Paper machine: Drive cogwheel investigation

- The case study presented in this document displays an investigation of toothmesh frequencies in a dryer section
- Corrugated medium paper machine
- System Reporter 200 with software version 6

This document shows how to investigate all toothmesh frequencies in a dryer section in relation to production speed using the System Reporter version 6 Analysis software.

By selecting the object freq for toothmesh in System Reporter Analysis the system can produce a custom report for all cogwheels in the dryer

- Select machine section (here the dryer section; see Figure 1)
- Select what to investigate from the 14 predefined object frequencies (toothmesh, BPFO, BPFI, BSF, fundamental velocity (FV), runner blade, etc.),
- Select time range (from one day up to several years)

System Reporter then generates a report in Microsoft Word format. Figure 2 and onwards displays a sample of such a report, showing tooth-mesh in a dryer section in relation to production speed.

The left part of the diagrams shows trends over 12 days for production speed (violet) as m/min and toothmesh frequencies (black vurve) as g.

The right part of the diagrams shows g as a function of m/min over the same time range. Can be used to find "bottlenecks" and to determine if it is necessary to replace gearboxes.

By examining the report contents it is possible to find problems related to the cogwheels and perform necessary steps to eliminate serious stop time with production loss as a result.
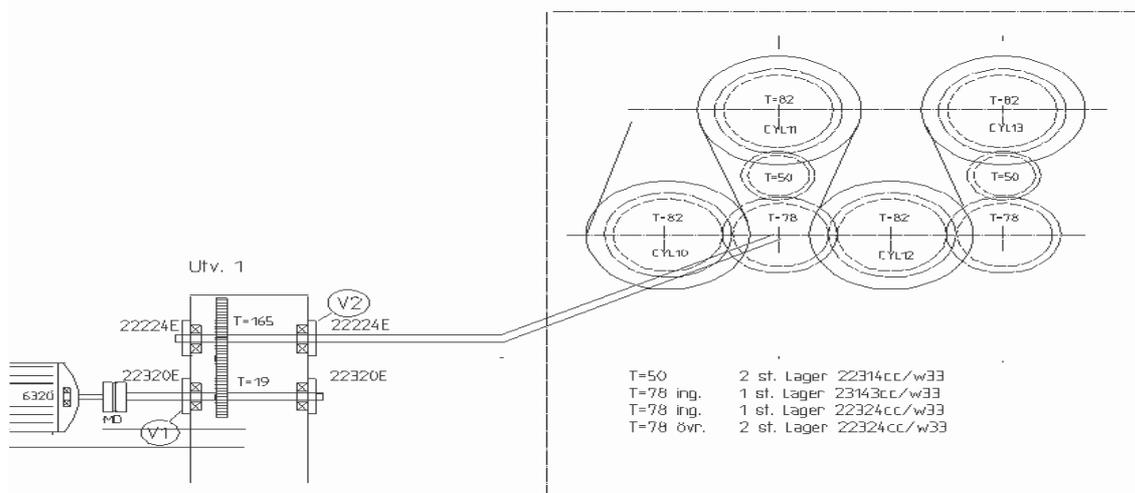

Figure 1. Typical setup of a dryer drive with the gearbox (left) and related cogweels (right).
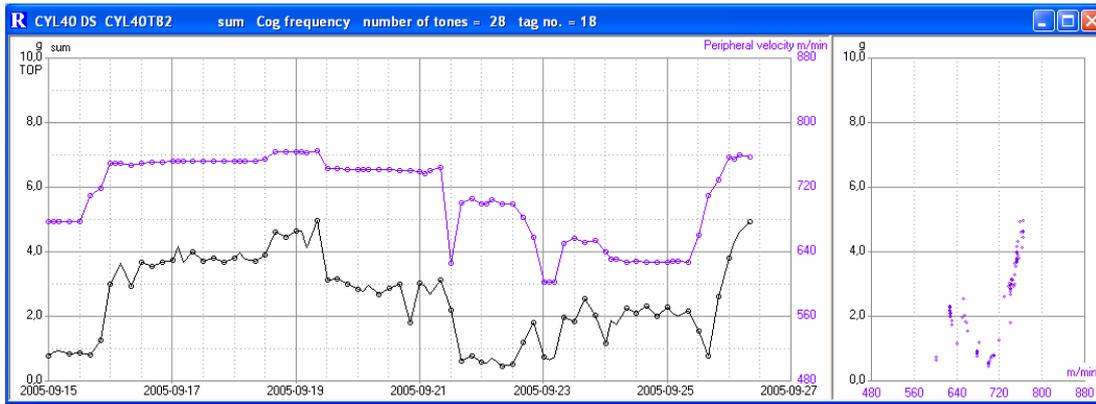
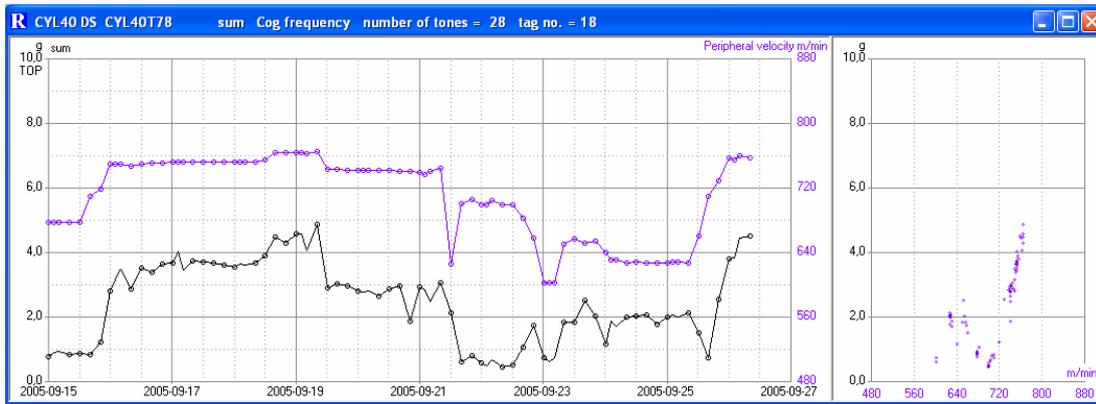Figure 2. The cogwheel (with 82 cogs) on cylinder 40.

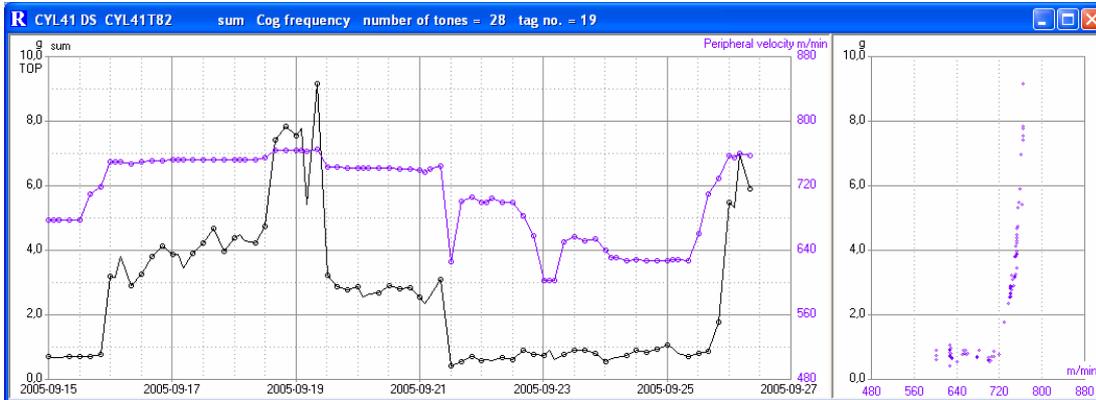Figure 3. The cogwheel (with 78 cogs) between cylinders 40 and 41.

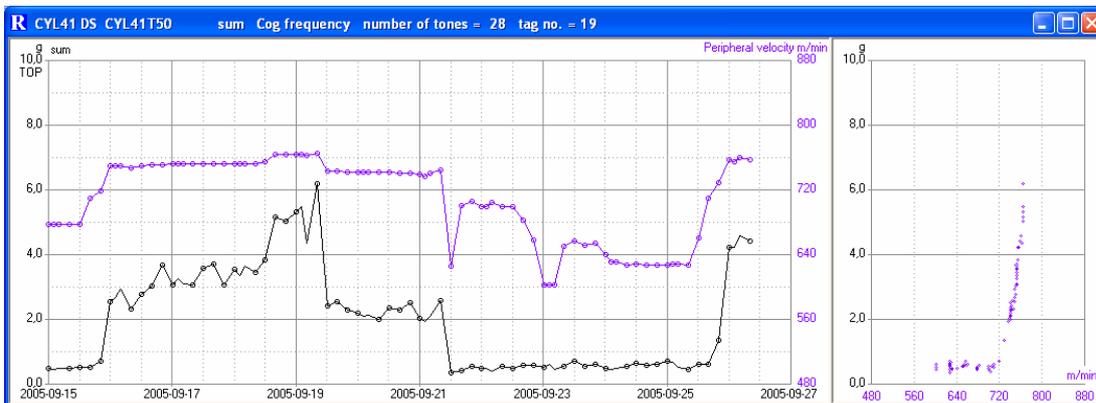Figure 4. The cogwheel (with 82 cogs) on cylinder 41.

Figure 5. The cogwheel (with 50 cogs) between the bottom and the top cylinders.
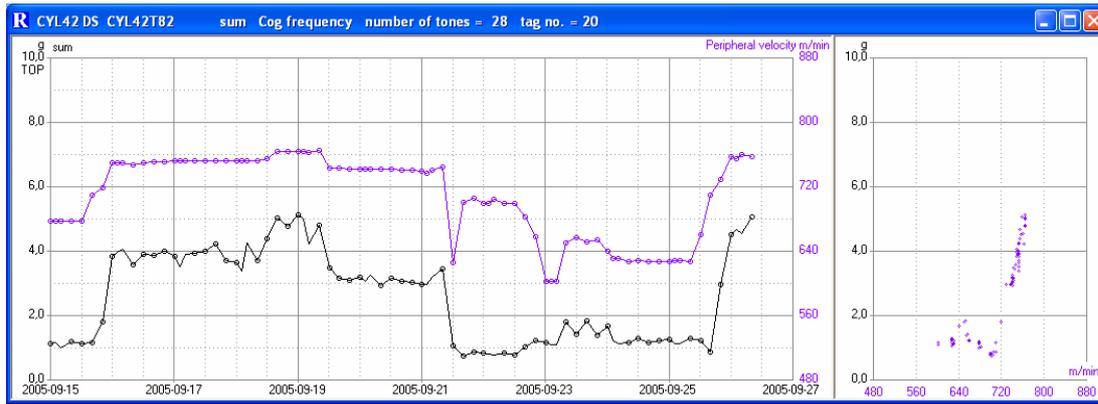
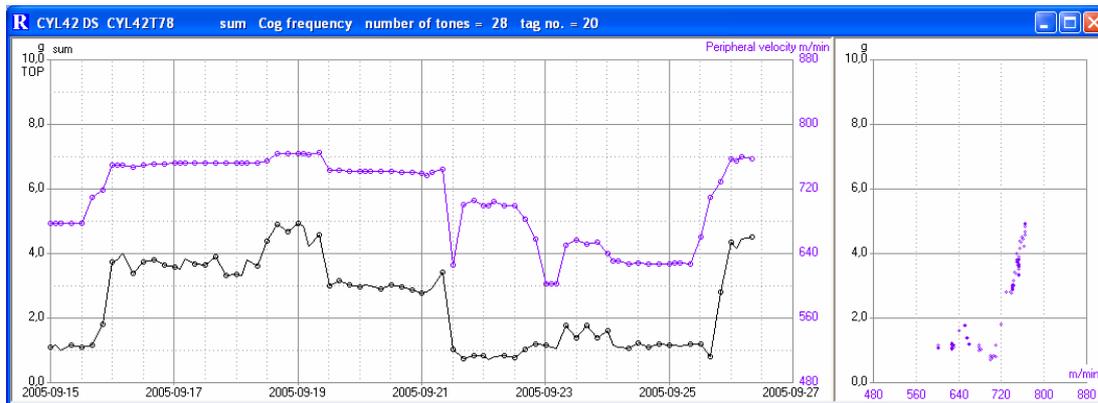Figure 6. The cogwheel (with 82 cogs) on cylinder 42.

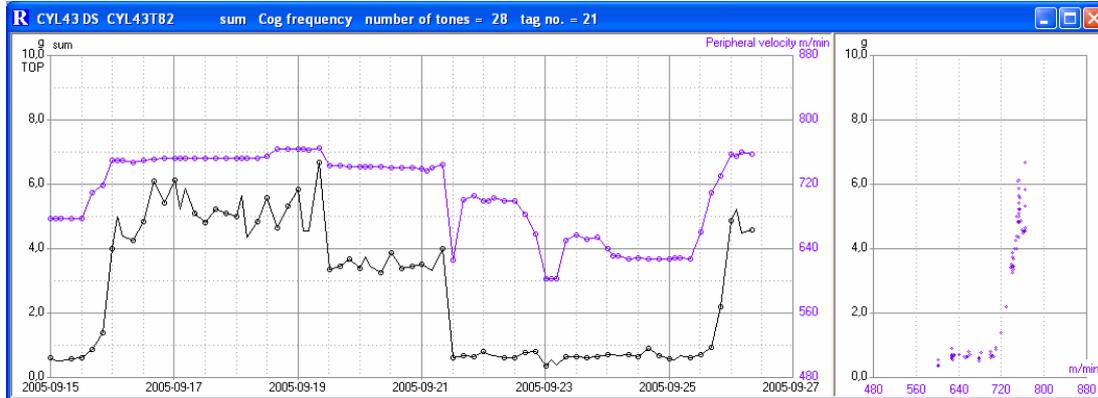Figure 7. The cogwheel (with 78 cogs) between cylinders 41 and 42.

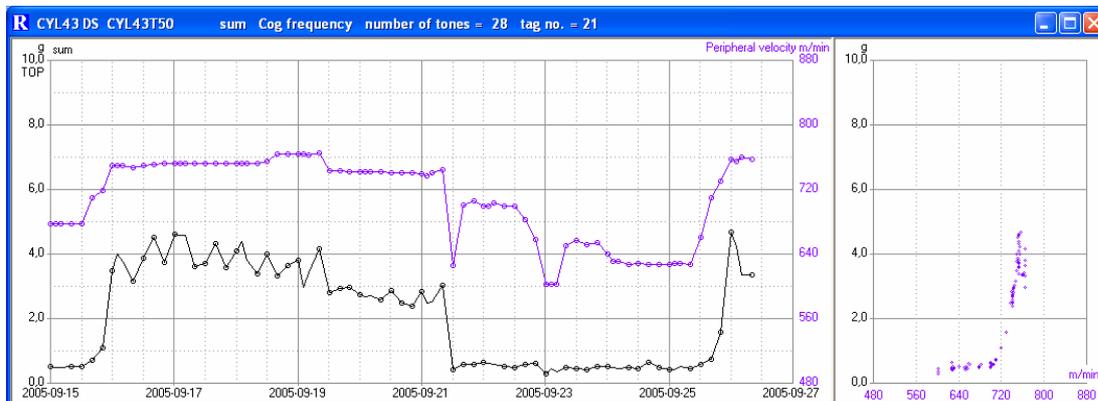Figure 8. The cogwheel (with 82 cogs) on cylinder 43.

Figure 9. The cogwheel (with 50 cogs) between bottom and top cylinders.
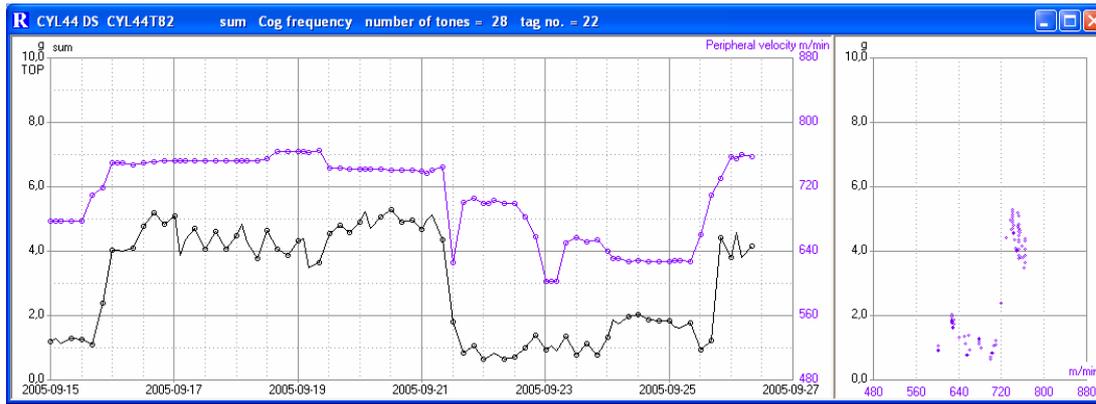
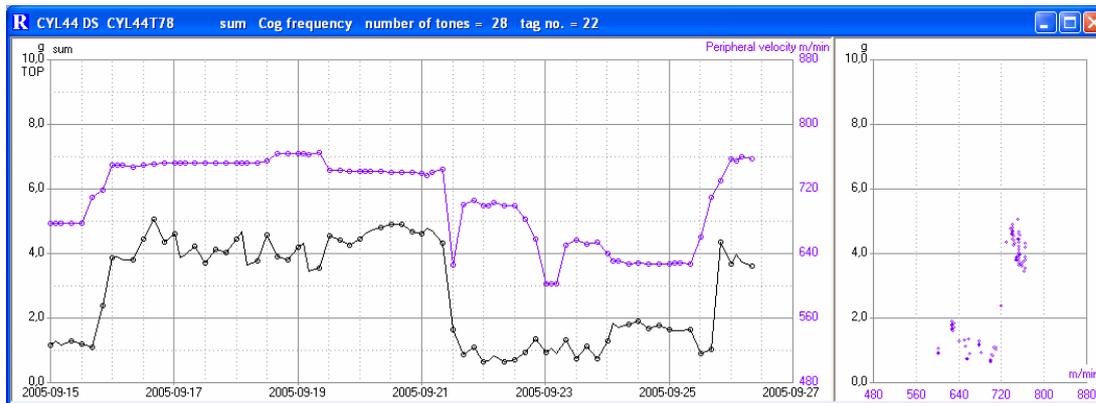Figure 10. The cogwheel (with 82 cogs) on cylinder 44.

Figure 11. The cogwheel (with 78 cogs) on cylinder 43 and 44.

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