



Industry Case Study

BELDEN
universal

CUSTOMIZING UNIVERSAL JOINTS FOR METAL PROCESSING

Just because a universal joint fits in size and form, it does not necessarily mean that it will perform as expected. This case study highlights the importance of customization in order to satisfy all aspects of operating criteria.

A customer's high-speed (RPM) leveling machine operated with a drive shaft assembly containing a traditional "pin & block" style universal joint. The speed of the application caused the component to overheat and posed

a considerable fire hazard. Pin & block style joints can be robust, cost-effective and can work well in restricted spaces. However, they operate with surface friction which can result in excessive heat and premature wear in high-RPM applications,

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To address the problem of overheating, Belden Universal's engineering team recommended replacing the pin & block component of the drive shaft assembly with a lubeable forged cross & needle-bearing style universal joint. Cross & bearing configurations don't present friction on the surface of the yoke ears - thereby significantly reducing the issue of heat generation. However, as was the case in this example, the swing diameter of standard cross & bearing joints is often too large and doesn't fit flush with other existing components. To resolve this problem, Belden's design team modified the yoke ears (ends) of the original drive shaft to align these with the larger outside diameter of the new cross & bearing component.

The assembly was manufactured from high-grade alloy steel. The yoke ears were hardened and ground for increased torque capacity. A special telescoping quick-release "spring-loading" feature provided for easy on-and-off installation. A forged cross that could easily be lubricated in the machine was fitted into customized leveler yokes to handle the high torque and maintain the tight envelope common to steel processing equipment.

The array of customization resulted in a high-performance, low-maintenance drive shaft optimized for the speed, torque, strength and available space as was appropriate for the customer's metal processing machinery.

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