



THE INSPECTIONEER POST

Fueling the Minds of Electricity

INSIDE THIS ISSUE:

- Acid Dew-Point Corrosion: causes, corrective action, and inspection.
- Boiler MACT Compliance Strategies

Boiler Tube Failure Reduction Program
Streamlining the Process
17th Annual All Users Conference

January 10 – 12, 2012

The Reach Resort*

1435 Simonton Street

Key, West, FL 33040

(866)397-6427

Three full days 8AM — 3:30PM
with speakers to include:

John M. Cavote

&

Jon S. Cavote

United Dynamics "AT" Corporation

Mike Neundorfer

&

Steve Ostanek

Neundorfer Particulate Knowledge

Richard (Dick) Storm

Storm Technologies Inc.

Stephen Storm

Stephen Storm Inc

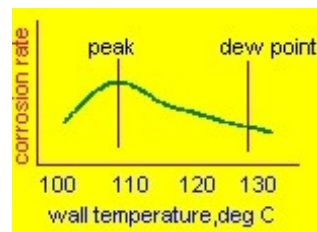
“ACID DEW-POINT CORROSION” LEADING CONTRIBUTORS AND PREVENTATIVE ACTIONS

The combustion of most fossil fuels, natural gas being one exception, produces flue gases that contain sulfur dioxide, sulfur trioxide and water vapor. At some temperature, these gases condense to form sulfurous and sulfuric acids. The exact dew-point depends on the concentration of these gaseous species, but it is around 300° F. Thus surfaces cooler than this temperature are likely locations for dew-point corrosion. Any point along the flue-gas path, from combustion in the furnace to the top of the chimney, is a possible site.

The obvious locations are openings to the furnace, support penetrations through the roof, leaks around superheater, reheater and economizer penetrations, and of course, the air preheater.

In boiler terminology, "acid dew-point" refers to the sulfuric-acid dew-point, as

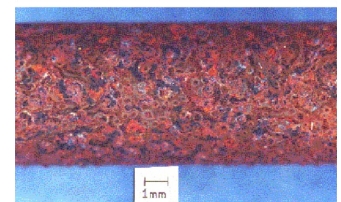
this is the highest dew-point temperature. Both sulfurous acid and hydrochloric acid co condense at lower temperatures. For hydrochloric acid, the dew-point may be as low as 130F. While the precise dew-point for sulfuric acid depends on the sulfur-trioxide concentration, at 10 parts per million sulfur trioxide in the flue gas, the dew-point is 280F.



Dew-point corrosion is exacerbated in coal-fired boilers by the presence of fly ash. Fly ash accumulates throughout the flue-gas path, and the resultant deposit acts like a sponge to collect both moisture and acid,

especially during shutdown cycles.

The root causes of low temperature corrosion can be verified by determining the acid dew point temperature, which is defined as the temperature at which the combustion gases are saturated with sulfuric acid. The acid dew point varies directly with the amount of SO₃ in the flue gas. The metal and gas temperatures in the economizer can be measured to ascertain that they are above the acid dew point obtained during the various phases of boiler operation.



Low temperature corrosion produces tube wall thinning

LOOKING AHEAD

UDC and our alliance team comprised of Storm Engineering, David N. French Metallurgists and Neundorfer Particulate knowledge are equipped and able to assist you in determining your best strategy for complying with Boiler MACT rules. Every site being unique requires a well thought out and planned approach for compliance. A comprehensive report for emission inventories is one essential element in the determination your facility's status and time is a crucial factor. Now is the time to set your plans in motion.

We're equipped to assist your organization prepare a step-by-step program to determine your facility's individual Boiler MACT compliance status. Our approach is underpinned with experience covering process expertise as well as modeling experience and analysis of operational variables. We evaluate your emission inventory estimates and perform a check of the current status of your organizations situation relative to Boiler MACT rules. Identification and evaluation of best potential compliance strategies are formulated based on the complete picture from the coal pile to the stack insuring the results are a recommendation for a path forward assisting you to achieve compliance.



United Dynamics
Advanced Technologies

2681 Coral Ridge Road
Brooks KY, 40109

Phone: 502-957-7525
Fax: 502-957-5441
E-mail: Sales@udc.net

Visit on the web
www.udc.net

The Name Behind The Flame



Tube surface conditions may appear similar to cold side, or moisture assisted corrosion.



Written By:

Jon Santino Cavote
(President / COO)

Sherri L. Hart
Manager Marketing, Sales,
Education



United Dynamics Corporation

Coming Soon UDC's "ALL NEW WEBSITE"

United Dynamics Advanced Technologies are proud to announce the launch of our new website with many new features. The new developments for site will serve to better assist us in connecting with our clients. News and topics focusing on current industry specific information will be among the many values in this greater connectivity to you our clients.

UDC also goes Social with our presence on popular social media platforms. We want to connect with you where you are.

Facebook & Linked-in for those who stay connected through personal network platforms. Look us up to connect



John Cavote—Laurie Cavote—Jon Cavote—Tina Sage
Jason Shankle—Robert Bevilacqua— Sherri Hart



"Like us" on Facebook - United Dynamics Advanced Technologies Corporation



Twitter provides us a connection to the micro-blogging community. Clients who are seated to gain insight into current trends within the industry are connecting with those of like interest worldwide. We invite you to "Follow Us" on Twitter - UnitedDynamics



YouTube—allows us to share short informative video clips with tips or industry related information valued across the power generating community .



(502) 957-7525
www.udc.net

exceeded. The external surface will have a gouged appearance where the corrosion activity has occurred.

Corrective action:

Corrective actions involve raising the gas and metal temperatures above the acid dew point temperature, lowering the acid dew point temperature by reducing the SO₃ below 1%, or by injecting magnesium oxide based fireside additives has also been successful in preventing low temperature corrosion, however this may not be feasible for many types of boilers. Chemical injection has been applied primarily in oil fired boilers.

Similar damage occurs in oil fired boilers when the units

are water washed to remove ash and the final rinse does not neutralize the acid salts. Sodium carbonate or washing soda should be added to the final rinse as a basic solution to neutralize the acidic ash constituents.

Inspection & monitoring:

Wall thickness measurements by UT methods will monitor the wastage in economizer as well other affected component tubing.

