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Recent Applications of Optical Measurement Techniques to Steel Industry Processes

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Synopsis :

On-line measurement of quality and dimensions of products and the condition of processes has recently become very important to keep stable production of high quality and homogeneous products. This tendency is also applicable to the steel industry. To satisfy these strong needs, optical measurement technologies and instruments have been developed because of their advantages such as noncontact, high-response and high-sensitive measurements. Recent advances of hard-ware technologies have also contributed to development of new instruments. Recent examples are dimensional

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principles have not changed greatly. At present, optical measurement finds more frequent practical application

Table 1 Component devices for optical measurement system

due to rapid progress in hardware, which is discussed

later. Nevertheless, the basic properties of light used in optical measurement are many, and it is expected that

Item	Device
Light source	W lamp

and higher grade products. Inspection of the outer of measurement.

appearance of products is also carried out to detect flaws. Even when measurement is applied to processes

(1) The optical measurement system should be of compact size and permit focused section and analysis

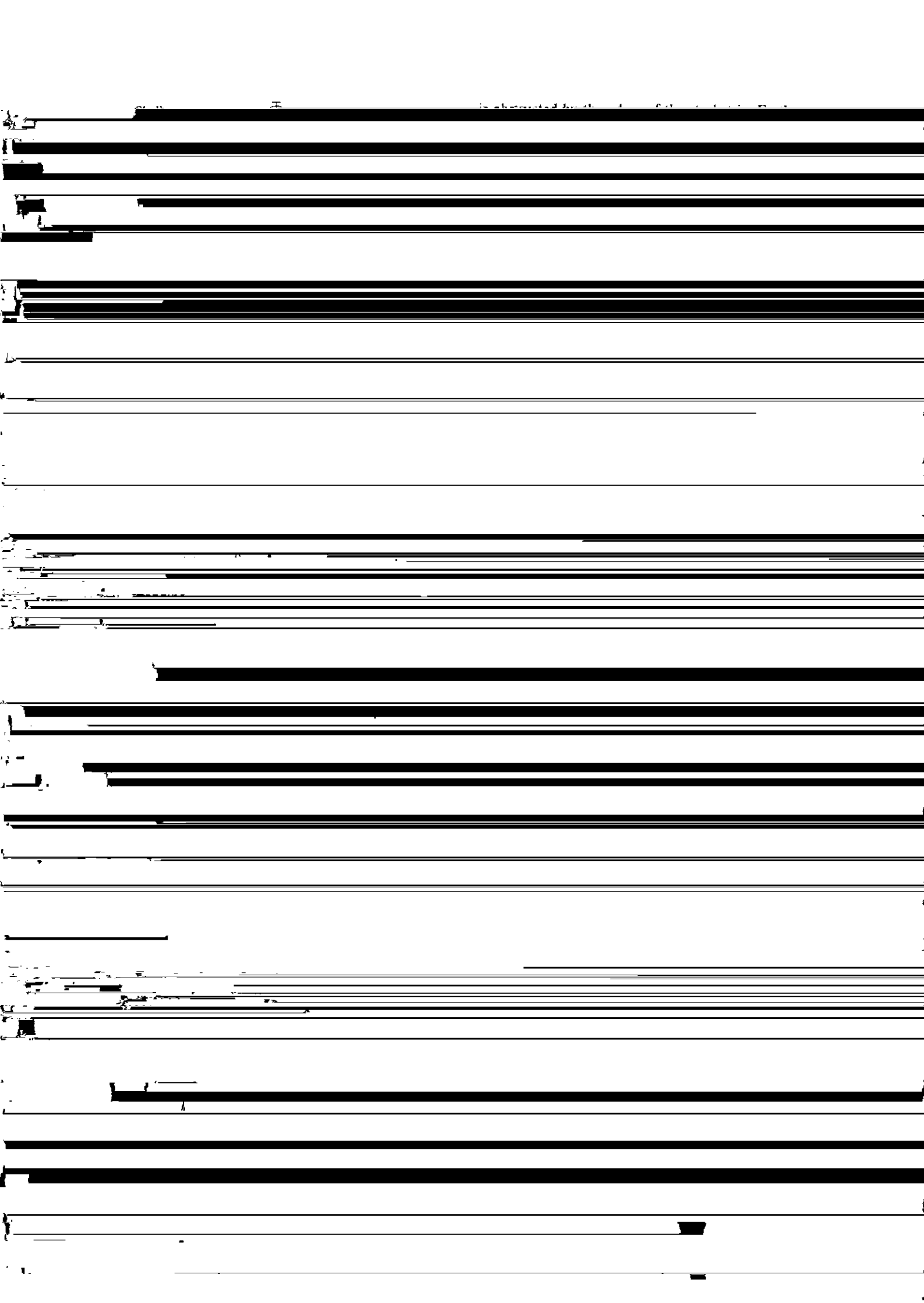
cussed in detail below.

Table 3 Specifications of the sensor head

4.1 Dimension and Shape Measuring Techniques

4.1.1 Torpedo-ladle brick wall profile meter¹²⁾

Light source	He-Ne laser
Wavelength (μm)	0.633
Power (mW)	5



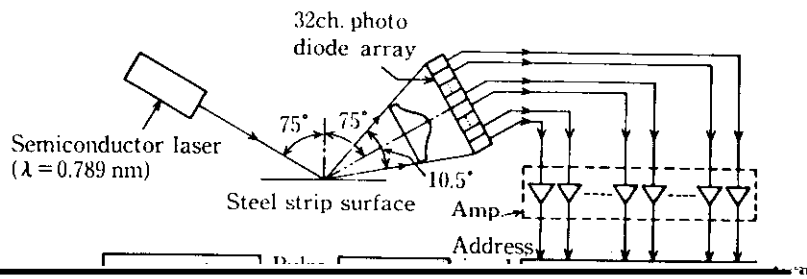
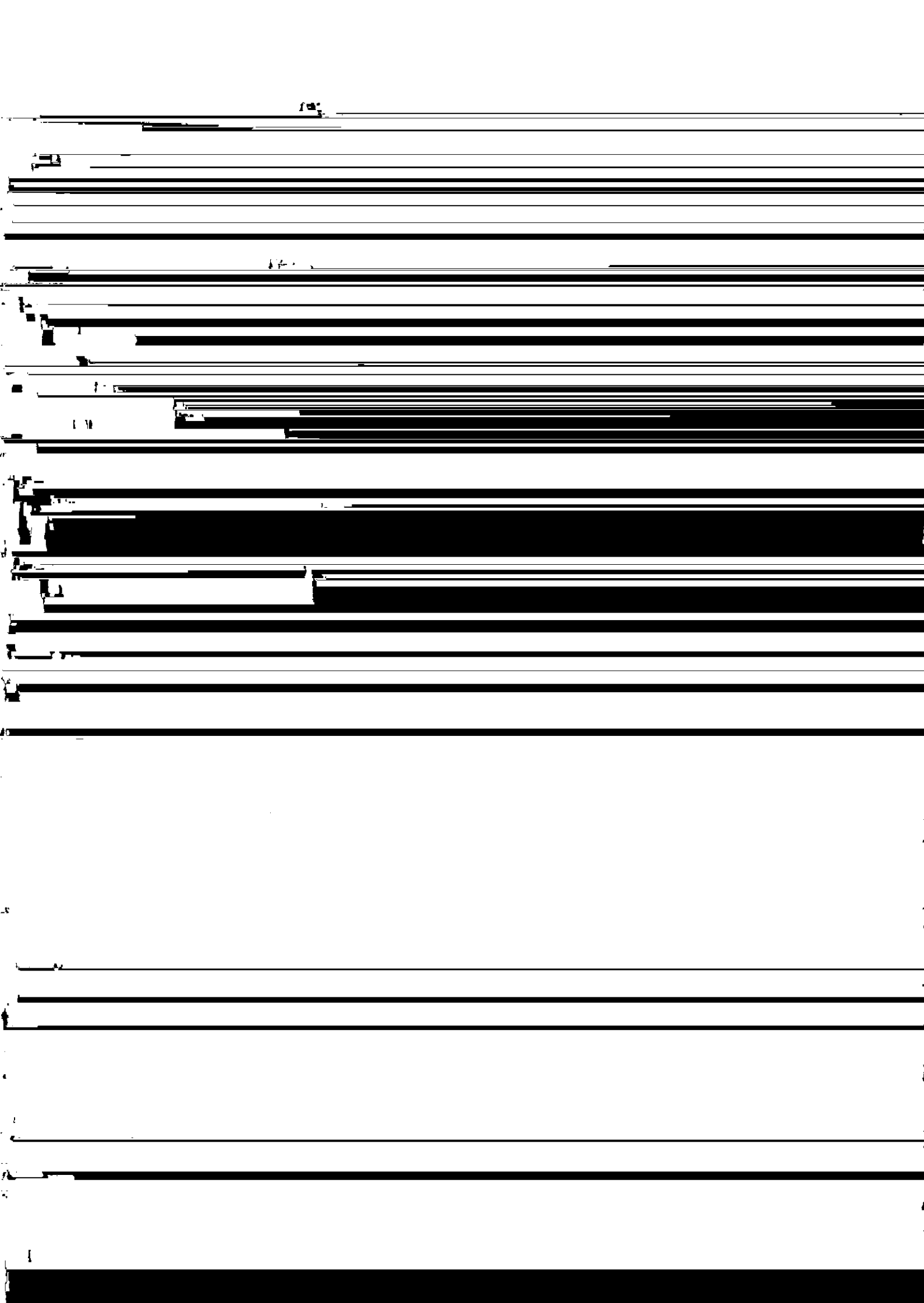


Fig. 4. Detection of surface defects.



contrast of the surface pattern. drop lighting is high speed rotary bodies of other types if fitted with

employed. The strobe light is transmitted through optical fibers. The image processor is high-performance hardware comprising a comprehensive system using an 8-bit gray scale memory and VME Bus. In the process-

the requisite processing software for pattern recognition.

5 Future Trends

The "Speed" technologies embodied in hardware created

As mentioned above, future optical measurement

7) Kawasaki Steel Corp.: Inn. Kokai 63-58104

As mentioned above, future optical measurement

8) Kawasaki Steel Corp.: I.I.C. Patent 4,724,766