DC Generating System for Spray Foam and Coatings Rigs

This document describes an environmentally friendly battery-run DC motor that emits no CO_2, yet never runs down because it has an integrated economical diesel engine to continue operating if the batteries run low. With the diesel engine running, the generator supplies power to the spray rig and recharges the batteries. It's a hybrid system.

The diesel engine uses a PTO clutch to connect to the generator. When the DC motor is running on batteries the clutch is disengaged and the diesel engine is off. When the batteries run low, you start the diesel engine, engage the PTO clutch to the generator, and disconnect the power to the DC motor.

Testing will determine the run time on batteries for your specific configuration. Adding more batteries and increasing the Voltage, lowers amp draw and will increase your running time. In less than 3 years we will have a battery system to run all day!

This system operates similarly to present hybrids. This will cut emissions and expenses greatly.

System Specifications

The diesel and generator are on the same axis. The DC motor is driven by a belt off the flexible coupling between the diesel and the generator. There is a power takeoff (PTO) attached to the diesel engine's bell housing for connecting and disconnecting the generator.

The DC motor sits parallel to the generator. A cogged belt is mounted on the flexible coupling between the PTO and the generator. This belt always turns. When the diesel engine is running, the DC motor is turned off and rotates freely. When running from batteries, the belt is the driving mechanism from the DC motor to the generator. When the DC motor is turning the generator and creating current, the generator can output any voltage, phase, or amps for the specific load.

When the batteries become low, the power source is switched from the batteries to the diesel engine. The power source to the DC motor is turned off, and the diesel engine is started. The PTO clutch to the generator is engaged, and the generator outputs power both to recharge the battery and to supply power to the spray rig.

The run time for the DC motor depends on several factors including the equipment load and power demands, motor RPM, and number and the Ah capacity of the batteries.

The batteries can also be charged from shore power if available, or from solar charging equipment.

Specific notes:

- The novelty of the generating system is that it always has a backup from a fuel-operated engine to create power to turn the generator and recharge the batteries while also providing power for the operating equipment.

- The engine can use any fuel type and be of any size depending on the generator's size.

- There are several ways to connect and detach the power source to the generator.

- The main reason for this generating system is to reduce CO_2 emissions and ozone depletion.

- Reduces fuel expenses to allow the contractor to be more efficient and competitive.

Query for Spray Foam & Coatings Power Supplies

There are many sizes of rigs and all types of power setups. Would you be interested in a generating system that uses a DC motor run from batteries?

- A battery-powered system cuts your fuel costs and reduces both CO_2 emissions and ozone depletion.

- **A battery-powered system is quieter and creates less vibration.** You might be able to operate longer because of reduced sound and pollution.

- The generating system can be scaled to any size. Adding more batteries adds additional run time. Key is higher Voltage, equals less amp draw, smaller wires, and longer run time

- You can use shore power if available to charge the batteries while spraying.

- The batteries can have a 20-year life span.

- When the batteries run low, you can switch to an integrated backup engine running on any fuel. This allows you to continue operating anytime, anywhere while also recharging the batteries.

- Generators with attached air compressors commit you to running costly fueled engines.

- A battery-operated system with integrated backup generator saves costs and can pay for the whole generating system.

Our system needs to operate more renewably! The goal is to operate more efficiently with less cost, noise, and contamination of our environment. Vehicle manufacturers are switching to electric cars to reduce costs, support the environment, and increase simplicity**. Our industry needs to be on the same track.**

Brief recap of our industry/
I have built a Battery-operated Generator for the Spray Foam & Coatings industry. Presently it has an Air Cooled 3-cylinder Lombardini Diesel engine for a back-up when the batteries get low and will recharge the batteries. Spray foam rigs get to places where there is No power enough for their rig.
At some point in time in the future it would be my mission to change out the Diesel engine for possibly a Hydrogen Engine, or more a totally environmentally friendly Generator! However, we will have a DC power system to work a full day within the near future.
Many of the Contractors use plant power as much as possible but the majority use Diesel generators full time. This is a huge added cost to the Contractor for the fuel and having to raise the installation price to the customer. Many contractors don't care about the CO_2 and environmental impact that they cause to our world! But we all live in it and it's impacting everyone. **This could backfire on them with fines and shutdowns in the near future!**
I am open for Questions and comments.
Huge is the fact that California and other states may be penalizing the use of the big generators causing global warming, heat contamination to the industry, & $C0_2$. We need to be prepared for this.
Another idea is to use more shore power on job sites and give credit back to the customer for the use of their power.
The use of Diesel engines with the air compressor attached to it when the engine goes down now you have also lost your air because it was dependent on the generator. These may need to be split for this purpose in the future.