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**COMPREHENSIVE ANALYSIS OF THE NEW IN-SITU CRANKSHAFT CRANKPIN BEARINGS
RENOVATION TECHNOLOGY FOR SEA GOING SHIPS**

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This article is based on the research conducted to improve the renovation technology of the shipboard diesel engines crankshaft bearings. Crankshaft renovation is the primary task during the overhauling of the main and auxiliary engines. Technical requirements for these repair operations are: fine surface quality, geometrical accuracy and high surface roughness (texture). Although available technologies are able to deliver these results, they are very expensive, time consuming and usually can be done only in workshop by highly sophisticated and expensive grinding machinery. This clearly indicates the need for new technology that could achieve the required quality but would be less work and time consuming. These problems are not new in the ship repair industry. Various technologies have been developed and technical patents registered with the same basic principle: grinding device is placed on the crankshaft itself and mechanical motion is ensured by compressed air, by chain mechanism or by electrical motor via mechanical drive. However, these technologies were limited: a) usually they are applicable only to large crankshafts, more than \varnothing 200 mm; b) they are considered a commercial secret; c) they require highly-qualified technicians. Nowadays, situation has slightly improved and these in-situ grinding technologies are available also to some specialized ship repair firms. Nevertheless, industrial application and scientific justifications of these unique repair technologies are lacking. Therefore scientific research has been launched to develop a new grinding technology allowing repairs of diesel engines' crankshafts directly in the engine housing with the crankpin bearings with a diameter of 100 to 350 mm. This article covers the following issues: 1. Description of a novel technological equipment for crankshaft bearings grinding; 2. 3D roughness model of the crankshaft bearings surface; 3. Calculation of 3D parameters based on practical metrological and technological characters; 4. Correlation established between 3D surface roughness parameters and technological regimes of the crankshaft bearings machining; 5. Experiments with the grinding device and practical recommendations for optimal choice of technological regimes. In this article, the crankshaft bearing surfaces will be defined in accordance with 3D surface roughness parameters according to ANSI/ASME B46.1-2002 and upcoming ISO 25178 surface texture standard. This research provides an efficient solution for the crankshaft bearing machining problems and allows to significantly decrease the maintenance time of ship engines and save considerable financial resources.