12th North American Waste to Energy Conference
May 17-19, 2004, Savannah, Georgia USA
NAWTEC12-2227

Seghers Boiler Prism: a Proven Primary Measure against High Temperature Boiler Corrosion

Bart Adams
SEGHERS Keppel Technology Group
Hoofd 1 – 2830 Willebroek, Belgium
Tel: +32.3.880.77.00, Fax:+32.3.880.77.99
E-mail: bart_adams@segherskeppel.com

Kris Peeters
SEGHERS Keppel Technology Group
Hoofd 1 – 2830 Willebroek, Belgium
Tel: +32.3.880.77.00, Fax: +32.3.880.77.99
E-mail: kris_peeters@segherskeppel.com

Dirk Eeraerts
SEGHERS Keppel Technology, Inc
1235-F Kennestone Circle, Marietta, GA
30066, USA
Tel: 770 421-1181, Fax: 770 421-8611
E-mail: dirk_eeraerts@seghersgroup.com

Herman S.W. Diederen
NV Afvalverbranding Zuid-Nederland (AZN)
Middenweg 34, Nr. M365, PB 21, 4780 AA Moerdijk
Tel: +31.168.38.54.00, Fax:+31.168.38.54.99
E-mail: h.diederen@nvAZN.nl

Jac P.F. Wijnhoven
NV Afvalverbranding Zuid-Nederland (AZN)
Middenweg 34, Nr. M365, PB 21, 4780 AA Moerdijk
Tel: +31.168.38.54.00, Fax:+31.168.38.54.99
E-mail: j.wijnhoven@nvAZN.nl

Abstract

This paper constitutes a follow-up on a presentation at NAWTEC 10 (2001) [1]. It contains novel insights regarding the operation of the Seghers Boiler Prism and its effectiveness as a primary measure against high temperature boiler corrosion in WtE plants.

Starting from the currently available fundamental understanding on high temperature corrosion and the main features of the Boiler Prism, the operation as a primary measure is explained.

Since the previous presentation, three additional Boiler Prisms were successfully commissioned as a retrofit at a large WtE facility (3 x 705tons/day at 4,700BTU/lb; 110tons/hour steam at 1,450psi, 750°F) in the Netherlands. Together with the previously installed prisms, this brings the combined operational experience from all trains to more than 15 years.

The main data and experience of the retrofit project in the Netherlands are discussed and results regarding the performance of the prism are presented in detail. The latter are based both on existing process monitors as well as dedicated measurement campaigns and include:

- temperature and oxygen distribution in the 1st radiation pass,
- feedback on corrosion rates,
- influence on the combustion quality, and
- impact on the effectiveness of the mechanical cleaning equipment.

The results confirm the effectiveness of the prism as a primary measure against high temperature boiler corrosion and highlight the additional operational benefits.