**An Update on Biomass Boiler OFA System Upgrades**

For a large number of projects, the rising cost of auxiliary fuel (natural gas, oil, coal) provides the economic ‘incentive’ for the OFA delivery system for upgrades. In many cases, an improvement in the local load’s environmental performance is as much (if not more) important (i.e., Boiler OFA).

Key elements in the Jansen approach and project execution are:
- A thorough initial process evaluation is conducted to characterize the boiler and identify its individual strengths and weaknesses.
- CFD modeling is used early to evaluate design options and verify that the project goals can be met.
- A customized, engineered solution is developed that is tailor-made for each boiler.
- Jansen uses relatively few but large Jansen High Energy Combustion Air Nozzles that provide excellent OFA air penetration and mixing. The Jansen nozzle-mist provides high jet velocities without sacrificing fuel combustion air pressures. As a result, in most of our upgrades, the existing FD fan can be used to supply OFA and no new fans are needed.

**Our success is based on professional and personal relationships with our customers, commitment to excellence, open-door policy for continuous support and repeat business, and look forward to another successful 30 years!**

RECEIVE OUR Newsletter by E-mail

Send your e-mail address to Firstname.Lastname@jansenboiler.com or Arie Verloop at 425.952.2825, or Mike Britt at 425.952.2829 or Mirela Dumitru, Dave Tracey, Matt Henderson, John Toomer, Mark Leffler, Steve Campbell, Mike Britt, John Lurvey, Jan Hulteen, Cathy Thomas, Pat Azeltine, and Samit Pethe.

For further information and specific questions, please contact
- John LaFond (503) 930-5250, or Mike Britt at 425.952.2829 or by e-mail at info@jansenboiler.com.

- Jansen Combustion and Boiler Technologies, Inc.
- RECOVERY & POWER

**INSIDE THIS ISSUE**
- An Update on Biomass Boiler OFA System Upgrades
- Our experience in providing innovative solutions relates to our long partnership with a number of companies. As a result of its breadth and scope, and size of its projects, Jansen has developed a number of successful and unique solutions for biomass systems, whether we are new builds or system upgrades. Jansen’s long-term relationship with the Biomass Energy Facility in Longview, WA has led to the successful development and implementation of a number of unique solutions, all of which have been documented in this newsletter.

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**Jansen celebrates 30 years of Customized Engineered Solutions!**

On the 18th of January 2006, Jansen officially celebrated 30 years of being in business. Anniversary activities included an Open House on January 13 and an employees’ promotion on January 21. In this newsletter, through these special articles, we would like to look back at the Company’s beginnings, the growth years, where we are today, and where we are going.

For 30 years, Jansen Combustion and Boiler Technologies, Inc. has delivered the highest standard of professional engineering services to owners/operators of industrial waste-fired boilers. Starting in 1976 with combustion and boiler process consulting and providing design concepts for modifications and upgrades, today we provide fully customized engineered solutions for biomass, chemical recovery, municipal waste (MSW) and fossil fuel-fired boilers. Recognized as the premier boiler specialists who provide full-service design and engineering, equipment procurement, construction capabilities, and field services, we oversee the operational performance and fuel economy of numerous waste-fired boiler systems.

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**An Update on Biomass Boiler OFA System Upgrades**

Since 2000, Jansen Combustion and Boiler Technologies, Inc. has been involved in numerous projects in the waste-to-energy industry and system upgrades on forty (40) biomass boilers in the Forest Products Industries. With these upgrades (of which several are under contract for installation in 2006), to the best of our knowledge, Jansen continues to supply the most biomass boiler OFA systems.

A breakaway original equipment manufacturer (OEM) shows that these OFA systems were initially on many natural gas-fired plants (e.g., Babcock & Wilcox (B&W), Combustion Engineering (CE), and Minneapolis-Moline), with the remaining six in a Erie City (2), Zurn, Kippel, and Riley (2) units. Many of these older projects are supplied to “repeat customers”, such as International Paper, Minnesota Power, Wisconsin Paper and SKP, three of these four companies have placed a combined total of twenty-seven (27) OFA upgrade orders.

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**In recent years, Jansen has provided superheater modification designs for several waste fueled boilers.** With increased emphasis on in-house power generation, many plants wish to improve the performance of their boiler’s superheaters, i.e., by increasing steam temperature and/or pressure.

A brief synopsis of these Jansen projects are:

**Boiler A.** Jansen design/supplied a replacement superheater for a spent sulfite liquor (SSL) recovery boiler in operation in western Canada. The Combus superheater for a spent sulfite liquor red liquor recovery boiler in operation in western Canada.

**Boiler B.** Jansen designed new superheaters for three identical Municipal Solid Waste (MSW) incinerators. By original design, at the time of installation, Babcock & Wilcox did not produce superheated steam, and with the purchase of a new unit, the existing facility, the units had to be retrofitted with superheaters.

The Jansen scope of work consisted of the following activities:
- Preparing drawings for structural modifications.
- Preparing ASME calculations.
- Preparing general arrangement and fabrication assembly drawings for the new superheater and associated equipment modifications.
- Preparing fabrication specifications for the new superheater and associated equipment.
- Preparing drawings for structural modifications.
- Preparing material data sheets for the new superheater and equipment.

The superheaters have been in service since 2003.

**Boiler C.** Jansen designed new superheaters for twenty companies that have placed a combined total of twenty-seven (27) biomass waste fuel-fired boilers.

**Jansen provides project management, design, fabrication, and delivery to the mill. Installation of the superheater modification will take place during the boiler outage schedule for May 2006.

For further information and specific questions, please contact
- John LaFond (503) 930-5250, or Mike Britt at 425.952.2829 or by e-mail at info@jansenboiler.com.

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In April 2004, 31 Winter 2006, it was again being sent by e-mail to our contacts for whom we have an e-mail address, they will be sent an ordinary postal service. We have included in this newsletter the electronic distribution list for our bi-annual newsletter, you are given the following choices:

- Prefer receipt by e-mail (no regular mail)
- Prefer receipt by regular mail (no OFA assinged)
- Prefer both mailings (e-mail and regular mail)
- Do not wish to receive OFA and therefore not on the distribution list

To receive this and upcoming Newsletters electronically, please send your e-mail address to Firstname.Lastname@jansenboiler.com or Arie Verloop at 425.952.2825, or Mike Britt at 425.952.2829 or by e-mail at info@jansenboiler.com.
How the Company had its beginning...

Johan H. Jansen, P.E., Founder and Past President

In a darty and rainy day early in January 1976, I received a telephone call from John Carlson, President of the Boeing Technical Services West Coast Operations (inviting me to a dinner meeting with George M. Pace and George J. Heyman in order to discuss the creation of multiple pulp and paper plants). The call was initiated because the company needed someone with strong recovery boiler expertise to fill that position. I accepted the offer.

The first Port Angeles mill I visited was that of Grumman in May 1978. Grumman's interest, as it turned out, was to appoint me to the position of Corporate (Company) Engineer. However, it was learned that I was not the right person for the job. Instead, my company needed someone with strong recovery boiler expertise to fill that position. I accepted the offer.

In the early 1990s, the Company went through some challenges due to the lack of employees and the failure of our custom- ized software. The company was struggling to keep up with the demands of our clients. With the arrival of personal computers and advances in engineering technology, the Company quickly grew. The company was first named J.H. Jansen Company Inc. and changed its name to JANSEN.

Jansen's projects in recent years have included combustion system upgrades on biomass and chemical recovery boilers. The company's projects have been recognized for their innovative and efficient designs. Jansen has been in the forefront of developments in the field of combustion engineering and boiler technologies, and has been involved in the design and development of a variety of boiler and process systems.

Since our last newsletter (Summer of 2005), the company has continued to maintain a strong commitment to the development and integration of innovative and efficient technologies in the field of boiler design and operation. The company has continued to engage in research and development activities to improve the performance and efficiency of its boiler systems, and has been involved in a number of projects aimed at reducing emissions and improving the reliability of its systems.

In the future, the company plans to continue to focus on the development and integration of innovative and efficient technologies in the field of boiler design and operation. The company aims to further improve the performance and efficiency of its boiler systems, and to continue to engage in research and development activities to address the challenges of reducing emissions and improving the reliability of its systems.

For further information or a specific project, please call Cathy Thomas at 425.932.2852, or e-mail at cathythomas@jansenboiler.com. Additional contact information is available on the company’s website at www.jansenboiler.com.
How the Company had its beginning...

Johan H. Jansen, P.E., Founder and Past President

A dark and rainy day early in January 1976, I received a telephone call from a friend at the Jansen Boiler Company (now Jansen and Boiler Technologies, Inc.), asking me to meet with him in the West Coast Club (inviting me to a dinner meeting with George Scofield, then the CEO of the company in charge of production nationwide), from the company’s New York office. The call was from Arie Verloop (Company President), and he was informing me that the new B&W spent silica recovery boiler they had installed and were operating was a failure in Port Angeles, WA.

Their interest, as it turned out, was to appoint me to the position of corporate sales representative. It was a position that was created and that was available. It meant that your company needed someone with strong recovery boiler experience to fill that job.

I politely declined the offer and instead proposed to work with ITT Rayonier as an agent. Their answer was a no. They told me that they were in a situation where they had at least half the available hours for the coming year. The parties agreed and the J.H. Jansen Company became a reality.

Company headquarters were located in our home in Bellevue, WA. The first company asset was an IBM typewriter. A few years later the company moved to a 900 sq. ft. space in Redmond, WA, and later on to a converted home in Woodinville, WA.

reported to the Port Angeles office on January 16, 1976, and worked on the project to improve the operation of the recovery boiler. I had been involved in processing wood waste for a local pulp company, Pacific Paper Company, before joining the Jansen Company.

I communuted between Bellevue and Port Angeles, coming home on the weekends where I had to get-acquainted with the family and to write the weekly reports.

After the Port Angeles project came to an end I was asked to work at the plant at the Jansen Boiler Company in Sweden (now Jansen, Arie’s brother, who was the founder of Arie Verloop Co., Wilco Company. I commuted between Bellevue and Port Angeles, coming home on the weekends where I had to get-acquainted with the family and to write the weekly reports.

Over the last few days of the month of January, the climate was quite mild. I quickly got into the swing of things and was very excited about the new opportunity that was available to me.

Within the first 30 days of the month, I was hired as a full-time employee of the company.

In March, I reported to the Port Angeles office and began working full-time at the company.

The growth years...

 subsidiaries, and technology and client relations.

When I came from Holland in 1983, I was excited about the challenge and adventure that was awaiting me. But had I known what a challenge it would be to stay for a couple of years and then go back to the Netherlands, I would have likely turned it down.

The first four years of my tenure were focused on the growth of the company. During this time, we expanded our service offerings, improved our technology, and increased our customer base.

After the first four years, we had achieved some significant milestones.

• Process Equipment / Barron Industries
• Chemical recovery boiler performance evaluation.
• Boiler circulation studies and UFM data collection.
• CFD modeling of biomass and chemical recovery boilers.

Where we are today and where we will be going...

Edward ("M.C.") C. Dye, P.E., President

Over the last 30 years, we have grown from a small company that provided services to a large company that specializes in developing technology that is used in the boiler industry all over the world.

Today, the Company is well-known for its excellence in the field of boiler technology.

The growth of the company has been steady and continuous, and we continue to be one of the leading companies in the field.

Where are we today and where we will be going...

Edward ("M.C.") C. Dye, P.E., President

The Company has grown significantly over the last 30 years. We have expanded our services and have become one of the leading companies in the field.

We have developed a strong reputation for excellence and have established ourselves as leaders in the industry.

The Company continues to grow and expand, and we are committed to providing the highest level of service to our clients.

The Company’s mission is to provide the highest level of service to our clients and to continue to grow and expand in the future.

Where are we today and where we will be going...

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How the Company had its beginning...

Johan H. Jansen, P.E., Founder and Past President

> How the Company had its beginning...
> How the company had its beginning... H. Jansen Company could be "the" recovery and power boilers and I had requests from companies such as Weyerhauser, Georgia-Pacific, Scott Paper, Temco and others to provide boiler engineering services.

In the meantime the Recovery Boiler Committee of the American Paper Institute (now ARRA) requested me to assist them in writing the Recovery Boiler Reference Manuals. This project started in 1979 and ended in 1981. Three volumes were published.

J.H. Jansen Company became a structured group when International Paper Company hired me to conduct power plant surveys of most of their pulp and paper mills. The American Forest and Paper Association then got together to conduct Power Plant Surveys at 13-IP mills over the next couple of years. We had hundreds of mill owners to thank for this.

The goal of this company had got started and it con- ducted business in the first years of its history.

> The growth years...

Edvard ("Ed") C. Dye, President

Over the years we have developed a firm that specializes in operational support only to those that provide full services - from problem diagnosis, through solution creation, to design, material supply, and equipment installation. By promoting the responsibility for power house projects, our custom- ers get much better service and our maintenance challenges face all production facilities.

Jansen’s projects in recent years have included combustion system upgrades on biomass and chemical recovery boilers, biomass boiler superheater design and supply, and chemical recovery boilers using state of the art materials. We have also provided services to new boiler island upgrades that include new fuel feed systems, furnaces, burner modifications, generating biosolid economies, mechanical, data sheet controls, and particulate emission abatement systems.

It is our intention to be the “go-to” company whenever a customer has a challenge with any boiler house. By customizing our solutions to meet the customer's needs and completing on-time, on-budget, in an exemplary manner, we strive to be the first choice for boiler retrofit projects.

Did you know...

The company was formed as sole proprietorship and was incorporated in 1981.

Five different office locations have been used, beginning with the family room above the garage in the Jansen's home. We're in our 9th year in our current location in Woodinville, WA.

10 years. That percentage increases to 75% for employees with at least 5 years. The growth of the company has been in place for over 16 years. Some of the locations have been vacated.

We now have worked in the following countries: USA, Canada, Venezuela, China, France, Germany, Czech Republic, Argentina and South Africa.

Our chemical recovery boiler air systems have been in use at 76 large industrial boilers, with modernized, higher capacity, and more efficient air delivery systems, using multiple units over the years.

After the Palatka success, word spread around quickly, and within a few years Jansen Company had designed and supplied air system upgrades on more than 100 recovery boilers. Because of continued growth, we moved offices again (some of you will remember Woodinville), and in the early 1990s, the number of companies was 30. To better reflect our capabilities and experience, in 1996 we changed our official name to Jansen Combustion and Boiler Technologies, Inc., or Jansen.

In the meantime, the side-by-side technology of the company continued to rely on two pillars of strength, namely our analytical process engineers and the process engineers as well as the mechanical design engineers, which was later expanded to include our pressure vessel engineers. In both, our clients recognized our expertise in keeping a recovery boiler to single fuel burning with the existing boiler fuel capacity, and in ensuring a high level of availability. We had been successful in solving problems of converting boilers to dual fuels, in providing complete boiler house solutions that offer not only full load but in particular high back-up capacity, for gas and oil burners.

» The workshop is by invitation and prior request only and is free of charge. Jansen reserves the right to single out new trends to ensure the workshops at any time without obligation or liability. To be able to attend the workshop and receive additional information, please call Cathy Thomas at 425.932.5052, or visit ARI at cnyt.com by e-mail to cathy.thomas@ari.com.

Boiler House Cartoons on Jansen Website

A collection of boiler house cartoons can be viewed on our website: www.jansenboiler.com. Some 30 cartoons and specific project references can be found on our website at www.jansenboiler.com.
For a large number of projects, the rising cost of auxiliary fuel oils (natural gas, oil, coal) provided the economic ‘impetus’ for the OFA delivery system upgrades. In many cases, an improvement in the boiler’s overall environmental performance is as important (if not more so) as the ‘bottom-line’ improvement in thermal efficiency. Jansen carries out a thorough and comprehensive evaluation of the boiler’s overall environmental performance and makes recommendations to achieve the best overall improvement.

A brief synopsis of these Jansen projects are:
- Preparing installation detail drawings and associated equipment modifications.
- Preparing fabrication instructions for the new superheater and associated equipment modifications.
- Preparing drawings for structural modifications.
- Preparing installation detail drawings and associated equipment modifications.

The Jansen News on the 16th of January 2006, Jansen officially celebrated 30 years of being in business. Antennary activities included an Open House on January 13 and an employers’ dinner on January 21. In this newsletter, among three special articles, we look back at the Company’s beginnings, the growth years, where we are today, and where we will be going.

For 30 years, Jansen Combustion and Boiler Technologies, Inc. has delivered the highest standard of professional engineering services to owners/ operators of industrial waste-fueled boilers. Starting in 1976 with combustion and boiler process design and providing design concepts for modifications and upgrades, today, we provide fully customized engineered solutions for biomass, chemical recovery, municipal waste (MSW) and fossil-fueled boilers.

Received recommendation to specify who provide full-service and process design engineering, equipment procurement, construction capabilities, and field services, we provide the operational performance and fuel economy of numerous waste-fueled boilers.


An update on Jansen Combustion and Boiler Technologies, Inc. system upgrades for 2006, totally based on our intent for a new 30 year in business. Antennary activities included an Open House on January 13 and an employers’ dinner on January 21. In this newsletter, among three special articles, we look back at the Company’s beginnings, the growth years, where we are today, and where we will be going.

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**DESIGNING Superheaters**

In recent years, Jansen has provided superheater modification designs for several waste fueled boilers. With increased emphasis on on-site power generation, many plants wish to improve the performance of their boilers’ superheaters, i.e., by increasing steam temperature and/or pressure.

A brief synopsis of these Jansen projects are:

**Boiler A.** Jansen design/supply a replacement superheater for a small (35 psig) natural gas fueled recovery boiler in operation in western Canada. The Combustion Engineering (CE) type unit was installed in the mid 1970’s to produce 470,000 lb/hr of steam at 600 psig and 725°F. After over 25 years of service, due to metal loss and failures, a complete replacement of the two superheater sections was warranted. Jansen then conducted an engineering evaluation to address the plant’s need and to confirm the design. Jansen’s design features for superheater arrangement and methodology to meet the melt shop tube material for improved corrosion resistance and extended useful life.

**Boiler B.** Jansen designed new superheaters for three identical Municipal Solid Waste (MSW) incinerators. By original design these low-NOx Biomass fired boilers did not produce superheated steam, and with the purchase of a new fuel gas burner, the units had to be retrofitted with superheaters.

For a large number of projects, the rising cost of auxiliary fuels (natural gas, oil, coal) provides the economic “impetus” for the OFA delivery system upgrades. In many cases, an improvement in the boiler’s environmental performance is also required (i.e., as low as Btu thresholds, low NOx levels). There are numerous energized systems that are qualified with air and water injection (e.g., Boral OAF). A brief synopsis of the Jansen approach and project execution are:

- A thorough initial process evaluation is conducted to characterize the boiler and identify its individual process characteristics and weaknesses.
- CFD modeling is conducted early to evaluate design options and verify that the project goals can be met. A comprehensive, engineered option is developed that is tailor-made for each boiler.
- An OAF nozzle is selected that best matches the furnace’s ability to supply OAF and control NOx.
- The OAF nozzle provides high NOx velocities without fluidization for combustion air pressures. As a result, in most of our upgrades, the nozzle system can be used to supply OAF and NOx fuel needs.

**Our success is based on professional and personal relationships** with our customers, our extensive experience, ongoing professional growth, and our continued support and repeat business, and look forward to another successful 30 years. 

**RECEIVE OUR Newsletter by E-mail**

This Newsletter. No. 31 Winter 2006, is open for new e-mail ir contacts to which we have an e-mail address which we will use as our official postal service. To receive future newsletter, you are given the following choices:

- Prefer receipt by e-mail (no regular mail)
- Prefer receiving by regular mail
- Prefer both mailings (e-mail and regular mail)
- Other (specify)

To receive this and upcoming Newsletters electronically, please send your e-mail address to info@jansenboiler.com and you will be included on the list.

**ANNOUNCEMENTS**

- Jansen Celebrates 30 Years of Anniversary

**O U R MISSION**

Our Company provides combustion and boiler technology, products, and services.

We are dedicated to working with our clients to achieve their performance, reliability, safety, and environmental goals.

We accomplished this by:

- Listening and understanding.
- Providing a flexible approach to problem solving.
- Developing innovative and innovative solutions.
- Identifying issues to implement these solutions.

We seek to innovate, respond to our clients’ needs, and perform work that our clients will recommend to others.

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**AN UPDATE ON Biomass Boiler OFA System Upgrades**

Since 2001, Jansen has been designing and supplying OPA system upgrades on forty (40) biomass boilers in the Forest Products Industries. With these upgrades (of which several are under contract for installation in 2006), Jansen has continued to supply to the most biomass boilers OFA systems in the industry.

A breakdown by original equipment manufacturer (OEM) shows that these OFA system upgrades were installed on many equally numbered M&W (B&W), and the remaining six on Erie City (2), Zurn, Kipper, and Riley units. A summary of the 184 OFA upgrade projects are supplied to “repeat customers,” in our International, Paper, Waste, and MSW categories.

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