



The CORN Connection

Central Iowa Renewable Energy's Mission Statement

To successfully add value to locally grown grains which will profit our investor owners and area grain and livestock producers while benefitting our local communities through economic growth.

The Corn Connection Is
Published Quarterly By
CORN, LP
To Provide Information For
Our Owners And Investors

For Timely News & Updates
Check Our Web Site
www.cornlp.com

Volume 2 -- Issue 1
May, 2007

Inside CORNland

By
Brad Davis
CORN, LP
General Manager



Over the course of the past year the Staff at **CORN, LP** has found it necessary to return several times to the very same place and for the very same set of circumstances to address a design shortcoming with a certain portion of the system that the situation has become both a source of embarrassment and frustration.

There are various references to the "well worn path" that has developed on the concrete by the passage of so many footsteps to and from this particular area.

Personally, my contribution has been to suggest we contact the people who publish the Webster's Dictionary to inform them that in our opinion the four digit serial number (0001) be included in their next list of 4-Letter Words.

I exaggerate, of course, but there is also a level of fact in these comments, since we have been required to deal with so many challenging issues related to the furnace and boiler system that it really has taken on a sort of gallows humoresque quality.

Like so many of the frustrations we all seem to encounter in business and in life, the ones we have had with the furnace and boiler system at **CORN, LP** have been of the smaller, nagging, irritating kind, the ones I am sure all of you have also encountered at some point and in some endeavor.

It's never been a big, stand out in a crowd, easy to identify and thus much easier to deal with problem that you're able to confront and resolve directly and decisively so that once you've made the necessary changes, the problem is fixed, and you move on.

Instead, it's like having one of those hard to reach places that itches, one you finally are able to get to for relief, only to have the itching sensation return a short time later, perhaps just a few centimeters farther out of reach.

Nevertheless, despite the rather inconsequential size of these issues in comparison to the big picture and numerous processes, complex systems and massive network of equipment engaged in the production of ethanol, encountering on-going challenges with the performance of the furnace and boiler has a domino effect that works its way throughout the plant, its performance and its productive capacities and capabilities.

In many ways it's like having a shiny new high performance car, perhaps a Mercedes, a new Corvette or, for the ultimate in excitement, let's say a new Ferrari.

Each represents the absolute pinnacle of automotive design and

engineering. Each is equipped with the very latest in technology. Each is a breathtaking sight to behold inside and out, under the hood, top to bottom, front to back.

And each is a performance marvel that will blow the doors off virtually anything else on the road.

As you drive around in your new vehicle, it's possible to pick up a rock chip, have someone open their door and give the side of your car a ding, or perhaps the wipers malfunction, a headlight burns out, the radio quits working.

There can be countless problems like these that you might encounter, and yet the basic fact is that as long as the engine and transmission are operating properly and at the peak performance level they have been designed for, you'll still be able to blow the doors off anything out there.

But if your transmission is slipping just a fraction, or if your engine is missing a beat, your high performance design wonder can not and will not operate at peak efficiency, and will not produce the ultimate in horsepower or traction.

And even if the best drivers and teams of automotive technicians in the world work tirelessly to fine-tune and make every possible modification to the transmission and engine they can, until both are functioning to the peak level of performance and productivity they were designed for, you'll always be missing a beat, be out of sync and revisiting the garage for downtime repairs.

Over the past 16 months the **CORN, LP Team** has been, in essence, revisiting the garage to make modifications and to fine tune the furnace and boiler system, and in reviewing the production schedule and days of downtime for the plant during that period, I see that as much as 90% of the downtime days were the result of furnace and boiler system related issues.

Inside CORNland -- Continued On Page 4



We took this photo from atop the bin site as we were lowering the "Steam Economizer" through the top of the CORN, LP plant roof.



CORN's Checkbook

By
Jim Glawe
CORN, LP Controller



Elsewhere I have included the figures from the 1st quarter of operations for **CORN, LP** in this 2007 year of business and, as I have done in each of the articles that accompanies this *Quarterly Update* to you, I will once again offer a few brief comments and observations to explain some of the figure in greater detail.

Sales were off somewhat in the 1st quarter of 2007 compared to 4th quarter of 2006, and the primary reason for this reduction was that during this 1st quarter the plant was shut down for a period of 28 days during which parts of the furnace and boiler systems were replaced, enhanced or modified.

With the extended shutdown period we went through during the first quarter, **CORN, LP's** ethanol production level slipped by a little over 2.74 million gallons compared to 4th quarter ethanol production levels, and were approximately 2.85 million gallons less than what we had budgeted for the quarter. Additionally, DDGs production was nearly 9,200 tons lower.

Obviously, these lower levels of production translate into a reduction in the volume of corn that was ground by **CORN, LP** in the 1st quarter, with bushels down by nearly 1.08 million bushels compared to the bushels of corn ground during the 4th quarter.

For reference, 1st quarter volume figures were as follows:

- 9,645,416 Gallons Of Ethanol**
- 24,502 Tons Of DDGs**
- 2,260 Tons Of Wet Cake**
- 3,266,568 Bushels Of Corn Ground**

While we are certainly disappointed at the reductions experienced for this 1st quarter of the 2007 year of operations for **CORN, LP**, there are also some very bright and promising developments which we believe create a more positive and optimistic picture as we look ahead into the remainder of the year.

For one thing, as both Brad and Plant Manager Andy Miller have touched upon in their articles, the modification of the furnace and boiler system along with modifications that are underway on the steam carryover issues would appear likely to give **CORN, LP** a significant boost above and beyond the nameplate production capability of 50 million gallons per year.

Secondly, as of this writing at the end of April, the price we are selling ethanol for has increased by approximately 40 cents per gallon, thus our increased level of productivity will likely generate even greater revenues as we move forward.

Third, while the market price for corn has remained strong, and is significantly higher at this time than it was a year ago, as was previously reported **CORN, LP** had the price of the corn it uses locked in to meet our 2007 raw material needs at very competitive, very attractive levels compared to current market values.

Moreover, a significant portion of **CORN, LP's** 2008 corn needs are also locked in at what we also feel are advantageous values as we continue to plan and project for the longer term to position our plant to achieve and/or exceed its maximum operational potential and the goals for success we have established.

I am also pleased to report that we have received a sales tax refund that is available on assets that have been purchased and placed into service. This refund will be utilized to offset construc-

tion expenses and result in a savings in excess of \$400,000.

With all of these positive developments taking shape as we go to press with this issue of *The CORN Connection* as May arrives, we hope you will agree that the future for **CORN, LP** looks to be very bright and promising, and I am very confident that in my next article to you reporting the highlights of the 2nd quarter of business, there will be some very good results to offer for your review.

In the meantime and as always, do not hesitate calling if there are any questions anyone has about any of the figures reported in these pages.



**Coach's
CORNER**
By
Andy Miller
CORN, LP Plant Manager

The first quarter presented us with an opportunity to repair the design flaws of this "serial number 001" plant, and the primary objective for the proposed 4-week period of downtime was to replace the entire economizer with a different design.

First, we need to discuss how the boiler is designed. The combustor is where the coal is burned. This heat is transferred, through convection, into the boiler.

The 1750°F air travels from west to east, where it first encounters the heat recovery steam generator (HRSG) section of the boiler. This section has larger tubes (3" diameter) arranged in bundles.

In a row, from north to south, there are approximately 20 tubes, and there are 10 rows of these tubes from east to west to form a bundle of about 200 tubes. The tubes are spaced about 8" apart (40' long top to bottom), and are insulated to protect the metal from the sandblasting effect of the ash entrained in the flow of the hot air.

The second, third and fourth sets of tubes (called evaporators) are all approximately 2" in diameter, are more closely spaced and form bundles as well with about 6' between the bundles.

Finally, there are three sets of tube bundles very closely spaced (1" between two tubes) at the extreme east of the boiler that are called economizers.

Heat is distributed into the water such that the 1750 °F temperature at the very west side of the boiler (HRSG) is reduced to approximately 1000 °F in the evaporator section and, finally, 400 °F on the discharge of the economizers.

This heat is transferred into the water inside the tubes to make

CORNER -- Continued On Page 3

CORN, LP Operation Highlights For The Period January 1 Through March 31, 2007 (Unaudited)

Sales	\$ 17,927,626
Cost Of Goods Sold	16,651,618
Gross Profit	1,276,008
Operating Expenses	1,468,946
Income From Operations	(192,938)
Other Income	90,715
Net Income	(102,223)
Net Income (Loss) Per Unit	(33)
Return On Investment	- 0.33%

**CORNER***Continued From Page 2*

steam, which is just like the radiator in your car. However, the purpose of the HRSG and evaporators is to heat the water to steam and send the steam to the steam drum, where it is distributed to the plant.

The flow of the water is a little confusing until you know the second part of the story.

The water coming into the plant is treated and mixed with condensate (condensed steam from the heat exchangers in the process). This water is then heated and sent to the economizers.

The purpose of the economizers is to pre-heat the water using the lowest energy (“waste”) heat at the back of the boiler. The water then is sent to the steam drum where it is routed through the HRSG and evaporators and steam is evolved and sent back to the steam drum.

The steam then exits the steam drum by passing through several baffles and a de-mister pad. These baffles and the de-mister pad are designed to only allow steam out the pipe to the process.

However, our steam drum was sized too small by the designers. This improper sizing causes the water to boil over, much like using too small of a pan to cook the spaghetti.

Water splashes over into the steam and takes energy out of the steam, which has the same effect as adding water to a boiling pot of water...it immediately quits boiling even if the water added is close to boiling hot.

It is thought that at least 5,000 lbs. of steam per hour are lost due to this phenomenon and this loss causes us to burn more coal to produce more steam and, in turn, causes more carryover.

As you can see, the problem feeds on itself. Also, we must carefully monitor emissions to keep them within specifications dictated by the IDNR and EPA, and we must makeup more water to feed the boiler.

Upon the initial startup of the boiler system, the plant experienced carryover, and in June of 2006, an economizer bundle failed and leaked water inside the boiler.

The designers sent in a crew to take the economizer section off line and out of service. This cost us steam production capability.

In January of 2007 we again experienced a failure in the boiler economizer and the leak caused more downtime as the designer came in to repair the leak.

I tell you this so you can better understand the necessity for the downtime in March and April, an issue I talked about at the shareholder meeting.

The plan formulated by the designers involved installing a steam separator in the steam line to the process. This steam separator allows the water laden steam to separate from the carried over water, then the steam continues to the process while the water is sent back into the steam drum.

This choice was made as a larger steam drum was deemed too expensive, too long on lead time (8 to 10 weeks), and too long on installation time (4 weeks).

Also, the economizers which were installed in our boiler were welded together. By welding the tube bundles together, the whole structure became rigid and the metal at the weld sites became brittle and failed upon use.

In order to repair the economizers, the tubes would have had to have been inspected for the location of the leak site, cut out, and re-welded. There were over 13 leaks, and this would have taken 4 weeks.

The alternative the designers pursued was to pull the top off of the building, pull the top off of the boiler, and pull out two of the three economizer bundles and totally replace them.

The new economizer bundles were not welded but “hand-cuffed”. This is where each row of tubes is held in place with a

sheet of metal with holes cut in to allow the tubes to fit through the center of the holes, but not be welded in place.

Therefore, the tubes can expand and contract without tearing the metal at the welded points, and still prevent the tubes from vibrating around.

The good news is the steam separator and new economizer bundles were installed in 2 1/2 weeks instead of 4 weeks, and at the designer’s cost.

The bad news is the steam separator ancillary equipment was sized improperly and would not get the carryover back into the steam drum due to the improper sizing of the pump. Furthermore, the control scheme for managing the re-introduction of this carry-over water was problematic.

Within the next month the designers (ICM and Victory Energy) plan to install a larger pump and new control equipment. This effort is being led by Dennis VanderGriend, who is the Vice-President of Engineering and the brother of the owner of ICM.

This is the plan that I personally pushed for after the initial installation of the steam separator failed, and I am convinced it will work. We are also pleased this will not cause a plant shutdown, as the tie-in points are already in place as a result of the shutdown.

We also replaced refractory in the combustor during the shutdown since we had the time and because we had determined the initial installation was not properly cured out by the design team on startup.

The refractory is much like concrete and must be applied to the metal walls of the combustor to ensure the metal does not melt. (The interior of the combustor is upwards of 1750 °F and carbon steel begins to melt and lose its structural integrity at 800 °F.)

The refractory must be slowly heated to allow the moisture to boil out, since if it is heated too quickly, the trapped moisture will boil and blow the refractory apart.

This occurs from ambient temperatures up to 800 °F. At 1000 °F to 1250 °F, the different components of the refractory begin to melt. For example, one component melts at 1000 °F and another melts at 1080 °F and so on.

As these individual components melt and meld, they form new compounds which are stronger than each individual component. This is called the ceramic set and, while not likely to cause boiling/blowing the refractory apart, as in the boiling out phase, it is just as critical, if not more critical, in that this develops the strength of the refractory system to make it more durable and resistant to abrasion.

This ceramic set did not occur at our plant. The combustor could not be reliably heated on the 100 °F per hour as needed up to 1250 °F + temperature.

Upon attaining 800 °F for the fifth time while attempting to cure the refractory, the designers decided to proceed to normal operating temperature, which caused the refractory to cure improperly, and allowed for a failure which had to be repaired at the designer’s expense.

The new refractory was installed over the shutdown and it appears to be in great shape after a satisfactory cure.

Every item on our list for the shutdown was completed. If I had another day, I could not have come up with any other tank to crawl into and inspect or pipe to look into.

We modified the molecular sieves with our mechanics and personnel to make the system more durable as well.

The plant personnel including operators, maintenance and management did a tremendous job. From cleaning to inspecting to maintaining, they covered every base and, as a result, we have a much more reliable plant to move forward with.

I appreciate their efforts and stamina and I look forward to the next few months to see the completion of the steam separator project and to watch the plant produce.



Inside CORNland -- Continued From Page 1

If we take a moment to review the plant's operations and productivity over the past 16 months, we find that as the plant was brought on line and was up and running following the start-up period, boom, almost immediately ethanol production reached a rate equivalent to the 50 million gallon capacity the plant was designed for.

Obviously, we were very pleased with such a solid beginning and envisioned bigger and better things were soon to come.

However, within a relative short period of time several design issues gradually began to surface, shutdown periods to address them became more frequent, and as a result the productivity level fell to a rate equivalent to around 38 to 42 million gallons annually.

In June of last year we took the entire plant down for an extended period during which some major modifications and work was done to further fine-tune the plant's performance, and as we brought the operations back up to speed there was marked improvement that had productivity at rates that were, on occasion, back up to 50 million gallons, but more often in the upper 40 million gallon ranges.

Although the consensus of opinion was that we had done just about all the fine-tuning, modification and tweaking possible to get more increased productivity and performance on a more consistent basis, in October the decision was made to take the plant down once again.

As we again brought operations back on line, productivity was much improved, the 50 million gallon per year capacity was no longer an issue, and there were times when production peaked out at a rate equivalent to 56 million gallons.

However, to use my high performance car illustration once again, by this time it was clear the tranny was starting to slip and the engine was knocking, so in March the decision was made and, in essence, it was *Out With The Old, In With The New.*

I am therefore most pleased to report the repetitious fine-tuning, tweaking and modification of the furnace and boiler system are now behind us and we will no longer have to deal with them or the problems and challenges, obstacles and downtime they have created for us over these past months.

And if the sense of frustration and helplessness all of us have felt became evident in my comments to you as I was relating this experience with the earlier furnace and boiler system in this article, then I certainly hope the feelings of relief, excitement and optimism that have filled all of us are equally evident now that we have the modified and enhanced furnace and boiler system on line and performing with the precision of that Mercedes, Corvette or

CORN, LP Board Of Directors

Dr. John Gazaway, President	CORN LLC
Max Nedved, Vice-President	CORN, LLC
Clayton Hansen, Secretary	CORN, LLC
Joseph Horan, Treasurer	CORN, LLC
Paul Rasmussen, Director	CORN, LLC
Dean Reichter, Director	CORN, LLC
Mark Wigans, Director	CORN, LLC
Mervin Krauss, Director	Gold-Eagle
Duane Vorrie, Director	Gold-Eagle
Dave Reinhart, Director	Fagen, Inc.
Ken Ulrich, Director	ICM, Inc.

Ferrari I used for illustrative purposes earlier.

Upon bringing the plant back on line following the replacement of the furnace and boiler system, production of ethanol has been above the 50 million gallon per year rate from the outset, and has topped the 60 million gallon per year level on several occasions.

We are, to be sure, extremely pleased with the results of this latest development, and when I say "we" I am including the CORN, LP Board, Plant Manager Andy Miller, his Staff and the entire Production Team, and yours truly.

And yet as pleased as we are, we are also not totally satisfied just yet, since we feel there is one more issue remaining to address, and that is with steam carryover and the equipment modifications that are necessary to eliminate it.

Without getting too deeply involved in the complexities of the processes taking place, the basic issue is that not all steam is alike. Some steam is hotter than others. Some steam contains a higher level of moisture than others.

For the purpose of producing ethanol at CORN, LP's coal-fired plant, we want the steam to be as absolutely hot and as absolutely dry as we can get it, since this is how we can capture even greater production and performance efficiencies.

While there is no actual means of measuring how much additional productivity the elimination of steam carryover will bring, we are cautiously optimistic that once this work has been completed we should be able to consistently reach a production level equal to 60 million gallons annually.



This photo shows the "Steam Economizer" equipment being hoisted into position by the crane on March 14th..



CORN, LP

515 North Locust Street
P.O. Box 280
Goldfield, Iowa 50542

First Class Mail
U.S. POSTAGE
PAID
Des Moines, IA
Permit No. 2929

RETURN SERVICE REQUESTED