

## DIGITAL CONTROL ECOSYSTEM FOR STEEL PLANT INSTALLATIONS

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**Rezumat.** *Articolul propune un sistem de control pentru o instalație de încălzire a aerului care alimentează un furnal. Obiectivul principal constă în proiectarea și implementarea unei soluții adecvate acestui tip de proces care asigură o prelucrare eficientă a instalației și optimizează procesul de combustie, o sursă de poluare recunoscută la nivel industrial. Structura de control este organizată ierarhic pe două niveluri: nivelul de execuție care controlează parametrii cheie ai procesului de combustie și încălzire a aerului și nivelul de supervizare care optimizează procesul de combustie necesar încălzirii aerului și minimizează gradul de poluare a mediului înconjurător.*

**Abstract.** *The paper proposes a system control configuration for air heating installations which aliment the blast furnaces. The main objective is to design and implement an adequate solution for this type of process which ensures efficient treatment for heating the air of the steel plant and optimizes the combustion process, an important supplier of the required energy and a recognized industrial source of pollution. The proposed control structure for the air heating process is organized across two interconnected levels in a hierarchical configuration: the execution level to control the key parameters of the combustion process and the heating air process and the supervision level for optimizing the combustion process, necessary for heating the air and for minimizing the degree of environment pollution, respectively.*

**Keywords:** Steel plant, control, optimization, pollution

### 1. Introduction

The complexity of metallurgic and steel facilities and their operational difficulties are well known. This type of installation is recognized as the sources of pollution in industrial environment [1, 2].

Significant improvements in the operation of these facilities were achieved after the emergence of digital control and high-performance computing equipment [8].

Economically and commercially, the most important evaluation criteria in a steel plant are price, quantity and quality of production.

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