

The mathematical modelling of hardness distribution in quenched steel specimen

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SUMMARY

The hardness distribution in quenched steel specimens with complex geometries has been investigated by mathematical modelling. The algorithm for specimen quenching and a computer program has been developed. The algorithm and the computer program have been completed to solve 2-D situation problems such as the quenching of complex cylinders, cones and spheres. The computer program consisted of three parts: automatic computation of the domain and grid generation, computation of the cooling curve in specimen points and computation of hardness in specimen points.

The mathematical model has been tested by comparing it with experimental data. The test shows that the model describes the hardness distribution in quenched steel specimens of a complex form with quite a satisfactory accuracy.
