

Innovative Concepts for Heavy Plate Inspection Systems with Phased Array

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Heavy steel plates are the base material for many critical applications, as for example SAW welded pipes for pipelines or construction components for Offshore wind generators. Today's State of the art testing are based on the inspection for internal metallurgically induced defects and lamination defects due to the rolling process in the plate body and the edges. However, actual standards operate still on the basis of Multi-element TR transducers, limiting the base sensitivity of the inspection to an equivalent defect size of FBH 2mm. Additional drawbacks exist as well in terms of near surface resolution, as in the reproducibility of the inspection process itself. Further, the sizing approaches applied to the indications detected by the inspection machines is subject to be improved. Within the context of this work, the authors will show up the increased inspection potential by the application of phased array based inspection systems for heavy plates in various arrangements. In depth investigations on how the performance of heavy plate inspection can be improved will be illustrated and experimental results will be shown. Finally, recent results from ongoing projects are presented to give an indication of the inspection potential which is still achievable on this important field and how future inspection machines can be designed and manufactured.