

# **ANALYSIS OF TECHNOLOGY IN VARIOUS INDUSTRIES**

**MONOGRAPHY**

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### APPLICATION OF HARD-FACING IN REPARATION OF DAMAGED FORGING DIES

**Abstract:** In this paper is considered reparatory hard-facing of forging dies used for obtaining forged pieces in automobile industry. Prior to reparatory hard-facing of the real forging dies, the necessary experimental hard-facings on models were performed, in order to establish the optimal reparation technology. All the tests were done on steels that are used for production of the real forging dies. In this way, the tests' output results are related to selected procedure and technology. The forging dies are in exploitation conditions subjected to heating up to very high temperatures, variable impact-compressive and shear loads. Steels, aimed for manufacturing of those tools, should withstand extreme impact loads, while maintaining mechanical properties at high temperatures, they should be resistant to wear and thermal fatigue. This is why the alloyed steels are being used for this purpose, though they have worsened weldability, since alloying increases proneness to hardening. Thus, any reparatory hard-facing of the damaged parts requires the specially prescribed technology adjusted to the particular forging die. Besides the optimal hard-facing technology one also needs to define the adequate heat treatments, the preceding, the current and the additional one. The established optimal technology, after the verification, was applied to real forging dies, whose working life was further monitored in exploitation conditions.

**Key words:** Hard-facing, forging dies, automobile industry, hardness, microstructure

#### 12.1. Introduction

In this paper is considered the problematics of reparatory hard-facing of the forging dies, which are in exploitation conditions subjected to

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