



Research Fund for Coal and Steel



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Machinability assessment of the steels previous to
the surface hardening treatment

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PUBLISHABLE SUMMARY

In order to assess the economic balance of the new hardening routes it is necessary to determine the affections to other manufacturing processes, like machining, as steel microstructure and hardness change depending on the selected route.

Steel rough machinability is substantially different for the steel grades for nitriding and carbonitriding due to their higher hardness. Compensating the influence of the different hardness, the machinability of the different steel grades is rather similar.

Machinability for finishing operations with CBN inserts in hardened condition for the different heat treatments shows noticeable differences in tool wear depending of the steel grade and heat treatment, having the 40CrMoBi4 steel the best performance. Carburized steels cause higher tool wear, showing the carburized 20NiCrMo2 the worst performance during hard machining.