

## GMC GAZETTE – October 2004

### **Properly Applied Technology Supports Industry Optimization**

By Kevin Davies, Enginuity, LLC

The natural gas industry has gone through significant and continuous change over the last several years; the pace of change will accelerate even more as we move forward. Regulatory forces are placing new demands on us; the need to replace or revitalize our aged reciprocating engines has increased; plant personnel are having a difficult time supporting our existing operations, in part due to reduced staff, in part due to early retirements that have caused the loss of years of experience. Our companies are being forced to purchase new assets and divest themselves of others in order to gain an edge on the competition or improve operations and to position our companies so investors can rely on our returns. Now add to these issues, new technologies, which have become a necessity if we are to support the demands of today's market.

The typical approach to dealing with incorporation of new technology has been to treat each of the many issues we face with our equipment separately, instead of interrelated components. This approach has consistently fallen short because of sacrifices required in supporting systems to satisfy a narrowly defined objective. As an industry we must look to optimize our assets and to do this we must look at all the components of the system and treat them as interrelated functional parts, not disjointed, individual items. Optimization delivers lower emissions, improved performance, increased throughput, reduced fuel consumption, longer maintenance cycles and a safer environment for our operators. Optimization is a means of operating our key assets in real time based on current corporate key measures to support targeted business goals and objectives. To truly optimize our systems we must look to advanced technologies to revitalize the engine and related subsystems, always reminding ourselves of the key business requirements.

In years gone by we looked to improve process or frequency by upgrading the engine speed control from mechanical to electrical, we improved performance by installing a new ignition system, we cleaned up emissions by adding an air fuel ratio control or catalytic converter, we upgraded a starter, adjusted the timing and so goes the story. Today we must look to improving all these components through utilization of advanced technologies that view the system as a whole, taking into account each component and the effect they have on the rest of the system.

The optimization process begins by conducting a thorough evaluation of the equipment within the fleet. The primary questions that must be addressed include:

- Where are we today?
  - What is the growth strategy for our organization?
  - What are the driving factors within our organization?
  - What people do we currently have to support our systems?
  - What regulatory requirements do we need to comply with right now?

- Where do we want to be tomorrow?
  - What will our organization require of our equipment for the next five to fifteen years?
  - What are the regulatory requirements we will need to meet in the coming years?
  - How many and what type of personnel will we need to support our system both short and long term?
  - What is the staffing we can afford?
  
- How do we get to tomorrow?
  - Will we need to upgrade our current equipment?
    - Ignition
    - Speed Control
    - Air Fuel Ratio Control
    - Catalytic converter
    - Fuel System
    - Turbo charger
    - Cooling
    - SCADA
    - Unit monitoring
    - Fuel usage
  
  - Will we need to collect more information?
    - What are our communications requirements?
    - Do we have a need to have remote communication and if so what type? Satellite, Cell, ModBus, Ethernet?
    - Monitoring or Diagnostic
  
  - What type of information will we need?
    - Temperatures
    - Pressures
    - Emissions
    - Performance
  
- What resources will we need?
  - Can we support our program in-house?
  - Do we add resources to our existing structure?
  - Do we need to bring in outside resources?
    - What to these resources look like? Are they Manufacturers Packagers, Distributors or Technology Companies?
  
- Who will be in charge of this effort and what will their support structure look like?
  - What is the timeline?
  - Where do we get funding?
  - Will these upgrades have a short return on investment?

In completing the process we must factor in answers from the above, and include other issues that may be important to our individual organizations, to build a complete and

detailed picture and a path forward. We may select a single strategy or decide on multiple strategies in establishing our optimization plan and a path forward to revitalize our reciprocating assets.

Many companies are looking to manage their assets better through optimization. The search for new technologies to meet the demands of tomorrow, both conventional and unconventional, will drive our industry further than it has ever gone and test our technology like it has never been tested before. The answer is not always the individual piece of technology, but the ability to bring them all together, creating the complete solution. Technical innovation has become a perpetual driver in the race for system compliance, performance, reliability, safety and profitability.

*Enginuity, LLC is a technology company based in Fort Collins, Colorado with offices in California and Texas. Enginuity provides energy industry customers with service focused technology solutions that consistently exceed expectation, win trust, and foster long-term business relationships. They support these technology solutions through utilization of trained and intimately familiar Application Specialists. They are actively involved in developing optimization programs for their many customers through the use of their intelligent engine family of products and their many industry relationships. Additional information about Enginuity can be found on company's web site at [www.enginuityinc.com](http://www.enginuityinc.com).*