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## **CLASSIC AND MODERNITY IN CHEMICAL TREATMENT OF METALS**

Keywords: cleaning and degreasing, ferrous phosphating, paint stripping, classic technologies, new directions

### Abstract

Three processes, widely applied in industry, were described in the paper: cleaning and degreasing, conversion coatings with particular emphasis on ferrous phosphating and removal of paint coatings. Classic versions of these processes as well as new tendencies (as an effect of technological, economic and ecological requirements) were introduced. It was confirmed that these classic methods are used with success in industry. Main directions of their development include first of all the change of composition of preparations on more friendly to environment (elimination of toxic components, lower temperatures of processes, lower working concentrations) – these concerns cleaning and degreasing as well as ferrous phosphating which is a good process before painting. New directions refer to removal of paint coatings are, apart from a new technology, the EU regulations of conditions of applying of solvent preparations as well as a technological consciousness and trainings of staff engaged at these processes.

Andrzej Brandt

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## **OPTIMIZATION OF COSTS OF CORROSION PROTECTION IN THE STEEL CONSTRUCTION INDUSTRY BY UPGRADING IT**

Keywords: equipment, cleaning, painting

### Abstract

A constant upgrading of equipment applied for cleaning and painting is observed in the steel construction industry. It is mainly driven by the reduction of the costs together with the increasing requirements of environmental protection and the quality of the coatings. The main upgrades are observed among supporting facilities with the equipment for construction cleaning with the use of metal abrasives and painting rooms that allow the proper coating while maintaining the safety and environmental protection requirements.

Sławomir Cebo

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**CIVIL ENGINEERING STRUCTURES, WITH PARTICULAR CONSIDERATION OF BRIDGE  
AND BRIDGE APPROACHES (MA-91), ON THE A1 MOTORWAY FROM GDAŃSK TO  
TORUŃ – IMPLEMENTED MODERN TECHNICAL AND ORGANISATIONAL SOLUTIONS**

Keywords: bridge, motorway, A1

Abstract

The bridge has been built within A1 Gdańsk – Toruń Motorway, over the Nowe Marzy – Grudziadz section. It is a post-tensioned concrete continuous beam. Total length of the crossing is almost 2 km. It consist of three parts: the main Vistula bridge and two approach bridges. The river span is 180 m long, so at present it is the longest concrete beam span in Poland. Also the length of launched from a single casting yard approach bridge girder (991 m) beats the present national record. The main bridge has been built using free cantilevering method, the approach bridges, as it is mentioned above, were constructed using longitudinal launching method. For each motorway line an independent box girder structure has been designed. The bridge superstructure rests on 37 pile founded piers. Construction of the bridge took two years.

Robert Chrzanowski

Zarząd Dróg Miejskich m.st. Warszawy

**CORROSION PERILS AND PROTECTION METHODS DEPLOYED  
ON THE COMMUNICATION INFRASTRUCTURE - REQUIREMENTS  
OF THE WARSAW DIRECTION OF URBAN ROADS CONFRONTED  
WITH PROPOSED DESIGNS AND THEIR REALIZATIONS**

Keywords: corrosion, corrosion protection, maintenance works

Abstract

Warsaw Direction of Urban Roads investor's requirements on the new, renewable anticorrosion protections of steel and concrete engineering communication infrastructure is presented. Constant need for close cooperation between investor, designers and contractor at every stage of design and realization is underlined.

Paweł Franczak

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## **REPAIRS OF PIPELINE CORROSION DEFECTS BY 3XE METHOD**

Keywords: pipelines, corrosion, anticorrosion protection, 3XE method, repair of corrosion defects, composites, aramides, Kevlar, epoxy resins

### **Abstract**

Local defects in pipelines were discussed with special attention to corrosion defects. Repairs of such defects were presented in compliance with ISO standard specifications. One type of repair was shown in which a composite coating is applied. Kevlar tape constitutes the structural material of this coating. The repair is preceded by calculations in compliance with ISO standard which are performed by a computer program. Data concerning the type of the defect, structural and material data of the pipeline, material transported by the pipeline and its internal pressure are entered into the program. The program calculates, among other things, the number and length of coating's layers.

Anna Gerymska

Urząd Dozoru Technicznego.

## **SURFACE PROTECTION IN THE LIGHT OF STANDARDS PN-EN 1090**

Keywords: corrosion, directive, new approach, global approach, conformity assessment, surface protection

### Abstract

The paper presents a brief description of the conformity assessment in the European Union, with particular emphasis on new and global approach. The paper presents also a system for the assessment of conformity of construction products. This paper focuses on a series of standards EN 1090, the performance of steel and aluminum. Particular attention is given to entries relating to corrosion and surface protection.

Michał Jaczewski

Tikkurila Polska S.A.

## **EXPERT'S EYE ON CORROSION PROTECTION PROJECTS AND TECHNICAL SPECIFICATIONS**

Keywords: corrosion, design principles of corrosion protection, specification of corrosion protection, design errors, errors in specifications

### Abstract

The paper examines 59 designs and tender specifications for corrosion protection and fire protection using coatings. Criteria for assessing the projects were selected by basing on the ISO 12944 standard part 8th. Errors are grouped into those arising from the project design, selection of materials (specifications) and technology of coating protection

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## **ZINC HOT DIP GALVANIZED COATING PREPARATION BEFORE PAINTING**

Keywords: Hot dip galvanized zinc coatings, anticorrosion protection, surface preparation, duplex systems

### Abstract

The durability of duplex system (with hot dip galvanized coating) is described. The main attention is put on the adhesion between paint coatings and zinc surface. Zinc surface preparation methods before paint application are described taking into account standard's requirements and the results of the own investigations.



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**THE INFLUENCE OF THE CHOSEN TECHNOLOGY  
AND CHOSEN MATERIALS FOR CORROSION PROTECTION ON THE COST,  
DURABILITY AND ENVIRONMENT FRIENDLINESS**

Keywords: corrosion protection, anticorrosion paints, anticorrosion coatings durability

Abstract

The most commonly used technologies for corrosion protection of big steel structures are reviewed in their aspects of environment friendliness, application difficulties, durability and costs.

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## **OBSCURE ORIGINS OF CORROSION CONSCIOUSNESS**

Keywords: corrosion, corrosion protection, education, knowledge, consciousness

### Abstract

The corrosion consciousness is based of the knowledge taken from high school and university educations as well as information extracted from mass media. Graduates from several courses in technical universities acquire, or at least should acquire, basic information on corrosion and corrosion protection. However, the university courses do not offer specialistic knowledge on corrosion. Prospective corrosion engineers acquire this knowledge by the continuing education (post-diploma courses, workshops, trainings, apprenticeships at skilled professionals). Textbooks devoted to corrosion are also useful. However, some inconsistencies, concerning corrosion issues, occur in popular textbooks. Examples of such inconsistencies and resulting misunderstandings were shown. Some awkward pieces of information about corrosion issues, disseminated in mass media, were also indicated.

Lilianna Brzoskowska

Teknos Oliva Sp. z o.o. - Gdynia

Andrzej Kubacki

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## **PAINTS - HOW HISTORY STARTED AND WHERE DOES AIM THEIR DEVELOPMENT**

Keywords: paints, binders, pigments, rock drawings, anticorrosive painting.

### Abstract

The short history of paint's coatings from ancient history up to the present is presented. There is introduced outline from the beginning of paint industry and short review of development the binders which are used nowadays.

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## **THE EFFECTS OF ERRONEOUS PROJECTS AND UNPROFESSIONAL WORKMANSHIP OF BURIED METAL STRUCTURE CATHODIC PROTECTION**

Keywords: cathodic protection, designing, workmanship, error

### Abstract

Cathodic protection, a quite complex and very specialist anticorrosion protection technology, is the source of different types of errors in the design, workmanship and operation phases of cathodic protection installations, typically made by insufficiently educated and inexperienced technical personnel. In the paper typical errors and examples of bad workmanship have been presented, which as the result lead to an unexpected anticorrosion protection effect and excessive investment costs. As protected surfaces are usually out of sight and direct effectiveness assessment is difficult, also limited confidence of investors in this cathodic protection technology is the effect of these errors.

Michał Wójtowicz

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## **REGULATION OF THE EUROPEAN PARLIAMENT OF THE COUNCIL FOR THE MARKETING OF CONSTRUCTION PRODUCTS – PRACTICAL CONCLUSIONS ON IMPLEMENTATION IN POLAND**

Keywords: technical approvals, evaluation documents, construction products, durability, recommendations, European harmonization

### Abstract

For the important field of economy – construction – the European formal requirements have been changed. Council Directive 89/106/EEC (CPD) has been replaced by Regulation (EU) No 305/2011. This regulation will influence and change many national requirements, specially within production and placing in the market of construction products and due to implementation of the basic requirement for construction works on sustainable use of natural resources. The paper presents general problems of the implementation of the new Regulation.

Małgorzata Zubielewicz

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## **SCIENCE IN CORROSION FIGHTING**

Keywords: scientific projects; corrosion and corrosion protection; metal, organic and inorganic coatings; corrosion inhibitors; cathodic protection; testing; standardization.

### **Abstract**

Review of scientific projects related to corrosion and corrosion protection, that were granted financing in years 2005-2011, are disused in regard of using their results in practice. Projects have been divided on a few subject fields: corrosion and corrosion testing, microbiological corrosion, corrosion of steel in concrete, corrosion in power engineering, corrosion in agriculture, surface treatment – preparation of surface layers for corrosion protection, metallic coatings – hot-dip coatings, thermal spraying coatings, organic coatings – test methods, intumescent coatings and based on conductive polymers, new paints and binders, conversion coatings, composite and sol-gel coatings, cathodic protection, corrosion inhibitors and standardization. The main criterion of granting the projects is their scientific value, however, many realized projects have also practical significance and their results may be applied in different industrial branches.