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Centrum Prefabrykacji Rurociągów ZINKPOWER Szczecin Sp. z o.o.

## **THICKNESS OF ZINK COATING – EXPERIENCES**

Keywords: corrosion, zinc coating, thickness of zinc coating

### Abstract

Report presents the differences of zinc coating thickness got on the steel elements with the same wall thickness galvanised by the same technology including dips time, temperature of zinc bath, zinc alloy composition, chemical composition, pickling baths, and flux. This report is designed to realize the impact of kinds of steel for the thickness of the galvanizing coating. It also present the economical and corrosion issue about thickness of zinc coat.

Andrzej Głębowicz

International Paint Sp. z o.o., Gdańsk

## **INORGANIC ZINC SILICATE INTERZINC 22 RANGE FAST CURE VERSION IN LOW HUMIDITIES**

Keywords: corrosion, inorganic zinc silicate, curing

### Abstract

In the paper there were discussed problems towards application of inorganic zinc-silicate products, connected mainly with a humidity barrier, restricting chemical cure of silicate resin. A series of IP inorganic silicate product been presented. It was clarified, what are the possibilities to lower the humidity barrier and water supply methods for achieving full cure grade. Which are in general the chemical processes, speeding up the crosslinking process and at which stage they can be utilized. International Paint methods of reducing critical humidity to get full cure has been given, without any additional water spray of inorganic zinc silicate coatings.

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## **PROTECTIVE COATINGS INCREASING THE DURABILITY OF ELEMENTS OF ENERGY INSTALLATIONS, PARTICULARLY BOILERS**

Keywords: high-temperature gaseous corrosion, thermal sprayed coatings, protection against the corrosion of boilers and energy installations

### Abstract

The work presents results of laboratory tests and industrial experiences from the use of protective coatings obtained with methods of thermal spraying and laser cladding on elements of boilers. Long-lasting investigations of the coating resistance on the high-temperature gaseous corrosion in the atmosphere simulating conditions of the combustion in the boiler were performed. The corrosive environment contained, among others, aggressive compounds of sulphur and chlorine and ammonia. Investigations showed high protective effectiveness of the thermal sprayed coating on the basis of the nickel and the chromium. Investigations of the coated, made after 7 years operation in the boiler, confirmed results of earlier laboratory research.

Agnieszka Królikowska\*

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## **PRODUCTS SHOWN BY THE PAINT PRODUCERS BELONGING TO POLISH CORROSION SOCIETY AGAINST THE BACKGROUND OF GLOBAL TRENDS**

Keywords: anticorrosive paints, intumescent paints, the paint market development

Abstract

The global trends in the manufacture of paints with particular emphasis on anticorrosive paints and intumescent paints are presented. Against this background the developments in these areas and selected products shown by companies represented in the PSK are placed. The reasons of the discrepancy between products commercially available and used in practice were also considered.

mgr inż. Andrzej Miodek

PetroKor Sp. z o.o.

## **SURFACE COATING OF THE INNER SURFACES OF TUBES IN HEAT EXCHANGERS WITH THE USE OF THERMOSETTING LACQUER**

Keywords: corrosion, anticorrosive protection, surface coating with thermosetting lacquer, thermosetting of surface.

### Abstract

The paper describes a unique method of corrosion protection, which has a particular application in the situations where significant operational problem is the precipitation of scale in the heat exchanger tubes. It involves coating of the inner surface of tubes in heat exchangers with thermosetting lacquer with a use of special processing line consisting of a filling stand and a thermal cure coating stand. By the use of this technique, one receives smooth coatings resistant to chemicals, particularly organic acids and salts as well as prevents the accumulation of scale. This type of heat exchanger corrosion protection has for many years been used in PKN ORLEN SA.

Cezary Monkiewicz, Andrzej Radoszewski

ZBM Inwestor Zastępczy S.A.

## **SURFACE PREPARATION BEFORE PAINTS APPLICATION DURING MAINTENANCE WORKS OF GROT- ROWECKI BRIDGE IN WARSAW**

Keywords: surface preparation, corrosion traps

### Abstract

The Technical Specification for maintenance anticorrosion works on Stefan Grot-Rowecki bridge does not incorporate the requirements of surface preparation according to standard PNEN ISO 8501-3. The lecture describes the necessary surface preparation, especially connected with edges and welds, to achieve class P2 on the outer surfaces and P2 on the inert surfaces (according to mentioned standard)

Ewa Kościńska

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## **POLYUREA AS MULTITASK COATINGS**

Keywords: polyurea, elastomer, hydroinsulation, industrial floor

### Abstract

The paper present innovatory way to protect concrete against the corrosion. Shown polyurea multitasking coatings, which may also be used as hydroinsulation, chemically resistant or abrasive resistant coating.

Ewa Nowicka, Kazimierz Raduszkiewicz

POLWAR S.A. Gdańsk

## **FROM ALKYD TO POLYUREA CHANGES IN THE COATING AND INSULATION SYSTEMS ON BRIDGES IN THE LAST 30 YEARS – RETROSPECTION**

Keywords: corrosion, paint system, bridge

### Abstract

The paper presents a chronological change of paint systems on bridges in Poland. Based on the activity Polwar SA corrosion protection industry shows used since 1988, various coatings and insulation. Starting from phthalic by chlorinated rubber, polyvinyl, epoxy, and ending with polyurea. The paper presents the changing requirements of code and the associated anticorrosion systems applied in over almost 30 years. Also shown are as changed structures with riveted with plenty of free edges, crevices and other so-called. "Traps corrosive" on hollow sections, "friendly" protection coating.



Gerard Przychodzeń\* , Łukasz Augustyński\*\*

Pulverit Polska\* , Instytut Badawczy Dróg i Mostów\*\*

## **WOOD EFFECT IMITATION BY SUBLIMATION OR POWDER ON POWDER TECHNIQUE**

Keywords: corrosion, powder coatings, sublimation technology

### Abstract

Poland is one of the leading manufacturers of building carpentry (windows and doors) in European market. According to the Central Statistical Office Polish manufacturers exported in 2013 goods for a total amount of 1.15 billion euro. It was the second score, just behind the German leader, and well ahead Italians, whose total afford estimated to 0.5 billion euro. The achievement of such a significant position would not be possible without the implementation of the latest technology, reaching the needs of the most demanding customers. A good example of modern technology can be a technique for obtaining the imitation of the wood with a specific application of powder coatings. In the paper two methods have been presented: the sublimation technique and application of "powder on powder" which allow obtaining powder coating with wooden, marble or stone appearance.

Jadwiga Dziedzic, Daniel Izydorczyk

„GALWA-KOR” Sp. z o.o.

## **HIGH CORROSION RESISTANCE OF THE ELECTROLYTIC ZnNi ALLOY COATINGS, AS AN IMPORTANT QUALITY CRITERION FOR PROTECTION OF SMALL PARTS IN MACHINE INDUSTRY, ENERGY INDUSTRY AND IN CONSTRUCTIONS**

Keywords: electrolytic coatings, alloys coatings, zinc, nickel

### Abstract

Today, there is a clear and strong trend to replace the pure zinc coatings, with more noble metals (eg. nickel, cobalt, molybdenum). This study analyzes the effects of introducing nickel to the galvanic zinc layer. Zinc-nickel alloy coating has a higher corrosion potential, thereby yielding a significant increase in corrosion resistance and other important functional properties. Application of zinc-nickel limits the emissions of zinc to environment - nowadays an especially important aspect. The study demonstrates the properties of the zinc-nickel coating applied on small steel parts in the alkaline process (barrel line). Results of the alloy layer structure examinations are discussed, based on the metallographic specimens. Coating thickness and composition studies have been performed using X-ray fluorescence and neutral salt spray test in company lab and are further discussed in this presentation.

Jerzy Kozłowski

SLV-GSI Polska Sp. z o.o.

## **REQUIREMENTS FOR CORROSION PROTECTION OF WELDED STEEL STRUCTURES, IN LIGHT OF THE PROVISIONS OF EN 1090 AND THE DEGREE OF FULFILLMENT OBSERVED DURING AUDITS**

Keywords: corrosion, EN 1090, Declaration of performance, Regulation (EU) No 305/2011, welded construction

### Abstract

The paper presents examples of the requirements of EN 1090 with regard to the corrosion protection of welded steel structures. Reference was made also to anti-corrosion requirements contained in the referenced standards and specifications for the steel building structures. To illustrate the current state of affairs, the degree of observed fulfilment of requirements is mentioned, on the basis of experience from the audit of factory production control systems in accordance with EN 1090. The paper also draws attention to the need to hire staff with the necessary knowledge of corrosion protection of structures.

Jerzy Ziółko, Ewa Supernak

Uniwersytet Technologiczno-Przyrodniczy w Bydgoszczy Politechnika Gdańska

## **DESIGN SOLUTIONS FOR STEEL TANK BOTTOMS TO PROTECT SOIL AGAINST CONTAMINATION WITH LIQUID FUEL EFFLUENTS**

Keywords: steel tanks, tank bottoms, double bottom interstitial space

### Abstract

Design solutions and technical usefulness of two systems currently used for protection of soil against contamination with liquid fuel effluents are discussed: – tanks with double steel bottoms and monitored double bottom interstitial space, – tanks with single steel bottoms and geomembrane, with the space between these components monitored.

Krzysztof Maliszewski

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## **FACTORS AFFECTING THE QUALITY OF THE WORK CARRIED OUT ON THE SITE – INSPECTOR’S REFLECTIONS**

Keywords: design, legal and formal contractual provisions, the role of the Contract Engineer, the role of the Inspector

### Abstract

This work will regard formal aspects such as law contractual issues as well as informal aspects concerning structure of investor supervision on the building site influencing final result. It pays special attention to the formal conflict between Construction Engineer working in accordance with FIDIC and Construction Supervisor whose work is regulated by Building Law. Additionally possibilities of correcting documentation errors or making it more detailed in terms of current Polish law regulations will be discussed.

dr inż. Krzysztof Szymański, dr inż. Bożena Szczucka - Lasota

Politechnika Śląska

## **THERMALLY SPRAYED COATING AS THE SOLUTION FOR INCREASING THE SERVICE LIFE OF MACHINES AND EQUIPMENT**

Keywords: corrosion, thermal spray

### Abstract

The paper presents general information about thermal spray process and its variations. Main areas of application have been pointed out for particular types of thermal spray coatings in various industries. Several different types of coatings have been characterized for their structural evaluation and functional properties. Technical effects of particularly selected material and technological solutions have been evaluated with regard to their final use.

Krzysztof Warchoł

PPG Coatings Poland Sp. z o. o., Gdynia

## **CORROSION UNDER INSULATION AND PROTECTION AGAINST IT BY USE OF PPG HI TEMP RANGE**

Keywords: corrosion under insulation, CUI, PPG HI TEMP

Abstract:

Main goal of this paper is to give presentation about CUI phenomena. Painting systems used for protection of insulated steel pipes are overviewed and protection against CUI by use of PPG HI TEMP products is presented.

inż. Lech Adamczewski, mgr inż. Łukasz Sobczak

PGE Energia Odnawialna S.A., Oddział Elektrownia Wodna Żarnowiec w Czymanowie

## **ANTI-CORROSION PROTECTIVE COATINGS OF STEEL AND CONCRETE STRUCTURES IN ZARNOWIEC PUMPED-STORAGE HYDRO POWER PLANT – EXPERIENCE AND ACHIEVEMENTS**

Keywords: Concrete, steel, anti-corrosion treatment, protective coating, hydropower plant

### Abstract

Zarnowiec Pumped-Storage Hydro Power Plant is situated at the north of Poland, at Zarnowieckie Lake, which plays the role of natural lower reservoir. Upper reservoir is situated 125 m above, as artificial structure with ground embankment and asphaltic waterproof coating. Reservoir is connected with main power plant building by four steel pipelines. The power plant, as hydrotechnical structure, is an example of connection of steel and concrete technology in one structure, making a complex challenge in a domain of safe exploitation. Taking above into consideration, means of anti-corrosion technology are crucial for a lifetime of the structures.



Łukasz Augustyński

Instytut Badawczy Dróg i Mostów

## **PARTICULAR REQUIREMENTS FOR CORROSION PROTECTION OF STEEL STRUCTURES MANUFACTURED FOR CERTAIN OFF-SHORE PROJECTS**

Keywords: corrosion, off-shore

### Abstract

Increasing number of Polish plants manufacture steel structures for gas&oil industry nowadays. Such a market is often called Norwegian. However, the adjective seems not be valid as the great number of goods, manufactured on behalf of Norwegian companies indeed, go in other parts of Europe or even the world. Corrosion protection for gas&oil industry is usually made on the basis of the Norwegian standard Norsok M -501. This rule is not global. Each general contractor and the owner have their own internal standards, varying more or less from the NORSOK, depending on the area of investment. The differences relate to the selection of materials and technologies, pre-qualification of materials and personnel, quality assurance and so on.

Leszek Komorowski, Agnieszka Królikowska

Instytut Badawczy Dróg i Mostów

## **EFFECTS OF BISMUTH, AND LEAD ADDITION ON CORROSION BEHAVIOR OF HOT DIP ZINC COATINGS. COATING'S MORPHOLOGY**

Keywords: corrosion, galvanized coatings, alloy additions

### Abstract

Corrosion resistance of hot dip galvanized zinc coatings is affected by many factors such as time and temperature of galvanization, the type of used steel, the method of cooling, but mainly by a chemical composition of a zinc bath. In some hot-dip galvanizing plants, the lead is used as an alloy addition, in order to improve the flowing properties of zinc baths and also to protect the galvanizing bath. Due to this fact, it is mostly replaced with bismuth. The effect of alloy additions on the corrosion resistance of zinc coatings on low and high silicon content steel, with alloy additions of lead and bismuth were tested in humidity and salt chamber. Both distribution of alloy additions on the surface of the coating, thickness of the phases and appearance of the coating after trials carried out in corrosion chambers, were registered with SEM. It has been observed that corrosion is uniform, in the absence of alloy additions and is local when these additives are present.

Murray Cook, Executive Director

European General Galvanizers Association and Secretary, ISO/TC 107 SC4

## **HOT DIP GALVANIZING TO EN ISO 1461 – SPECIFICATION, INSPECTION AND APPLICATIONS**

Keywords: Galvanizing; zinc; steel chemistry; design for galvanizing

### Abstract

Hot dip galvanizing of fabricated steel components and structures is one of the oldest and most reliable methods of corrosion protection. This paper will explain how EN ISO 1461 and EN ISO 14713 are currently used to ensure correct specification and delivery of hot dip galvanized coatings. The recommendations for steel chemistry for galvanizing within steel supply standards, such as EN 10025, will also be described. The use of duplex coatings – involving either liquid painting or powder coating of galvanized steel – has increasing application in many countries. The standards and guidance related to duplex coatings will also be described, with particular attention to the most recent EN standards. Finally, the importance of long-term exposure testing to determine the comparative performance of different zinc and zinc alloy coatings will be explained, with examples of potentially misleading results of accelerated testing when compared to real field corrosion performance.

Marek Gdesz

RAFAKO S.A.

## **CORROSION PROTECTION OF POWER ENERGETIC ELEMENTS WORKING AT HIGH TEMPERATURE**

Keywords: corrosion, anticorrosion coatings, durability, warranty.

### Summary

One of the most significant parts of the power station boiler are the flue gas ducts - made of steel sheet with a thickness of approx. 6mm. They are considered as the one of the most bulky items with diameters up to 10m. The channels are produced in parts at the workshop and then assembled on the site. Due to high operating temperatures they are insulated at the last step of the installation. In the paper it has been discussed how to protect the surface against corrosion and against the potential risk of damage of coating during installation. Customer's expectations regarding warranty and durability have been pointed out.

Maciej Gruszczyński, Urszula Paszek

Politechnika Krakowska, Stowarzyszenie Producentów Betonu Towarowego w Polsce  
Instytut Badawczy Dróg i Mostów

## **DAMAGES OF CONCRETE PAVEMENTS DUE TO FAULTY AGGREGATE QUALITY**

Keywords: aggregate, concrete durability, freeze resistance, concrete pavement

### Abstract

Aggregates applied for pavement concrete production and especially for constructing grinding layer are subjected to codes classification according to determined criteria and testing methods. One of the most important properties that should be estimated within the aspect of pavement durability is freeze resistance. In the paper there is presented the problem of significant damages appearance on concrete pavement caused by the lack of freeze resistance of a certain part of the overall composition of aggregate used for grinding layer that after two winter-spring seasons resulted in total disqualification of executed layer. Aggregate admitted for the mix during code tests did not indicate any basis for disqualification. Presented problem hence refers to the verification of correctness of recommended tests and codes criteria for aggregates for concrete pavements.

Michał Jaczewski

Tikkurila Polska S.A.

## **ANTICONDENSATION AND NOISE DAMPING PAINTS FROM OFFERED BY TIKKURILA POLSKA**

Keywords: corrosion, anticondensation paints, noise damping paints, vibration damping paints

### Abstract

This paper presents paints protecting water dropping from surfaces where cyclic condensation of moisture is possible and paints noise damping. Anticondensation paints can be applied on surfaces where are dry and humid cycles, for example dairies, breweries, roofs of garages etc. Noise dumping paints can be useful for decreasing of vibration level on walls made of steel sheets in factories and manufactures, buses, coaches and railway carriages.

Monika Malicka

MALCHEM Sp. z o.o.

## **ANTICORROSIVE PROTECTION OF STEEL STRUCTURES AS DEFINED IN THE NEW TECHNICAL REQUIREMENTS OF THE POLSKIE SIECI ELEKTROENERGETYCZNE**

Keywords: corrosion protection systems, PSE paint systems, power poles, renovation, anticorrosion protection

### Abstract

The technical requirements on anticorrosive protection of steel structures used by the Polskie Sieci Elektroenergetyczne (Polish power transmission operator) and by the network of Tauron (Polish energy holding company) provide general information on the choice of painting systems for steel and galvanized steel. The purpose of the document is to enable the right choice of anticorrosive protection technologies and products (high-quality paints), and the preparation of the surfaces to be painted on both new and already used structures. A separate chapter of the document provides information on the so-called duplex system and its requirements. In this document I would like to present the protection systems approved and proposed by the company Malchem Sp. z o.o., their short description and application technology based on the applicable standards presented in the document of the Polskich Sieci Elektroenergetycznych effective since 6 June 2014.

Pier Luigi Bonora

Retired full professor of Materials Science and Technology and of Materials Corrosion and Protection, [bonora@ing.unitn.it](mailto:bonora@ing.unitn.it)

## **AVOIDABLE CASUALTIES THROUGH BETTER AWARENESS OF THE CRITICAL IMPORTANCE OF BOTH DESIGN AND MAINTENANCE**

Keywords: design, maintenance, corrosion science, safeness

Abstract:

Every manufactured article should be characterized by awareness of three fundamental parameters: safeness, functionality and service life extension to whose realization contributions are provided by: the design, the choice of both materials and assembling criteria, both active and passive surface protection, maintenance, analysis of both working conditions and environmental aggressiveness (T,P, fluodynamics, red-ox reactions...) and vision of transient/anomalous situations. A rich and various literature is available on service life extension (coatings, cathodic protection...). This paper will therefore focus only on examples related to harmful reduced safeness: explosion of a double walled lead tank due to wrong operations after acid leaching, collapse of small bridges due to under evaluated risks and lack of both inspections and maintenance and highway disaster due to weak link between side reinforced concrete barriers and the carriageway.



Paweł Lula

Tikkurila Polska S.A.

## **SELECTION AND DESIGNING OF PROTECTIVE COATINGS ON THE EXAMPLE OF INFRASTRUCTURE „POMERANIAN METROPOLITAN RAILWAY”**

Keywords: corrosion, designing, train stop shed, hot dip galvanized steel structures

### Abstract

The aim of the paper is presentation of a new investment in Pomerania - building of a municipal railway line. Basic data of project and it's realization are presented. Is discussed the design and workmanship of corrosion protection of steel structures of train stops. The paper is focused in details on hot dip galvanized steel surface pretreatment before painting, selection of paints and paint application methods.

Piotr Skrzypczak

Sika Poland Sp. z o.o.

## **SIKA® UNITHERM® PLATINUM - ONE - COAT, CHEMICALLY HARDENABLE, FIREPROTECTION SYSTEM FOR STEEL CONSTRUCTIONS**

Keywords: fire protection system, fire protection coats, steel constructions, resistance to mechanical damage

### Abstract

The paper presents the characteristics of a one-coat, epoxy based fire protection system Sika® Unitherm® Platinum which is designed to improve fire resistance rating (R15 up to R120) of steel components in comparison to traditional, three-component fire protection systems. The comparison of Sika® Unitherm® Platinum and traditional fire protection systems includes such aspects as physical and mechanical characteristics in general and drying time, adhesion strength and mechanical impact resistance in particular. Additionally, in the paper the application characteristics of Sika® Unitherm® Platinum as well as economical aspects accounting for the use of the discussed one-coat system are presented.

Romuald Baranowski

Firma Inżynierska ROBAR, Chorzów

## **FLUE GAS DESULPHURIZATION UNITS THE PROBLEM OF CORROSION PROTECTION OF PRIMARY AND AUXILIARY EQUIPMENTS IN POWER PLANT**

Keywords: power device, flue gas desulphurization, corrosion protection

### Abstract

This is the characteristic of dangerous and mechanism of chemical reaction pending in different systems of Flue Gas Desulphurisation Units of power generation exhaust gas especially near exhaust pipes, absorbers, transportation and storage systems of sludge materials. Analyze of basic desulphurization methods including corrosion protection of steel construction was carried out.

Robert Chrzanowski, Agnieszka Kulesza

Zarząd Dróg Miejskich w Warszawie

## **OVERHAUL OF THE REINFORCED CONCRETE BRIDGE SITUATED IN THE CONSERVATION AREA, WITH THE PRESERVATION OF SOME CONSTRUCTION ELEMENTS**

Keywords: bridge, beam, rebuild, overhaul, reinforced construction, reinforced concrete bridge

### Abstract

The bridge overhaul (including a heating system change) – situated in the area of nature reserve, with the usage of the old bearers and the application of the modern methods of the reinforced concrete repairs.

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\*\* Plasma System S.A, Siemianowice Śląskie

## **PROTECTIVE COATINGS INCREASING THE DURABILITY OF ELEMENTS OF ENERGY INSTALLATIONS, PARTICULARLY BOILERS**

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### Abstract

The work presents results of laboratory tests and industrial experiences from the use of protective coatings obtained with methods of thermal spraying and laser cladding on elements of boilers. Long-lasting investigations of the coating resistance on the high-temperature gaseous corrosion in the atmosphere simulating conditions of the combustion in the boiler were performed. The corrosive environment contained, among others, aggressive compounds of sulphur and chlorine and ammonia. Investigations showed high protective effectiveness of the thermal sprayed coating on the basis of the nickel and the chromium. Investigations of the coated, made after 7 years operation in the boiler, confirmed results of earlier laboratory research.

Rafał Kasak

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## **CHARACTERISTIC OF POLYMER CONCRETE USED AT BUILDING**

Keywords: polymer concrete, constructive materials

### Abstract

Polymer concrete has very admired features that are used at building industry. High mechanical strength, high chemical resistance and tightness are major advantages of this material. But all of materials have disadvantages and this one has high price. The lecture will present characteristics' comparison of particular polymer concrete types with other constructive materials. Some problems connected to this material will be also presented.

mgr inż. Tomasz Kordjak

Diagnostyka i Naprawy Konstrukcji, Warszawa

## **DURABILITY OF CONCRETE BRIDGES REPAIRS, BASED ON OBSERVATIONS OF BRIDGES RENOVATED IN 1995-2005**

Keywords: Concrete bridges, reinforcement corrosion, protection against corrosion of reinforcement, concrete repair.

### Abstract

The paper discusses the current state of repair of concrete road bridges undergoing refurbishment and rebuilt between 1995 and 2005. The analysis is carried out from the point of view of the designer of bridges and it aims to identify optimal solutions, useful in the repair of engineering structures. It also shows the most frequent cause of the failure of the repair of concrete structures in which there has been a reinforcement corrosion.

dr inż. Teresa Możaryn

Instytut Techniki Budowlanej, Warszawa

## **CORROSION PROTECTING COATINGS ON ALUMINIUM FOR ARCHITECTURAL PURPOSES - TESTING, REQUIREMENTS, EVALUATION**

Keywords: aluminium building products, powder paint coatings, anodic oxide coatings, durability

### Abstract

The paper concerns requirements for corrosion protection of aluminum building products by anodic as well as powder coatings. These requirements are related to the designing service life of building structures. The basic scope of research and evaluation of corrosion protection of aluminum profiles for construction industry were discussed following the example of harmonized documents EOTA ETAG 02 and 34.



Urszula Paszek, Agnieszka Królikowska

Instytut Badawczy Dróg i Mostów

## **EFFECT OF THE THICKNESS OF PROTECTIVE COATINGS ON VAPOR PERMEABILITY OF CONCRETE**

Keywords: protective coatings, concrete surfaces, thickness, vapor permeability, water-vapor transmission rate  $V$ , water-vapor diffusion-equivalent air layer thickness  $s_d$

### Abstract

Coatings used to protect concrete surfaces in infrastructures should provide both a barrier against water penetration into construction, and to provide for "breathing" of the concrete. This "breathing" is characterized by water vapor transmission rate. Requirements for the values are specified in PN-EN ISO 7783-2:2012 and PN-EN 1504. Vapor transmission is particularly important, because the choice of protection system is often not carefully controlled causing blistering and delamination. This paper presents the effect of the thickness of coatings based on various binders used for surface protection of concrete structures on their vapor permeability.

Witold Majewski, Krzysztof Saramowicz

Gemiprem Technologie SA

## **PASSIVE FIRE PROTECTION: SELECTED CORROSION PROBLEMS**

Keywords: passive fire protection, PFP, corrosion, corrosion under fireproofing, CUF.

### Abstract

Basic characteristics of two types of passive fire protection materials: intumescent coatings and cementitious fireproofing mortars were outlined. Some problems of cementitious materials corrosion and corrosion under fireproofing and the need for a systematic, holistic approach were discussed.

Wojciech Paszkowski

PUT Wagner – Service

**OFF-SHORE ANTI-CORROSION PROTECTION OF DRILLING RIG  
PERFORMED FOR A KOREAN CUSTOMER: DAEWOO  
SHIPBUILDING & MARINE ENGINEERING CO., LTD.**

Keywords: corrosion, off-shore

Abstract

Steel structures for the offshore segment are increasingly being manufactured in Poland. Leading petroleum companies involved in oil exploration projects order construction from specialized engineering companies such as Kvaerner, Petronas, Technip, Aker. It is an interesting challenge for skilled Polish contractors to manufacture such type of structure. However, this requires sometimes a completely different technological approach and work organization. Very often highest quality standards are not understood in detail what later causes problems in their implementation.

Hanna Matus

GAZ-SYSTEM S.A.

## **EXPERIENCE IN CATHODIC PROTECTION OF PARALLEL GAS PIPELINES**

Keywords: corrosion, pipeline, cathodic protection

### Abstract

Assessment of cathodic protection effectiveness of parallel pipelines with a different insulation level causes many measurement problems. In the lecture two cases have been described of high pressure parallel pipelines and the approach of corrosion protection specialists to their operation.

Józef Dąbrowski

Zakład Trakcji Elektrycznej Instytutu Elektrotechniki

## **CONDUCTANCE MEASUREMENTS ANOMALIES TRACKS ON WATERING CONCRETE**

Keywords: stray current, conductance tunnel rail crossing, conductance transitions rail tunnel

### Abstract

Registration using the measurement unit of the rail tunnel conductance transitions in the measurement system recommended by the standard [1] you can find on the cases presented in this work. The results of most of them are easily explainable and often repetitive, but there are situations when the polarity of the current force measurement is important and for those rare cases are given in terms of perceived job they occurred, and attempt to explain them.

Jezmar Jankowski, Wojciech Sokólski

SPZP CORRPOL Sp. z o.o., Gdańsk

## **RESULTS OF CORROSION RATE MEASUREMENTS FOR STEEL IN SOIL IN VICINITY OF CATHODICALLY PROTECTED STRUCTURES**

Keywords: steel, corrosion in soil, corrosion rate measurements, electrical resistance probes, cathodic protection

### Abstract

The paper presents selected results of long-term measurements of the corrosion rate of steel in the ground near the mounded tanks with cathodic protection. Measurements were made using electrical resistance probes with an area of 10 cm<sup>2</sup> exposed in sandy soil. Increasing corrosion losses were measured during the three years prior to the application of cathodic protection of tanks and approx. 4 years after it for both cathodically polarized and freely corroding steel. It has been observed in some cases, a marked influence of cathodic protection of tanks on freely corroding steel samples resulting in reduction in their corrosion rate.

Marek Fiedorowicz, Michał Jagiełło  
Operator Gazociągów Przesyłowych  
GAZ-SYSTEM S.A. Oddział w Gdańsku

## **SOME EXAMPLES FROM THE PRACTICE OF MEASURING THE CATHODIC PROTECTION**

Keywords: cathodic protection, cathodic protection influence, pipeline, casing, monoblock isolation joint

### Abstract

The paper shows two cases of pipelines cathodic protection measurement practice, interference and casings. It is shown that assessment of cathodic protection influence is vital to avoid wrong conclusions.

Maciej Malicki

Atagor Sp. z o.o.

## **REVIEW OF TERMS APPLIED TO CATHODIC PROTECTION STANDARDS AND COMMON PRACTICE**

Keywords: corrosion, electrochemical protection, cathodic protection, terminology, naming

### Abstract

The article takes on the subject of terminology in the field of cathodic protection of underground structures in Polish, European and ISO standards. It presents the results of terminology review of selected standards and their compliance. The examples of differences in definition of some terms in various standards are presented. Results of the review show the need to systematize and standardize terminology. The last part contains a discussion on the examples of current technical jargon terms that are used not in accordance with standard definitions.



Wojciech Sokólski

SPZP CORRPOL Sp. z o.o., Gdańsk

## **CATHODIC PROTECTION STANDARDISATION ISSUES - REVIEW OF CURRENT STANDARDS**

Keywords: cathodic protection, standardisation, European standards

### Abstract:

Standardisation activities in cathodic protection technology is conducted in the Polish Committee for Standardisation (PKN) by Technical Committee no. 290 "Special electric techniques". Due to limited financial means of PKN and lack of interested sponsors, all European standards issued at present in this area are not being translated into Polish as of 2008. In the report most important issues have been discussed, connected with continuous updating of existing European and international standards. Also, the new most important standard requirements have been presented, concerning consecutive areas of cathodic protection application in technology.