Winter Diesel Operation

Winter brings unique challenges to diesel fleets. The strategic partnership that BG Products has with fleets along with quality fuel additives and the support of fleet specialists in the field mitigate against any disruption from winter weather. Here are some reminders to ensure uninterrupted fleet operation in cold weather:

- Treat bulk diesel storage tanks with BG Diesel Fuel Conditioner (#PD-14, #239, or #215)
    - Note: Use BG Summer Diesel Fuel conditioner #225 from March 31 to October 1
- Have the BG fuel specialist pump water off the bottom of the bulk tank.
- Treat with bulk fuel system dryer (#IPA) and BG Biocide (#Kathon)
- Make sure all trucks and equipment get filled up each night (this is to prevent condensation at the top of the tank).
- If the temperature fluctuation is expected to be more than 20º (which causes condensation), use one bottle of BG Fuel System Dryer (#280) in each vehicle. Remember the larger the temperature swing, the more condensation will be created. Note: Only use one bottle per tank.
- If truck or equipment is equipped with a water separator, drain it at the end of each day.
- In extreme cases, truck fuel filters and dispensing pump filters may need to be changed more often.

Extreme Winter Diesel Operation

When extreme cold temperatures are in the forecast, in addition to the above guidelines, the following steps should be taken (in order.)

- Treat diesel fuel with a stronger dose of BG Diesel Fuel Conditioner. (For example, BG #PD-14 at 1:750, #215 at 1:1500, and #239 at 1:750)
- Install BG #233 Diesel Fuel De-icer to mitigate against “entrained water” icing issues. (Note: BG #PD-14 and BG #239 have de-icer already, the addition of BG #233 would simply increase the protection.) Treat BG #233 at 1:5000 or 1:2500 depending on the level of anti-icing protection needed.
- Just prior to extreme cold weather, install BG #256 Diesel Thaw into individual vehicle tanks. Run the vehicle long enough for the product to circulate in the fuel system. (You will notice more information on Diesel Thaw below. While this is an after-the-fact product, it can also be used as an additional preventive measure to proactively guard against fuel icing when added to the tank **before** extreme cold weather arrives.)

Winter Diesel Problems & Solutions

Diesel Fuel Gelling

- Diesel becomes cloudy when wax crystals begin to form. Fuel gelling occurs when the wax crystals start sticking together and get caught in the filter matrix. Eventually, the engine dies (or won't start at all) due to fuel starvation. The wax plugs the filters. To confirm fuel gelling, cut the filter open. If there is a paraffin-type wax buildup caught in the filter matrix, then the fuel gelled. (Note: at room temperature, the wax will NOT melt and turn back into diesel fuel.)
- The use of BG Diesel Fuel Conditioner makes fuel gelling extremely rare. Many times, diesels that appear to have had fuel gelling issues have actually had fuel icing issues. See below.

Fuel Icing

- Icing is not the same as gelling. Icing occurs when water, caused by condensation, gets into fuel lines and fuel filters. The water freezes and thus plugs the fuel filter, blocking the flow of fuel. Once again, the engine eventually dies (or won't start at all) due to fuel starvation. The ice plugs the filter. To confirm icing, cut the filter open. If there is nothing plugging the filter matrix, then the issue was icing, not gelling. (Note: at room temperature, the ice will melt.)
- The use of BG #280 Fuel System Drier, #233 Diesel Fuel De-Icer, and #256 Diesel Thaw make fuel icing extremely rare as long as the above procedures are followed

Icing Leading to Gelling

- An icing issue can lead to a gelling issue. Let's say you have a 10-micron filter that begins to experience icing issues. As ice forms in the filter matrix, it makes the passageways smaller and effectively makes a 10-micron filter a 3-micron filter. The wax crystals flow uninhibited through a 10-micron filter but get caught and accumulate in a 3-micron filter. Therefore, the icing was the root cause, but it appears to be a gelling issue.

BG Diesel Thaw

- Despite all the preventive measures for winter operation, in extreme cold temperatures on rare occasions there can still be icing or gelling issues. Therefore, we recommend that all fleets keep several cases of BG #256 Diesel Thaw on hand. BG Diesel Thaw is an after-the-fact product that is poured into a new diesel filter to get the vehicle rolling again AND a preventive maintenance product to be used in individual vehicle tanks prior to the arrival of extreme cold weather.

Our Objective

- Note: The goal of our Winter Diesel Program is to offer a measure of protection for winter diesel operation. Nothing is 100% effective on 100% of the vehicles 100% of the time. Our goal is to help you mitigate against risk and downtime.

Back to the Basics

- Taking the above steps, in order, will go a long way in mitigating against extreme winter issues. However, the above guidelines assume that the fleet and the BG fuel specialist has taken care of the basics. For example, all the fuel in all of their equipment is continually treated with BG Diesel Fuel Conditioner, water has been pumped out of bulk storage tanks, microbial growth issues have been dealt with, and the fuel meets all other quality criteria, such as RSSOT, HFRR, Corrosion, etc. These are the basics. If we have not dealt with these issues, then microbial growth or biodiesel contamination could plug a filter and thus the issue would have nothing to do with winter operation.

Additional Services Provided by Your BG Fuel Specialist

- Analysis of fuel and filters to determine if there was gelling or icing
- Proactive fuel analysis to ensure that the cold filter plug point of the fuel is adequate for winter operation