1. Record Nr. UNINA9910463765103321 Autore Singh Bikram Jit **Titolo** Rsm: a key to optimize machining: multi-response optimization of CNC turning with Al-7020 alloy / / Bikram Jit Singh, Harsimran Singh Sodhi Pubbl/distr/stampa Hamburg, Germany:,: Anchor Academic Publishing,, 2014 2014 **ISBN** 3-95489-709-1 Descrizione fisica 1 online resource (118 p.) Disciplina 001.434 Soggetti Experimental design - Graphic methods Response surfaces (Statistics) - Germany Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references. Nota di contenuto RSM: A Key to Optimize Machining; ACKNOWLEDGEMENTS; PREFACE; Contents; List of figures; List of Tables; CHAPTER 1: MACHINING AND CNC MACHINING; 1.1 Machining: An Introduction; 1.2 Machining Operations; 1.3 An Overview of Machining Technology; 1.4 CNC Lathe / CNC Turning Center; 1.5 Present Work; 1.6 Machining Parameters; 1.7 Summary; CHAPTER 2: CUTTING TOOLS; 2.1 Tools; 2.2 Multiple Cutting-Edge Tools; 2.3 Stages in Metal Cutting; 2.4 Tool Material; 2.5 Tool Wear; CHAPTER 3: ALUMINIUM AND ITS ALLOYS; 3.1 Aluminium; 3.2 Fundamentals of Aluminum Alloys; CHAPTER 4: RESPONSE SUFRFACE METHODOLOGY 4.1 RSM4.2 Outline of ANOVA; 4.3 Considered Responses; 4.4 Motivation of Study; CHAPTER 5: BACKGROUND OF MACHINING OPTIMIZATION; CHAPTER 6: MACHINING OF ALUMINIUM AND ITS ALLOYS; 6.1 CNC Machining; 6.2 Methodology Proposed; CHAPTER 7: MACHINING OPTIMIZATION: A CASE STUDY; 7.1 Machining Parameters along with their Levels; 7.2. RSM Matrix; 7.3. Execution of Designed Experiments: 7.4. RSM Statistics for MRR: 7.5 Graphical Inferences for

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Parametric optimization, especially in machining of non-ferrous alloys seems to be quite rare and needs an immediate attention because of its associated downstream financial and non-financial losses. This book tries to fill the gap and presents an optimization problem of commonly used Al-7020 Alloy. Principles of Response Surface Methodology (RSM) have been implemented through Minitab software to bring necessary multi-response optimization, while turning on a CNC turner. The present study focuses on to enhance Material Removal Rate (MRR) while simultaneously reducing the Surface Roughness (Ra)