



Short Course RECYCLING OF IRON & STEELMAKING BYPRODUCTS

November 12-13, 2019

Howard Johnson 9 de Julio, Buenos Aires, Argentina

<u>Instructor & Methodology</u>	<u>Public, Objective & Background</u>	<u>Program</u>	<u>Evaluation</u>	<u>Venue & Timing</u>
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Instructors:

Jorge Madias. Metallurgical Engineer, UTN – Buenos Aires Regional School. From 1973 to 1980 he worked for the foundry industry and for the coke & recarburizers industry. From 1980 to 2008 at the **Instituto Argentino de Siderurgia (IAS)**, as Researcher in the Raw Materials Division, then at the Steelmaking Division, then Steelmaking Division Manager, finally **Technical Director**. Since 2008, **metallon Director**. He has more than 200 publications in local and overseas journals and conferences, as well as two book chapters. Member of the Editorial Board of Metallurgical Research and Technology (formerly Revue de Métallurgie). He has lectured short courses on metallurgy, in Latin America and the Middle East. Member of ABM, AIST, ASM, IOM3, SAM and SEASI.

Methodology: Interactive lecturing; case studies; exercises; observation of videos

Public:

Those with interest in processing / recycling of slag, dust or sludge from blast furnaces, oxygen steelmaking and EAF plants, as well as refractories and scale.

Objective: The attendants will acquire knowledge on the different existing alternatives to process wastes; their strengths and weaknesses; success and failures in their application.

Background: This course was lectured by first time in open format in 2015 at Hotel Colón, Buenos Aires, Argentina, in 2016 at Howard Johnson 9 de Julio Hotel, Buenos Aires, Argentina, in 2017 in metallon headquarters, San Nicolas, Argentina, and in 2018 again at Howard Johnson 9 de Julio, with attendance from steel companies, service corporations and consultants from Argentina, Brazil, Chile and Uruguay.

Besides, it was lectured in company at Acerías Paz del Río (Votorantim Group), Colombia, in 2018.

Hours: 16

Outline:

1) Introduction

Iron and steel industry wastes. Specific generation. Reuse in the process. Internal recycling. External recycling. World and regional figures. Books and events on the matter.

2) Blast furnace slags

Characterization. Influence of operating aspects. Properties needed for cement production. Wet processing. Dry processing. Other uses. Recent trends. Case study.

3) Steelmaking slags

Characterization. Oxygen steelmaking slag; EAF slag (carbon and special steels). Processing. Technological alternatives. Recent trends. Case study.

4) Blast furnace dust and sludge

Formation and characterization. Influence of gas treatment system. Influence of furnace operation. Ways for internal recycling (blast furnace, converters, cupolas, rotating hearth furnaces) and external recycling (cement plants, dedicated blast furnaces). Latin America situation.

5) Oxygen steelmaking sludge and dust

Formation and characterization. Influence of off-gas cleaning system. Ways for internal recycling (sinter plant, blast furnace, converters) and in dedicated units (cupolas, rotating hearth furnaces) and external recycling (cement plants, dedicated blast furnaces). Latin America situation.

6) EAF dust

Formation and characterization. Ways for internal recycling (injection) and external recycling (Waelz furnace, RHF, shaft furnaces, smelting reduction). Latin America situation.

7) Rolling and continuous casting scale

Formation and characterization. Internal recycling (sinter plant, briquettes). External characterization. Cement industry.

8) Spent refractories

Figures. Characterization. Internal and external recycling. Experiences in Europe, Asia, North America and Latin America.

Evaluation

10 questions, multiple choice type. For certificate of approval, seven right answers are requested. If this is not the case, a certificate of attendance is issued.

Venue & timing: Howard Johnson 9 de Julio, Bernardo de Irigoyen 432, Buenos Aires; 8.30 am to 5 pm.

Hotels:

Howard Johnson 9 de Julio, Bernardo de Irigoyen 432, Buenos Aires. Reservations: reservas@hj9dejulio.com.ar; phone +54 11 5222 9000.

Exe Hotel Colón****, Carlos Pellegrini 507, Buenos Aires. Reservations: reservas@execolon.com.ar or www.execolon.com.ar; phone +54 11 4320 3500.

Hotel Panamericano****, Carlos Pellegrini 551, Buenos Aires. Reservations: www.panamericano.us; phone +54 11 4348 5000.

Transportation:

From Aeroparque (AEP) and Ezeiza (EZE), buses or "remises" (car with a driver) of Manuel Tienda León company can be used, or the cab service of the respective airport.

Registration fee: USD 690

Cancellations 10 days before the course date have 10% charge. After the deadline, there is no refunding but registration to another course. Change of attendants can be made

until course start. If the course is postponed due to force majeure, the course organizers are not responsible for covering trip, hotel or other costs assumed by the attendant.

Registration includes colour-printed course notes with the course slides; a CD or pen drive is added, too, including the slides, spreadsheets, videos and simulations, further readings for each chapter and exercises. Coffee breaks, lunches and certificate of approval or attendance are included, too.

Additional information and off line registration: Phone/fax =54 336 442 1318; e-mail cursos@metallon.com.ar

Registration Form

Full name: _____

Company: _____

Job title: _____

Address: _____

City: _____ Zip Code: _____

State: _____ Country: _____

Phone_: _____ Fax: _____

e-mail: _____

Payment

Wire transfer: Ask for data to cursos@metallon.com.ar

Check on the name of Jorge Madias; send to **metallon**, 9 de Julio 432, B2900HGJ San Nicolas, Buenos Aires, Argentina