Doroczna konferencja naukowo-techniczna
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Research on atmospheric corrosion as an element of increasing aircrafts service life process with keeping specific safety level of aircrafts maintenance

Keywords: service life, atmospheric corrosion, aircraft (AC)

Abstract

The service life analysis of selected A/C (aircrafts) used in Polish Armed Forces proved that 96% of A/C service life is connected with keeping of aircrafts on the ground. It causes that A/C are affected on the influence of environment. Monitoring of corrosion losses of specimens made from structural elements of A/C, as well as reference samples and knowledge about correlation between corrosion losses of reference samples and specimens goes to possibility of preliminary assessing of difficult access elements corrosion rate. Results obtained during the research can be used for: materials corrosion rate describing in specific time intervals, category of corrosion assessing, corrosion losses forecasting, specifying of surface preparation categories for protective coatings, selection of the most effective painting system, corrosion process monitoring of structural materials, describing of limitation of environmental data collecting range, development of mathematical model for prognostic of atmospheric corrosion, comparing of received data with environmental conditions.

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Chemical surface treatment in technologies of powder painting of the metal construction elements

Keywords: chemical surface treatment, cleaning and degreasing, phosphating, paint stripping

Abstract

The selected methods of the chemical metal surface treatment (steel, galvanized steel and aluminium), often employed in the processes of surface pre-treatment before powder painting of the metal construction elements, have been presented. The paper provides also with many practical informations on the basic application and application parameters concerning various metals (with emphasis on different corrosion resistance of various aluminium alloys). The modern ecological trends, concerning e.g. the limitation of the use of certain kinds of surfactants, have been included. The paper also presents shortly the evaluation of the quality of cleaning of metal surface contaminated with oil and surfactants.

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Emerging corrosion control methods for reinforced concrete structures

Keywords: steel, concrete, corrosion, realkalization, chloride extraction, corrosion inhibitors

Abstract

In the last two decades new strategies for corrosion protection of reinforced concrete structures have been developed, namely electrochemical realkalization of concrete, electrochemical chloride removal from concrete and application of migrating corrosion inhibitors. These techniques make it possible to restore conditions, which favour passivity of reinforcing steel and subsequently suppress its corrosion. This effect can be achieved without expensive removal of contaminated concrete and its replacement by new one. These new repair methods are essentially non-destructive and cost effective. However, despite of numerous laboratory and field studies, demonstrating the efficiency of these methods, they are still a subject of controversy and their use in practice is limited. A brief theoretical background of these treatments is given and then approaches to their practical applications are outlined. Essential factors controlling the efficiency of these techniques are indicated. Finally, practical aspects as the importance of the condition assessment before the treatment, durability of steel repassivation and possible side effects are pointed out.

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Issues concerning the corrosion protection of historic bridges in Wrocław

Keywords: steel bridges, technical history, corrosion protection

Abstract

Wrocław is old historical and multicultural City. The bridges of Wrocław constitute an inherent part of the city's cultural and historical heritage. They are more and more often faced with maintenance issues. The corrosion protection particular in case of steel bridges entails not only the restoration of it's functionality but also the enhancement of its esthetical qualities. At the beginning on new century modern technologies and materials make it possible to maintain structures of this type in good technical condition. Wrocław is a "guinea pig" for restorers and other people responsible for the proper maintenance of steel bridges, and the variety of issues they are faced with encourages the use of a wide array of various modern corrosion protection technologies.

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The new methods of surface preparation for painting

Keywords: corrosion, surface preparation, paint coatings

Abstract

The method worked out recently of inductive removal of paint coatings and corrosive products from the steel surface is presented. The possibility of coatings applying on not quite clean steel surface covered with the layer of corrosion inhibitor was stated. The inhibitor can be applied as the alcoholic solution by means of typical painting technique. The layer of inhibitor provides with the high adhesion of typical paint coatings to both corroded steel surface with loose rust removed and to the old epoxies coatings cleaned with a steel wire brush. The very good field performance of coatings were observed after two years since executed. The applying of inhibitor can be useful for surface preparation for painting of the steel surface cleaned by the inductive method with no further blast cleaning or high and ultrahigh pressure water jetting prior to recoating.

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Personnel certification and company approval - statute activities of the polish corrosion society on an example of cathodic protection

Keywords: Corrosion and corrosion protection, personnel certification, company approval

Abstract

The Polish Corrosion Society, in accordance with its statute, is obliged to create conditions promoting technical and economical progress in the scope of corrosion protection of equipment and fixed assets in the national economy, amongst others by professional training of personnel and organising widening of knowledge in the scope of application and implementation of novel anticorrosion methods. It thus becomes an institution of public confidence, from which one expects not only reliable assessment of personnel and companies involved in the discussed scope, but also active participation in development of the technical level of this branch. Such activities are difficult in market economy, but indispensable in the interest of investors, as well as consumers. In the lecture the new European standard has been presented concerning qualifications and certification of cathodic protection personnel and present perspectives of its implementation in Poland. Also possibilities of co-operation with the society have been indicated in this and other fields of corrosion protection technology.

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The effect of overpainting period of epoxy coatings on adhesion of topcoats and protective properties of whole paint system

Keywords: epoxy coatings, polyurethane coatings, ageing of epoxy coatings, adhesion, corrosion protection

Abstract

The correlations between adhesion and durability of coating systems and surface properties of aged and non-aged intermediate coats were tested. The intermediate coats were aged 500 h in UV chamber. The surface free energy and polar groups were estimated after ageing. The results have showed that adhesion of polyurethane topcoats depends on degradation of epoxy intermediate coats. Coatings with good adhesion have good protective properties even when the blisters have occurred.