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MODERN ANTICORROSION TECHNOLOGIES
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REHABILITATION OF BRIDGE DECK IN SANOK

Keywords: steel bridge, segmented bridge's deck, pavement of deck, rehabilitation, modified urethane

Abstract

In this paper the technology of unconventional repair of segmented bridge's deck was presented. The urethane modified by asphalt was applied for deck pavement. This pavement contain two layer. First one is a basic layer which was made from of modified urethane. Second one is thin layer of this same material but with silica sand addition at the moment when layer is in semi-liquid state. The durable and antislip pavement was obtained. The noise generated by moving vehicles is damped also additionally.

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INFLUENCE OF ENERGY RECUPERATION IN CITY TRANSPORT SYSTEM FOR CORROSION RISK OF UNDERGROUNG INFRASTRUCTURE

Keywords: corrosion, stray currents, rail city transport

Abstract

Return circuit of rail city transport system which was electified direct current is a source of stray currents. Electronics development enable vehicle energy recuperation. Energy is bringing back to feeding system or to energy storages when wehicle brakes. Storages are located in particular places of feeding system or on the vehicle. We made the review of putting into commision the rolling stock with recuperation results in existing city transport system according to energy recovery. We paid attention that the rolling stock have an influance on track – ground voltage level. The rolling stock with recuperation also have an influance at location of cathode/anode zones. The technical staff have to control active cathode protection system which was chosen for rolling stock without recuperation.

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SURPRISING EXAMPLES FROM THE PRACTICE OF MEASURING THE CATHODIC PROTECTION OF PIPELINES

Keywords: cathodic protection, pipeline, casing pipe, galvanic anode, earthing the casing pipe

Abstract

The paper presents two examples from the practice of measuring the cathodic protection of pipelines for casing pipes. On the basis of these examples, answers to the questions below have been provided: why mount galvanic anodes in casing pipes is impractical and why groundbeds of steel casing pipes should not be made of metal which is more electronegative than steel?

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THE EXPERIENCES WITH FILLING OF SPACE BETWEEN CASING AND CARRIER PIPES BY ANTICORROSION MATERIAL ANTICOR Syntetix CF

Keywords: underground crossroads of pipelines with roads, anticorrosion protection, casing pipe, anticorrosion fillers

Abstract

In this paper a technology of anticorrosion protection where the internal space between the casing pipe and the carrier pipe is filled by synthetic material is discussed. This material is applied in the form of a liquid form. After the process of gelation it has very good anticorrosion properties e.g. high specific resistance and electrical breakdown, no cathodic disbonding, proper adhesion to internal wall of casing pipe and coating surface of carier pipe, slight water absorption, resistance to biological corrosion. It very well damping the mechanical vibrations which were transferred from soil. The technology of filling in the space is easy and very effective.

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THE REVIEW OF METHODS AND CRITERIA FOR ASSESSING THE ECONOMIC IMPACT OF CORROSION AND ATTEMPT OF THEIR ASSESSMENT

Keywords: corrosion, economic effects of corrosion, corrosion costs

Abstract

This paper presents and analyzes the methodology and criteria for assessing the economic impact of corrosion (EIC). The study describes basic terminology used in the estimation of losses caused by corrosion. It summarizes the reports by Uhlig, Hoar and the report of corrosion in the United States in 2002. Considering the differences between USA and Polish economy, the American EIC percentage of GDP shouldn't be copied uncritically. Polish attempts of estimating the effects of corrosion were reviewed. The importance of EIC was described in the microeconomic scale for comprehensive assessment of corrosion loss.

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ECONOMIC ASPECTS OF CORROSION PROTECTION OF THE STADIUM PGE ARENA GDAŃSK ROOF'S CONSTRUCTION

Keywords: corrosion, anticorrosive protection, coats, Football Stadium, PGE Arena, industrial infrastructure, steel, constructions, airless spraying

Abstract

Project of corrosion protection performance of the roof structure PGE Arena Gdańsk assumed the burden of translating the work to Plant construction and the imposition of the last layer of lacquered on the site, unfortunately, under construction, it turned out that this is not the best solution. Transport and unloading caused damages of the paint system on steel. TShe assembly and repair of welding design errors such as forgotten items, often stated that the design requires a re-reconstruction of the entire coating system. Implementation of security systems, painting on surfaces with varying degrees of complexity, both in factories and on construction site leads to the development of solutions and problems associated with the application of corrosion systems. Typically, complications are associated with the type of construction hedged, the choice of an appropriate paint system, adverse weather conditions, improperly prepared surface, errors in the application of the coating and damage during transport and installation of individual components. An extremely important factor determining the quality of security is knowledge of corrosion and protection against it, and practical experience. Enforcement of anti-corrosion work on prestigious buildings need to approach with caution the quality and sustainability of the work, so you must choose a cost-effective solution, which is the application of the last layer on the object, taking into account the recommendations of the manufacturer. Not without significance is well qualified staff and specialized personnel supervisor painter.

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PRODUCTION AND EXPLOITATION COSTS OF METAL AND METAL-PAINT COATINGS PROTECTING STEEL STRUCTURES AGAINST CORROSION

Keywords: protective coating, hot-dip galvanized zinc coatings, thermally sprayed coatings, analysis of life-cycle cost of steel structures.

Abstract

In article a purposes and a principles of metal and metal-paint coatings protecting the steel constructions agains corrosion were discussed. The benefits of using of hot-dip galvanized coatings and thermal sprayed coatings were presented. On the basis of national and foreign examples the analysis of exploitation costs of thermal sprayed coatings in comparison to the cost of traditional paint systems were presented.

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TRENDS IN NEW POLYMERS DEVELOPMENT

Keywords: polymers, nanotechnologies

Abstract

Working in anticorrosion coatings and appreciating their development during last years, we do not take into consideration that it is only the minor part of development in the polymers science. This article aims to allow you the deeper vision of it.

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PENETRATING CORROSION INHIBITORS FOR STEEL IN CONCRETE – EXPECTATIONS AND DISAPPOINTMENTS

Keywords: steel, concrete, corrosion, inhibitor, diffusion, effectiveness

Abstract

Accessible data on the effectiveness of penetrating corrosion inhibitors for steel in concrete are very diverging: from a high effectiveness to lack of effect on corrosion process. The performance of these inhibitors is governed by the rate of their transport in concrete and their ability to inhibit initiated corrosion of reinforcing steel. There are more and more reports indicating slow transport of penetrating inhibitors in concrete and their limited effectiveness for the inhibition of developed corrosion of steel. Conceivable reasons for the slow transport of these inhibitors in concrete were shown. Factors, which can contribute to slight effectiveness of these inhibitors or even the acceleration of corrosion, are discussed.

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ANALYSIS OF MICROSTRUCTURE OF ZINC COATINGS OBTAINED ON SELECTED REINFORCING STEEL

Keywords: corrosion, hot-dip galvanizing coatings, corrosion of reinforcing steel

Abstract

The results of microstructure investigation of galvanizing coatings obtained on reinforcing steel in the bath contained Ni, Al, Pb is presented in the paper. Detailed analysis of technical knowledge concerning problem of protection of reinforced concrete by hot dip galvanizing coatings. It has been found that application of conversion coatings eliminates promote destruction of galvanized coatings during contact by liquid concrete and at the beginning stage of concrete setting. It has been also determined that application of galvanizing coatings to protection of reinforcing steel grows ferro concrete structure production costs only about 1%. During investigations microstructure, kinetic of growth and thickness of coatings has been specified. The results allow to possibility evaluation of galvanizing of reinforcing steel application. Test of reinforcing steel galvanizing has been carried out in industrial conditions.

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HYDROPHOBIC IMPREGNATION OF CONCRETE

Abstract

Hydrophobic impregnation protects concrete against capillary water uptake and the transportation of the soluble salts causing corrosion of reinforcement and concrete structure. Silicones and particularly silanes are the most popular group used for this application. Due to the small size they can easily penetrate dense concrete structure forming inside strong covalent bonding with hydroxyl group present in CSH gel. The appropriate selection of functional organic group provides long term durability, resistance against alkali and UV. Hydrophobic impregnation does not influence breathability of the concrete. The same products can be also used as primers. In such a case they form durable layer protecting against water ingress in case of damages of the coating's surface.

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SWIPPING OF SURFACE OF GALVANIZING STEEL BY SHOT IN PNEUMATIC AND ROTOR DEVICES BEFORE POWDER AND WET PAINTING

Keywords: duplex systems, abrasive blasting, protection against corrosion, sweeping

Abstract

One of the primary factors determining appropriate quality of duplex systems is proper preparation of galvanized surface before painting. The paper discusses techniques of abrasive blast-cleaning sweeping of galvanized coating surface before applying wet paint or powder coating. The most popular method of surface preparation is pneumatic sweeping by abrasive material and wet chemical cleaning. Treatment with round or sharp-edge shot using rotor devices is an interesting alternative method. Such systems used abroad are cheaper and more efficient that traditional pneumatic alundum sweeping and through proper control of blast cleaning process parameters they guarantee very good surface properties. Results of investigations of galvanized coatings surface properties after abrasive blasting show that the blast cleaning of zinc coatings with round shot or mixture of 80% round and 20% sharp-edge shot provided thorough cleaning and appropriate surface development. Basic quantitative parameters describing surface profile after abrasive blast-cleaning sweeping have been characterized.

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THE BENEFITS OF Zn THERMAL SPRAYED COATINGS REPLACED BY Zn-Al COATINGS

Keywords: thermal spraying, the loss of coating material, coating with Zn and Zn-Al., the cost of coating, dust in atmosphere.

The paper discusses the durability and scope of both coatings, the differences in coating material losses caused by the process of thermal spraying, difference in deposition rates, and related manufacturing costs. Aspect of ecological risks resulting from the thermal spraying of both materials.

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PROTECTION, REPAIR AND MAINTENANCE OF REINFORCED CONCRETE STRUCTURES – SELECTED ISSUES

Keywords: concrete structures, repair, protection, service life, maintenance programme.

Abstract

This paper refers to the proceeding principles when the protection and repair of concrete/reinforced concrete structures are planning. The performances of products for products and systems for the repair and protection of concrete structures were presented. The possibilities of the PN-EN 1504-9 standard use in the maintenance schedules of RC structures were discussed.

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CATHODIC PROTECTION TRAINING FIELD

Keywords: cathodic protection, personnel training, field range

Abstract

The cathodic protection personnel certification process as per European Standard PN-EN 12527 involves the necessity of creating repeatable conditions during training and examining of persons applying for a certificate in the scope of application of this technology. Unfortunately, the scope of planned exercises connected primarily with specialist measurements on an object protected against corrosion is so wide, that it can be performed in a satisfying way only in a specially built experimental field range. In the elaboration already known technical solutions have been shortly described of such training objects and the concept and the possible scope of constructing such a range for implementation needs of the cathodic protection personnel certification process in Poland have been presented.

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EVALUATION OF IKOROL PROPERTIES

Keywords: surface preparation, protective coatings, corrosion protection

Abstract

The effective anticorrosion protection by coatings of corroded surface, slits and deep corrosion pits in case when the accurate cleaning is not possible, is the great challenge for corrosion specialists. There is the anticorrosive preparation IKOROL produced for the few years now by Technological Laboratory of the Chemical Department of Warsaw Technical University, available on the home market. The preparation is assigned for preparation for painting of surface, slits and corrosion pits not completely cleaned. There are results of the testing research of the preparation IKOROL properties stated in the technical sheet, presented in the lecture.

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INSURANCES OF ANTICORROSION WORKS

Keywords: insurances, insurance guarantees, civil liability

Abstract

The purpose of an article is a short presentation of the insurance solution for anticorrosion Works. Those works are made stage by stage. To each stage the proper insurance products must be offered. The most important are civil liability insurances and insurance guarantees. The article shows an idea of civil liability and its background and then insurance cover in the anticorrosion works area. Other group of products are insurance guarantees: bid bond, performance bond, maintenance bond and advance payment bond. An author presented basic difference between insurance and guarantee and also the risk of the company, which follow usual activity of the company and which is not possible to insure.

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CERTIFICATION OF CATHODIC PROTECTION PERSONNEL ACCORDING TO PN-EN 15257:2008

Keywords: certification, certification of personnel, cathodic protection

Abstract

Confirming the competence of persoen by independent third parties is essential to ensure an appropriate level of qualifications of personnel, who perform tasks that affect the safety of their activities and used equipment. The major task and responsibility of the certification body of personnel is to carry out the certification process, which is an independent and objective evaluation of certification requirements, demonstrated by candidates for specific knowledge and skills, which final result is awarded the certificate. To ensure high quality of certification programs and issued certificates, certification bodies of personnel should meet the requirements of PN EN ISO/IEC17024:2004 as well as specific standards for the specific scope certification, ie. PN-EN15257:2008 for cathodic protection personnel.

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SAFETY PROBLEMS OF REINFORCED CONCRETE STRUCTURES OF PREFABRICATED RESIDENTIAL BUILDINGS WITH REGARD TO CORROSION PROCESSES

Keywords: corrosion, durability, residential buildings, large panel structures

Abstract

Prefabricated residential buildings, which have been exploited for 40 years, are in different technical condition. The environmental impact as well as inadequate execution quality and used materials caused concern regarding safety and durability of structures. This report includes the ITB research results concerning exploited buildings. In addition to the research results, the possibility of structures corrosion was assessed and ITB recommendations were formulated.