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The Collapse of a Crane on Site: A Case Study

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Abstract : This paper discusses the causes of the structural failure in a tower crane. The structural collapse occurred at the upper joints of the extension element used to increase the height of the crane. The extension element consists of a steel lattice structure made with angular profiles and plates joined to the tower element by arc welding. Macroscopic inspection of the sections showed that the break was always observed on the angular profiles at the weld bead edge. The case study shows how, using mechanical characterization, chemical analysis of the steel and macroscopic and microscopic metallographic examinations, it was possible to obtain significant evidence that identified the mechanism causing the breakage. The analyses identified the causes of the structural failure as the use of materials that were not suitable for welding and poor performance in the welding joints.

Keywords : failure, metals, weld, microstructure
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