabilities. The AMS engineering team then developed software features to address backlash associated with each axis of the machine.

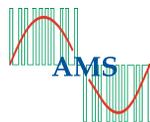
The solution uses both real and virtual axes to provide a stable position loop that automatically compensates for backlash in the drivetrain. This novel dual-loop approach is implemented in the X, Y, and W axes, resulting in point-to-point positioning accuracy to within ± 0.0008 " at the spindle throughout the machining envelope (X=432", Y=88", W=49", Z=12").



Surprising Results

The success of this project is due to the collaboration between AMS engineers and PSM CNC programmers and machinists. PSM now has a fully CNC-capable planer mill that delivers automatic milling, drilling, and rigid tapping functions using industry standard G-code. Ball bar tests indicate that circular interpolation features turn in respectable performance even with significant backlash issues with both the X and Y axes. Circular interpolated profiles hold better than ± 0.005 " at 10 ipm using the original X axis rack drive system.

At AMS we thrive on developing solutions for manufacturing challenges. What can we do for you?



APPLIED MOTION SYSTEMS

Simplifying the Complexity of Motion