Roll Analysis System

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The roll analysis system (also known as 'WAS' from the abbreviation of the Dutch name, Walsrol Analyse Systeem) is a PC based computer system that determines the influence of backup rolls and work rolls in the thickness deviation of the strip. The result of the analyses is displayed on a monitor. The analytical method used for this is the Synchronous Time Domain Averaging (STDA) method.

Method

This method uses a signal that consists of a periodic component and a noise component and is continually averaged synchronously with the period of the periodic component of the signal. The signal used by WAS is the exit gauge deviation signal. That part of the gauge signal that is synchronous with the period of a roll rotation is amplified, while the part of the gauge signal that is not synchronous (noise) is averaged out. The averaging period is different for every roll and is determined by the roll circumference.

The gauge deviation signal is sampled at a fixed sample rate. The also measured rotational speed of each roll is used to determine the roll angular positions. The measured thickness is linked with these angular positions and summed every time. This results in waveforms that are estimations of the contour of every roll.

The maximum amplitude of this contour is used to specify the influence of the particular roll in the overall thickness deviation. The roll speed and the bandwidth of the gauge meter limit the harmonics of the roll frequency that can be detected.

Display

The display of the WAS system shows for every roll a bar graphs with the influence of that roll in the overall thickness deviation for the last 20 coils. Also a bar graph is shown with the overall thickness deviation and the total influence of all rolls summed together as percentage of the deviation. In case of a high thickness deviation this display can be used to indicate which roll causes this (unacceptable) deviation and take the appropriate actions.

The data that is shown on the WAS display is also saved to files on the hard disk of the computer system. This facility makes it possible to show the history of WAS data off-line in a viewer program. This viewer program has the same display layout as the on-line system. It is also possible to start and stop a data logging with more detailed information to perform off-line analyses.