Cleanliness Determination of Hot Strip Steel Samples using a Modified US SAFT Reconstruction

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Abstract. Determination of cleanliness of steel samples needs a high spatial resolution of the ultrasonic signals. Only in this case it is possible to find very small inclusions and to determine their positions for additional examinations by metallographic methods. In hot strip material inclusions will be deformed and smeared over a certain range by the rolling procedure. To find these regions, to determine the dimension of deformation and the distribution of particles with sufficient resolution focussing probes with high spatial resolution have to be used. These probes will image only inclusions and inhomogeneities lying in the focal plain. Therefore to get sufficient resolution also for regions out of the focal plain it is necessary to add up the ultrasonic signals from adjacent positions with a corrected phase depending on the type and shape of the probe. This will be done with a modifies SAFT (Scanning Apperture Focussing Technique). In a first step the probe characteristic has to be determined in different planes in and out of focus. This characteristic is then used to correct the ultrasonic signals. The results compared to conventional ultrasonic measurements are discussed.