Surface Inspection System for Large Sheet Metal Parts

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Abstract. In this paper a measuring system that allows an automatic detection of waviness and form errors in sheet metal parts is introduced. The system is based on a stripe projection method using a high resolution line scan camera. Particular focus is put on achieving a short measuring time and a high resolution in depth, aiming at a reliable automatic recognition of dents and waviness of 10 µm on large curved surfaces of approximately 1 m width. On smoothly curved surfaces a spatial frequency analysis is used to detect dents. By combining this spatial frequency analysis with a CAD model, more complex parts can be inspected, too. Using an objective 100% inspection of all parts, a quality improvement can be achieved by controlling the forming process.