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TechTimes

Solutions and Technology for Today's Power Generation Industry

In today's world it is inevitable that more efficient will be placed on reducing greenhouse gases . With the push of the IMO to have the marine industry utilize lower sulfur fuels, will only drive the cost of diesel higher. This will also have an economic impact on land based power generation. The solutions and technology are available. In the case of Hydroflo Controls and Procal Analytics we have the most current technology that allows the clients to monitor and report all forms of emissions. These systems are in place to protect your investment, both from a process point of view or costly fines for emission accidence.

Many power providers are going to need to find ways of reducing these greenhouse gases. Therefore emission levels need to be measured and recorded.

Get the best CEM's Equipment that is Proven for the Marine and Power Diesel Industry

this issue

DIESEL POWER GENERATION CHANGES NEEDED TO MEET NEWER ENVIORMENTAL DEMANDS

Still in many parts of the world there are still many regions that have no access to Hydro distribution lines, natural gas, or coal. Therefore the most available resource that is easily transportable is Diesel or Bunker C fuels for diesel Engines. In Northern Parts of Canada and remote costal regions the only viable fuel for generating electricity is the use of diesel fuels for generator sets. Many large engine manufactures such as Tormont, Cummings, Wasiltta are a few that have designed special tier two and now tier three engines and generator packages for remote communities.

With current pressures to reduce NOx and S02 levels for emissions, power generation providers must look at different options to meets new governmental guide lines. In the case of S02 reduction the use of cleaner fuels with lower S02 levels is the quick choice. Even the use of Bio diesel is a great way to resolve this immediate requirements. However these choice come with a cost, Therefore the higher cost fuels ultimately mean more expensive electric power costs.

However with combustion engines and in the case of NOx reduction there is only so much one can do to reduce NOx levels. The only real solution is to reduce NOx is with SRC scrubbers that utilize Urea. No mater if one plans to use lower sulphur fuels or SRC scrubbers the common factor is the requirement to measure. By installing a Procal CEM's system the energy provider can use regular maintenance to keep emission levels in check. Or utilized the measured values to either monitor the performance of the SRC scrubbers or control the urea dosage rate to optimize the NOx reduction and urea usage.

It has been mentioned that re-burning exhaust gases is also an alternative for NOx reduction. No mater which method is adopted, the common denominator is measurements must be made to base line and ultimately monitor your process. Procal approach has been to utilize the infra red spectrum to measure multiple species of gases in one analyzer. The unique in-situ design allows Procal to measure your gases directly in the exhaust stream. This eliminates any sampling procedure which ultimately minimizes maintenance. This makes the Procal one of the most maintenance free and robust Analyzers in the industry. The PC based software makes it simple and operator friendly. As your Representative for installation pacific for your applications.

HYDROFLO
CONTROLS LTD.

Principles for Power Generation Industry Success

The Desiel Power Generation industry must be proactive and ready for the increases in fuel costs that could be caused by the IMO's new targets of lower S02 for the marine industry. With the proper measurements in place many producers can properly monitor their emission levels for their fuel consumption. When purchasing fuels with low SO2 content one can operate close to the allowable limit if the right measurement tools are in place. Additionally if scrubber technology is installed, higher sulfite fuel can be used while emission levels are maintained. The cost savings associated with being able to use fuels with higher SO2 levels will be massive compared to the cost of the scrubbers and the analyzer equipment.

This approach will allow Diesel Power Generating operations to optimize their fuel cost while still being environmentally compliant. This is a win/win for both industry and the environment.

Hydro One Utilizes Procal CEM's To Prepare For NOx Reduction Limits

Hydro One has many roles to play in Ontario's Power industry. One of their Primary roles is to supply remote communities in Ontario with reliable Power. The most practical methods to accomplish this is to use Diesel power Gen sets. In recent years there is governmental demand to reduce the NOx air emissions sent to the atmosphere. Right now there are new efficiency mandates for tier 4 engine designs, but what can be done about existing tier 2 engines?

Even though there is no current requirement to source-test these engines and no current mandate to monitor CEMs under 15 MW, there are still many things that can be done to improve the current systems and prepare for NOx reduction. At Hydro One they are always trying to find ways to be more environmentally friendly and, including looking at ways to reduce NOx levels. The current plan is to utilize Bio-diesel to reduce SO2 levels and still maintain lubrication on their tier two engines.

All existing tier two engines at Hydro One are covered under the original C of A's.

Initially the discussion with Hydroflo Controls Ltd was to implement a continuous online system that would insure that current engines are in compliance with the C of A.
The first step is to baseline the engine performance and for comparison with the original specifications supplied by the manufacturer.

The next issue was to try to determine what NOx emission levels are acceptable for current C of A's.

If the required levels could be obtained through programs such as biodiesel fuels and improved maintenance, that could eliminate the need for expensive SCR systems. In the inevitable event that SCR systems are required then control and reporting tools will already be in place.

Now that the first system in Armstrong has been installed and data is being collected. Hydro One remote service personnel utilizing Procal ACWn software can trend and store the data to monitor performance and report on emissions if necessary.

The next step of the plan is to baseline different service conditions, including regular fuel and then biodiesel. Questions have also been raised about the crank case bypass gasses. By studding and recording different scenarios, Hydo One operations can determine the optimum operating conditions at these sites.

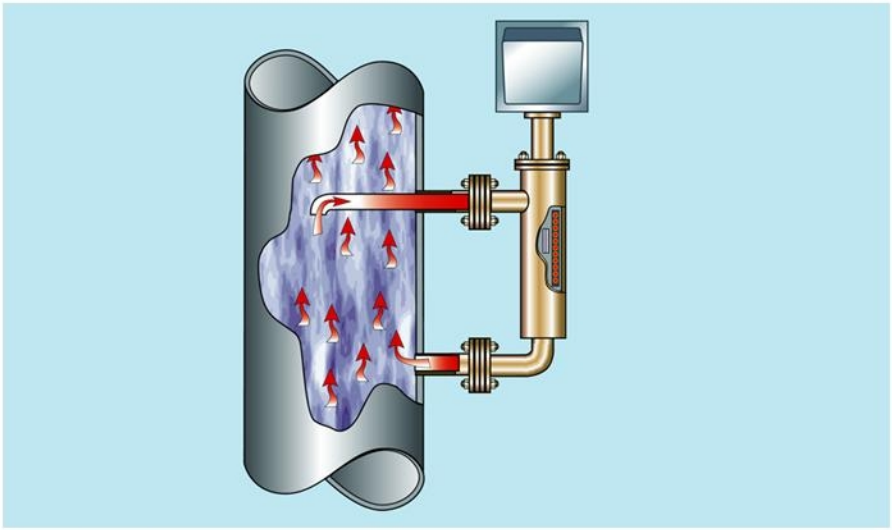
During recent operations Hydro One has also discovered that the Procal system is a useful tool for determining maintenance requirements.

As an example, a high N0x peak indicated that something in the operations had changed. It was discovered there was a problem with the turbo that resulted in a rich fuel and high N0x. In other cases valve issues have been detected. Hydo One is now discussing how best to use the NOx and CO levels from the Procal unit as part of their predict maintenance programs.

It can said that the Procal system is much more than just a CEM monitoring device, it has been demonstrated to be an effective operations performance and maintenance tool as well.

CEM's DESIGNED FOR DIESEL POWER INSTALLATIONS

The Procal P-200 infrared emissions analyzer has an infrared source which generates infrared radiation from 2 to 12 um and a series of narrow band filters that are used to select specific wavelengths. The wavelengths are dependent on the gas species to be monitored as each gas has a separate absorption characteristics. By comparing the energy of each wavelength after passing through the in-situ cell the concentration of the gas can be calculated. Other factors which will affect the absorption, such as path length, temperature and pressure are either fixed or measured, and automatic compensation is applied. In addition due to the wide absorption characteristic of both water vapour and carbon dioxide (CO_2) these gases are also monitored and compensated for, this also gives the ability to report on a wet or dry bases dependent on the requirements.

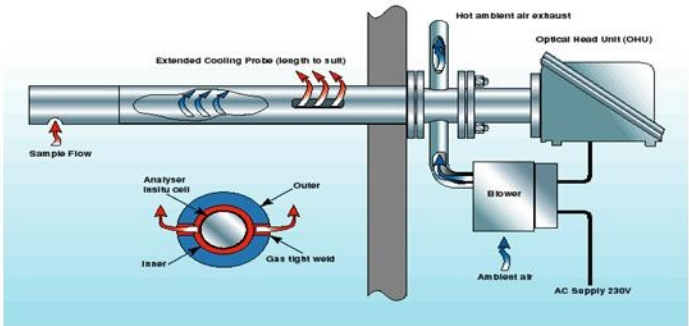


Procal's design for Diesel and Marine applications is instantaneous, continuous and requires no support equipment (pumps, valves, etc.). Typically when the scrubber in not in service flue gases are in the range of 300F. Procal's design utilizes a bypass system that controls the gas temperature to about 200F. When the scrubber is in service the stack temperatures are drastically reduced. To accommodate this mode the bypass chamber is fitted with a heater that maintains the 200F temperature. All types of measurement are affected by temperature. Procal units are calibrated for 200F and it is proven that controlling temperature is easier and more accurate than trying to compensate for it. The implementation design and installation is quite often more important than the measurement technology. A successful system is one that works with very little maintenance and can operate in extreme conditions such as Marine applications.

The Procal operating system is called ACWn. This software utilizes Microsoft operator interface Windows 2000 and XP. For the marine applications we are using an industrial panel PC that can handle the rigorous environment.

By incorporating both a simple and compact design with almost no moving parts and an industrial PC, the system is the most robust and maintenance free CEMs system currently available in today's industry. This is an extremely important advancement for the Marine industry.

As an additional feature, because the Procal system is PC based it is capable of incorporating GPS signalling which allows reports to be position and time stamped.



EYE ON IT
Current Industry Trends

For the Diesel Generation industry there will be increased requirements to measure emissions, whether or not you are scrubbing. Monitoring agencies will want to see historized data. These will have to be time stamped and correlate with limit reductions related to scrubbing.

SOFTWARE
Procal's latest operator interface

For many years analyzer manufactures have had black box technology as the interface to their systems. Recently Procal has developed a new software package called ACWn. This software resides in a standard PC. Microsoft Widows 2000, xP and, in the near future, VISTA is the standard operating platform. The software operates up to 8 separate Procal probes with only one software. license. The system communicates via RS485 to the analyzer heads. The heads are then daisy-chained. In all cases the software stores all data and displays the current readings with trending.

Professional Services

In Canada, Hydroflo Controls Ltd has been supplying and servicing Procal Analytic equipment for close to 20 years. Our office in Central Canada can supply technical ,engineering, and field services as well as replacement parts.

WHY PURCHASE PROCAL CEM's FOR YOUR POWER GENERATION REQUIREMENTS

- To be compliant to the new greenhouse emission levels
- Multiple gases in one measurement that is continuous.
- Low Maintenance compared to extractive type analyzers
- Only working design for Marine and Diesel Generator applications
- Proven design for both scrubbed and non- scrubbed application
- Special design made for marine & diesel engine installations.
- A design that allows control changes during scrubbing periods and even during not scrubbing periods.

PROCAL

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