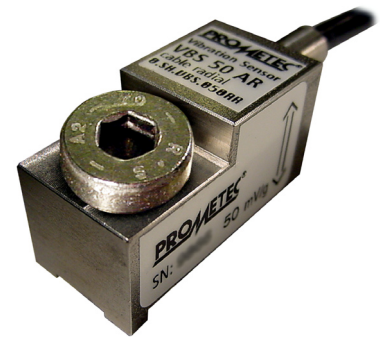


Success Story *No. 0610_01*

VBS-50 Vibration and Acceleration Sensor

Breakage detection at milling of sleeves



Tested at

**GETRAG FORD Transmissions GmbH,
Cologne, Germany**

Machine Data



Manufacturer: Prävema GmbH
Synchro Form V

Machining - Workpiece



Sliding sleeve
Material: steel

(Image: Sliding sleeve and multi-purpose tool, source: Prävema)

Machining - Monitoring task

In manufacturing of transmissions the sliding sleeves run through a lot of procedures until final completion.

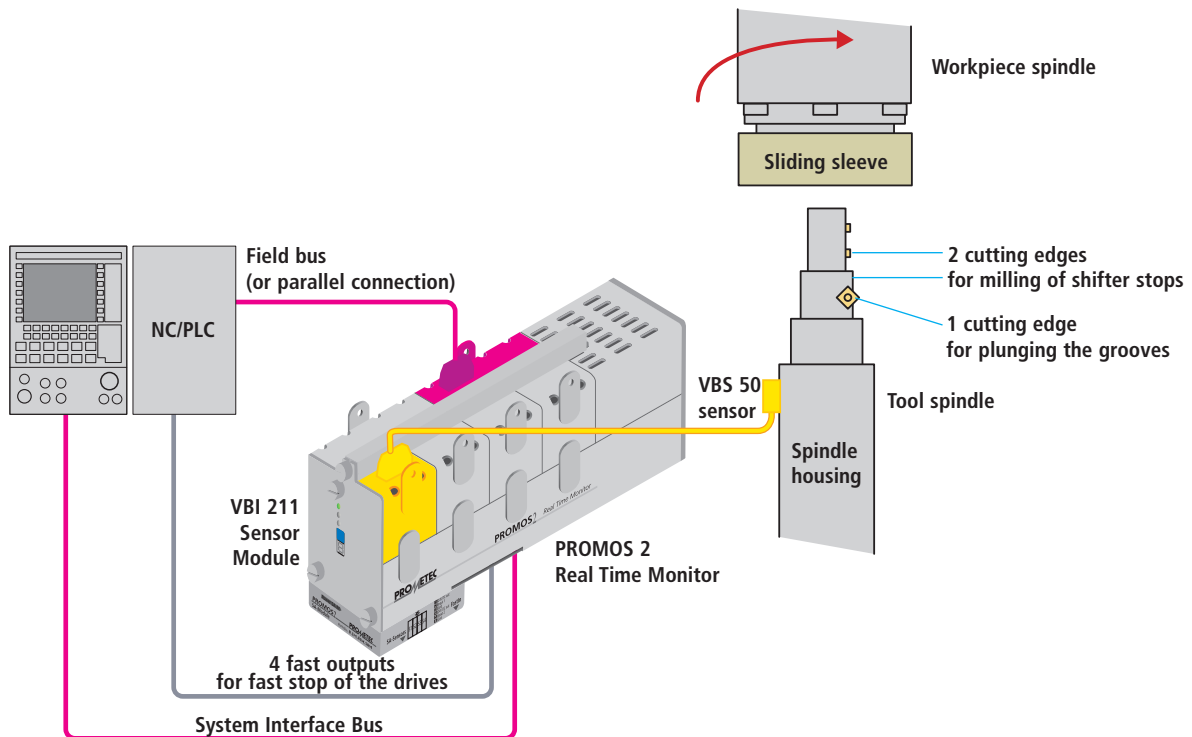
For example the gear cutting of the sleeve is subject to a slight milling (groove) done by means of a two-edged milling tool.

In the past it happened that one cutting edge of the tool broke off resulting in an incorrect performance of the milling process and consequently in production of scrap.

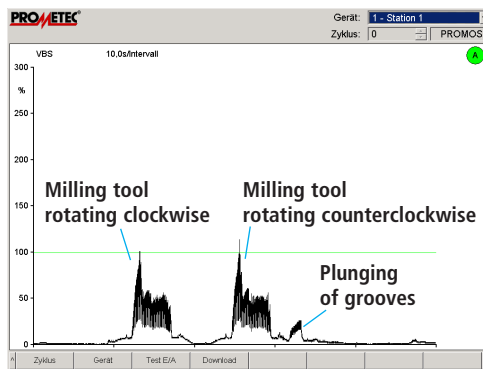
A later manual visual checking of the rejects is not possible owing to the slightness of the feature and includes further uncertainties.

The customer wants a system which is monitoring the process parallel to primary processing time and stopping the machine in case of tool breakage or in case of a damage in cutting (chipping) to prevent an increased production of rejects.

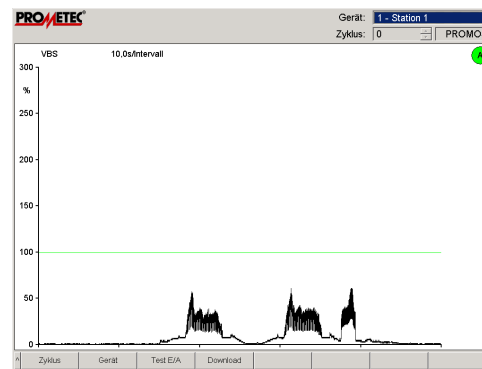
Solution/System configuration



Results



intact cutting edges



broken cutting edge

Conclusion

It was confirmed that the applied measuring technique is perfectly suited for a continuous monitoring of milling on the manufacture of sleeves.

The measuring signals are representing the process clearly and interpretably and have a very good accuracy of repeats.

In case of tool breakage a clear modification/reduction of the measuring signal occurs so that different tool monitoring strategies can be applied.

While *plunging the grooves*, which is done by using the same multi-purpose tool, an increased wear of the cutting edge arose that was detected and

monitored reliably by means of vibration measuring technique.

The desired process safety and a 100% check of the workpieces can be realized by application of the PROMOS-2 system on the Präwema machines.

Source: GETRAG FORD Transmissions GmbH, Präwema GmbH. Subject to technical modifications ©2006 PROMETEC

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