

WRENCH TIME OVERHAUL

**DGC MANAGES MAINTENANCE
TO CUT COSTS**

By Kathi Risch



Field technicians, Tim Rogness (left) and Gavin Dacar, inspect a phenosolvan vessel.

Golden goose or goat, shining star or white elephant; anyone who has followed the history of the Great Plains Synfuels Plant knows it's been called all four and many more, but the pet name of the day tends to reflect the volatility of natural gas prices.

To put it into perspective, take a look at the past year. The average sales price in 2008 – a banner year for gas sales from Dakota Gasification Company (DGC) – was \$8.81 per dekatherm. The average sales price from DGC for 2009 through July was \$5.44 per dekatherm. While sales price remains above production cost today, the production cost was projected to escalate toward \$6 per dekatherm over the next few years.

When Gary Loop came on board as chief operating officer of DGC in 2006, his assignment was to create a sustainable operation at the Great

Plains Synfuels Plant and bring focus to all of DGC's 700-plus employees to understand that the company's financial viability largely hinges on keeping those production costs below market prices.

To that end, Loop established a \$5-per-dekatherm cost of production goal. Loop says employees are embracing the goal through employee groups working to build a strong business sense in all that they do, and actively seeking cost management improvements and additional revenue from product sales.

"We believe if we kept operating the way we were, which wasn't particularly bad, we were headed for \$6-a-dekatherm cost of production," Loop says. "We were concerned new shale gas producers are producing at costs between \$5 and \$6 per dekatherm. At what price would they stop producing? We at DGC

need to do everything we can to keep our production cost below that price."

Loop says if the Synfuels Plant can achieve a \$5-per-dekatherm cost of production, "we're about as safe as we can expect to be, as long as we meet or exceed all of our safety and environmental requirements and maintain a sustainable operation mechanically."

A hard look at maintenance

Steve Pouliot, Synfuels Plant process operations manager, says when Loop first started, he asked good questions about how they do business. They

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Editor's Note: This is the first of two articles exploring efficiency efforts at the Synfuels Plant aimed at helping reach their \$5/dekatherm cost-of-production goal.



Gary Moon and Jeff Kopp discuss work to be done on a gas gun diffuser plate to be milled by Jesse Roth on the computer numerated control mill in the background. This specialty equipment uses computer programming and robotic operation for speed and accuracy.

saw opportunities in many areas and decided to concentrate on the maintenance side first. “We had a consultant, Ritchie & Associates, that helped us streamline our work management program to increase efficiencies, increase our wrench time, and make sure we’re doing the most work in the field that we can get done. That included improving our planning process,” Pouliot says.

Dave Sauer, Synfuels Plant maintenance manager, says they got down to basics with the technicians doing the work in the field. “They do a good job for us, and they do it efficiently, but we weren’t managing them as well as we could, so we reworked our management system.”

Sauer says the maintenance area worked with the planners to reduce the level of frustration in the field with the technicians. “Everybody wants to go out, work hard, feel like they accomplished something during the day, so when you go home at the end of the day you can say, ‘I did something.’”

Planning had previously been done within each crew, but at DGC the crews are interdependent, where crews send work into shops that work for all areas. “The coordination

efforts between some of those shops wasn’t as good as it could be, so that caused frustration. One crew would think a pump was going to come out of the shop on a certain day, it didn’t, and then a crane wasn’t lined up at the proper time. So, finally, when the work product did show up, the crew may or may not be in a position to install it,” Sauer says.

Gary Moon, Synfuels Plant gasification and satellite area planner, was instrumental in working with the consultants when the project started about two years ago. They finished a year ago. Now Rory Hochsprung, Synfuels Plant gas processing area planner, is working with another consultant, the Renoir Group, on what they call EIP 2, or Efficiency Improvement Program Phase II. Their goal is to engage all areas to have a joint schedule, so they are not working against each other.

Moon says the maintenance group is now taking a proactive, rather than a reactive approach. “We say, ‘This is what needs to be done. Let’s plan to do that in five days or 10 days.’ We get all of our material and resources lined up, and people scheduled. By coordinating that effort, it allows us to execute the job at a much quicker rate.”

Without running any “fancy” reports, Hochsprung says they can tell the change just by listening to the radio channels. “There used to be a couple of groups that were called almost on the hour to move around to different jobs. That traffic on the radio alone has dropped to hardly any. Every time you drop a job and go to another one, you lose your efficiency. Eliminating that with a schedule helps our efficiency tremendously.”

Work backlogs have declined about 20 percent, Moon says. A backlog is the amount of work a crew has on its work list. In that 20 percent, they have assumed the hours that were previously contracted out, and brought that back in-house for the mechanics to do. “We saved money because we have fewer contractors. Our crews are doing more of that work, and overtime numbers are down the second year running.”

Sauer says the backlogs are declining, the cost per task is declining, overtime hours are going down, and the savings are climbing. “We really haven’t reached a plateau yet. We’re still seeing a general trend in the right direction,” he says.

Key performance indicators

Moon says they developed key performance indicators (KPI) to monitor how efficiently they’re doing business. “We really concentrated on trying to improve estimating a job, so that allows us to better plan for the workday.”

For example, Moon says they’re paying close attention to estimating how long each job takes. “We use input from the operations people, the maintenance supervisors, and planners. Everybody has a say in what the job entails. In the past I’d guess, as a planner, that a particular job takes 10 hours. Now, I’ll ask the question, ‘Do you think I’m right here?’”

Moon says they now have better historic data, and are classifying each individual job on the time sheet rather than batching them.

Sauer says they have had a lot of support from the IS&T (Information Systems and Telecommunications) group in Bismarck on the KPIs. Levi Kom, decision support developer at Headquarters, builds reports on the KPIs.

Moon says it's a work in progress. "We're massaging those reports constantly. We've got historical data to 2007, so if we decide to change some of the key fields we monitor, we probably have the information. We just have to go back and get it. Levi can dig that stuff out of there just like you and I can out of a notebook."

The reports are e-mailed out each morning, Moon says, starting everyone on the same page every day. "We've simplified the reports we use. Everything is the same now. In the past, there were 15 planners and probably 13 different ways to do business."

Hochsprung says Moon had most of the KPI systems developed before the formal process started. "Our biggest goal was just to make it a group effort. The KPI was originally developed to look at the maintenance side, where we now are looking at maintenance, planning and operations as one



Rory Hochsprung, gas processing area planner, is working on Efficiency Improvement Program Phase II to get all areas working together.

group. So we built off what Gary (Moon) did and tried to make more ownership as one group."

Moon says the KPI system also helps spread accountability. "The reality of it is, the supervisor is accountable for what he can accomplish. If the planner doesn't plan the job properly and have the material, his hands are tied. If operations can't give him the equipment or they can't do it that particular day, his hands are tied. His gripe is, 'I'm the one looking bad and I have no control over that,' and he's right, he doesn't."

"So we developed variance reports through the work management program that can help identify why work has or has not moved forward," Hochsprung says.

Sauer says it's a tool to get better. "That's the hardest part for a lot of people to understand. It's not a report card. It's a tool you can use to see where we have opportunities to get better. It's kind of a continuous improvement process."

Work management

Sauer says many of the changes that have been made were things they already knew needed to be done, but were struggling to find the means to implement them. The consultants helped get the ball rolling. "They came in and put teams together to work through the issues. The team comes up with solutions and together they work to implement the solution.

Sauer says these kinds of changes are hard for a lot of people; it takes them out of their comfort zone. But now that the different work management structure has been in place for almost a year, people are more comfortable with it. "People may think we're changing because we are wrong. But really we're changing because we have new and better information," Sauer says.



Dave Sauer manages maintenance at the Synfuels Plant as well as the planning and reliability groups and the warehouse.

"Now everybody is kind of 'Oh, yeah, we can do this; we can do that. Switch directions if that makes sense.' I think a lot of that is because we were the first ones to go through the work management change process," he says.

Sauer thinks now there is acceptance and even some excitement toward the changes.

The keys are communication and measurement

"We didn't go out and buy a software tool or reinvent the wheel," Moon says. "They are the same tools as we had before, but what we've done as a group is figured how to use those tools better. And doing that has allowed the reporting capability. That's the important part. We have instant feedback on anything we do."

Hochsprung says the key performance indicators are essential. "You can't manage what you can't measure, because you have no way to set a goal for anybody."

"The guys are out in the field doing everything they did before; it's just everything is ready for them when they get there," Sauer says.

"Essentially what we've done is come from managing a bunch of piles of paper to managing work on a computer with goals and KPIs, for us to measure how good we're doing."