4.4.8. RECENT IMPROVEMENTS AND INDUSTRIALISATION OF ULTRASONIC 1D AND 2D FLEXIBLE ARRAYS FOR NDT

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UT Inspection of irregular profile components remains complex since a conventional rigid probe being scanned onto an irregular profile generates a variable thickness of coupling media which results in distorted beams.

Main challenge consists in the development of probes allowing generating controlled beams of L or T waves. In addition this has to be done reliably and at a reasonable cost.

After a description of the already existing concepts this paper will present the solution developed by Imasonic and CEA based on linear and matrix array having a flexible active surface. A profilometer embedded in the probe measures the distortion of the active surface; UT system drives the profilometer and computes the delay laws adapted to the profile.

New generation of these probes has been developed which takes benefits of the recent Imasonic research works, such as new resistant front face and new mechanical design making the probe more compact and more robust. An optimised electroacoustical design producing better signal has also been implemented.

Several examples where these probes have been used with success in different using conditions will be presented.