Kiln Axis Alignment System
New fast and precise system is using a target axle and a laser theodolite (Total Station)

Reference point for stationing

Target Axle with Reflector Prism

Calculated kiln center

Robotic Total Station
Leica TS60 or MS60
Later also from Trimble
Kiln Axis Measurement System Overview

Typically 2 stationing of theodolite are sufficient

Reference point for stationing

Calculated kiln center

Assistant with Target Axle

Main Operator with Robotic Total Station
The ball reflectors make the measurement easy, precise and fast.

The target catching function of the theodolite finds and measures the targets quickly. It does not require precise targeting by the operator.

Reference point distributed around the kiln for re-stationing of theodolite.

Target Axle on kiln tire

Target on shaft center with Rotation Adapter.
The results of the measurement is the value how much to move the rollers to get the kiln straight.

Kiln Axis deviation:
Expected center determination accuracy: +/- 1mm
(depending on accuracy of laser theodolite)

**Side View**

**Top View**
The measurement results are displayed immediately in 3D (in Measurement Studio)
The new method for kiln axis measurement brings several advantages

• Independent if kiln is in operation or stopped
• Easy to measure
  – no specialized geo surveying knowledge required
  – 1...2 days training is sufficient
  – Low number of sources for errors
  – The operators are in contact via the hand free intercom
• Fast
  – A kiln with 3 piers can be measured easily within halve a day, traditional methods require up to several days
  – Diameter of rollers and tires have not to be measured
  – Typically only two positions of theodolite are required
• Easy to analyze
  – The results are immediately visible in the PC
  – Possible erroneous measurements can be repeated at the spot
  – No transfer to other software required
  – Unmistakable visualization in 3D
  – The data can easily be shared and distributed via e-mail
Kiln Axis Alignment Accessory Kit, includes all special components to measure the kiln axis.
Industrial Tablet PC, Panasonic TOUGHPAD FZ-G1 with Long Range Bluetooth

- The special TomTom Bluetooth Adapter makes the Tablet PC to match perfectly to the kiln measurement tools
Some impressions from the measurement