

KAWASAKI STEEL TECHNICAL REPORT

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On-line Size and Shape Measurement Techniques for Hot Steel Rolling Process

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Synopsis :

Recent development in Kawasaki Steel on size and shape measurement techniques for hot steel rolling process is reviewed. First, a precision-enhanced technique for a laser distance meter is described, then, its rugged structure necessary for measurement in tough environment such as hot rolling process is shown in detail. A plate length meter and inter-stand sensors for a hot strip mill are shown as developed size measurement techniques. Furthermore, plate shape meter and laser profile gauges for H-beams are depicted as specific examples of shape measurement techniques.

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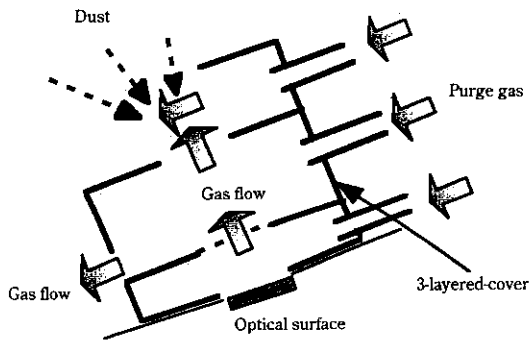


Fig. 3 Dust-proof structure

take proper countermeasures for thermal fluctuation caused air expansion in the optical path by radiation heat. The chosen countermeasure for thermal fluctuation is to properly air-purge the inside of the optical path.<sup>2)</sup>

### 2.3 Maintenance Techniques

In order to improve the workability and safety of maintenance, every measurement apparatus is located in an off-line retractable structure in principle. In addition, the system is designed in such a way that by linking to a host computer, the data at calibration and various data

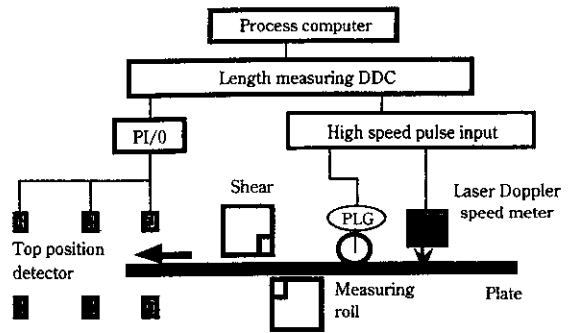
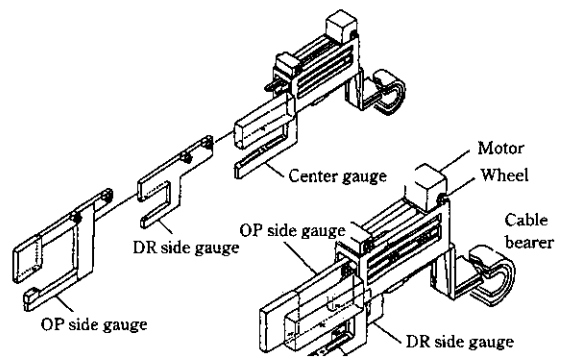
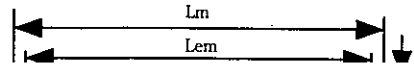
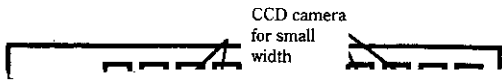


Fig. 4 System configuration of plate length meter





$W_l, W_m$   
Width  
of ...



described in this paper.

(3) As for shape measurement techniques plate profile

35th Jpn. Joint Automatic Control Conf., (1992), 579-580

3) N. Katayama, I. Yamasaki, K. Baba, I. Okamura, T. Ogasawara