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Progress of Diagnosis Techniques for the Cold Strip Processing Line

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Synopsis :

For the cold strip processing lines, the authors have developed diagnosis techniques in which information on product quality, such as sheet thickness, and information on operation are combined together with processing signals and machine conditions. The major diagnosis techniques are (1) diagnosis of welding performance, (2) diagnosis of leak in mechanical descaling pump. (3) diagnosis of cold strip mill (eccentricity of work roll and back up roll) and (4) diagnosis of automatic sheet gage control system for rolling reduction at the cold strip mill. These techniques coupled with fundamental diagnosis techniques for rotary machinery, hydraulic lubricant equipment, electric and control units have led us to the development of a new type diagnosis system in which the functions of automatic diagnosis and expert system are incorporated. This system has been introduced to the pickling line, cold strip mill, and continuous annealing line. The above introduction has contributed not only to the execution of early treatment of defective portions of the equipment but also to improvements in the accuracy of sheet thickness, prevention of rupture in welds, and stability in picking efficiency. This has furthermore brought about improvement in the accuracy of the equipment management control including an increase in CBM (condition based maintenance) rate and the like.

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The body can be viewed from the next page.

Progress of Research on the Cold Strip

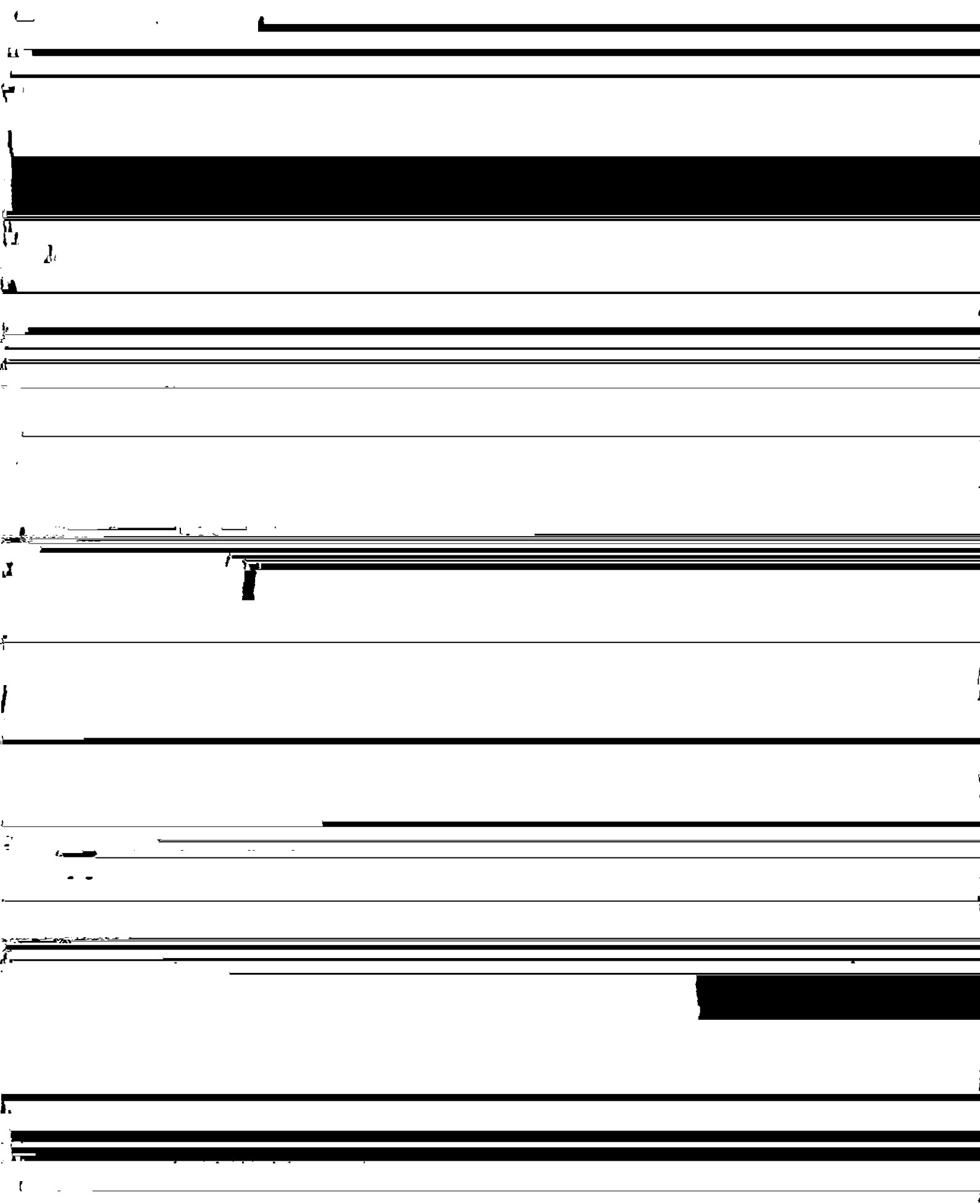
line¹⁾, with a great deal of contribution made to quality

The authors have taken electrical and instrumenta-

This paper reports the development of the facility incorporated a linkage with the process computer. For

and supports analysis for various improvements, so that
the caused and effect relation between the diagnosis

3.1 Diagnosis Examples for Water



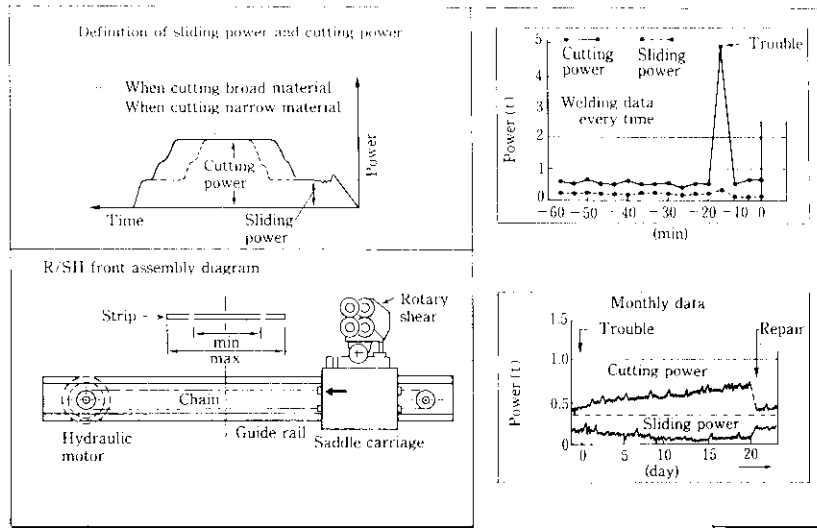


Fig. 3 Sliding and cutting power before and after rotary shear trouble



deteriorating the overall coiled shape.

As a result of analyzing the data of the aforesaid upset quantity difference and these phenomena can

In promoting the development, valve Nos. 1 to 5 were replaced with new ones, an acoustic emission (AE) sensor was installed to No. 2 above the

makes a leak corresponding to the critical pressure difference of water are shown in Fig. 8

This figure indicates that it is possible to judge the identification of leaks of the suction and exhaust water

by knowing at what particular time continuous AE is

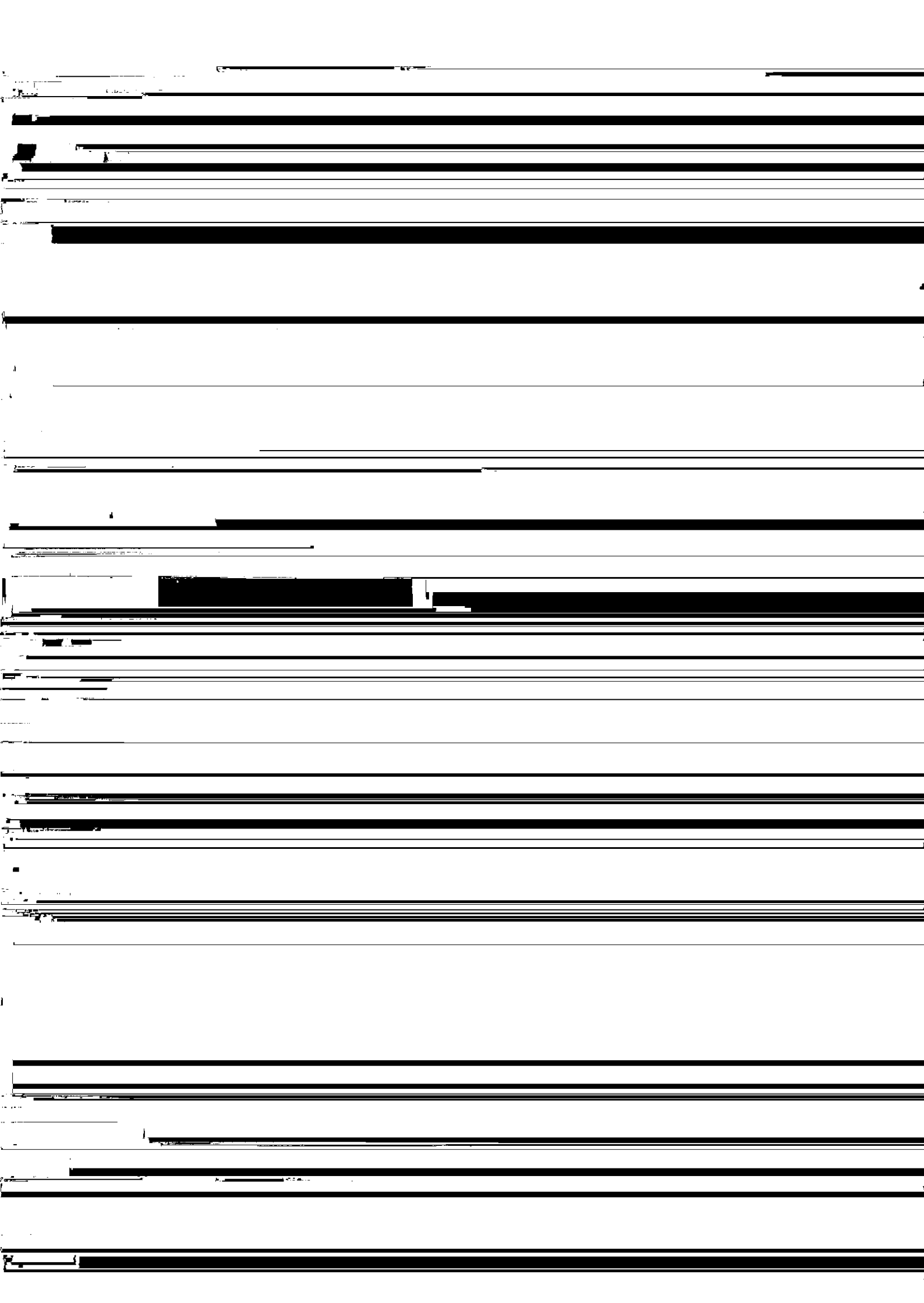
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replacement, it was found that only clear AE pulse waveforms were outputted at each plunger pump,

position of this hydraulic cylinder is detected by the built-in-type Magnescaler (magnetic position detector).

5 Diagnosis Techniques for Analyzing Thickness

result is used as control information of the mill concerned and further of succeeding mills and becomes



ation 2.5 (New BUR), set. (Change)

rotary shear travelling resistant force, thereby contributing to the prevention of welding defects and

