

DIESEL VS. ELECTRIC POWER

by Paul Smith



The world we live in is constantly changing. I've learned it's crucial to stay "loose in the saddle" and keep doing the next right thing. Otherwise, I'll create unnecessary misery for myself and those around me.

Case in point: The current debate over power configurations available on portable and mobile processing equipment.

On the surface, the arguments for both are fairly straightforward. The biggest benefit of diesel engines is that they provide a captive power source, provided that you keep filling the fuel tank. This enables the equipment to be deployed to remote locations where line power simply isn't available. If the engines are used as a direct drive to large horsepower crushers, such as cone crushers, they also eliminate the need to toil with the large, cumbersome electric cables that must be connected to electric motors.

Having each plant equipped with individual power units also facilitates the added flexibility to separate or split the system and only turn on the engines that are required for a specific job. This can help offset liquid fuel costs. For example, if you only need to produce 1 ½-in. base material, you'll likely be burning fewer engines and less fuel than if you're producing ½-in. minus asphalt rock.

Historically, with self-contained systems, diesel engines are coupled with hydraulic motors and control valves. This simple circuit eliminates MCCs, expensive starters, cables and connectors.

There is also the service aspect. Chances are the same mechanic who services your loader can also service the engine on your crusher or screen. Compared to electric systems, hydraulic systems do not require a rocket scientist to maintain them.

ELECTRIC SYSTEMS

But let's not assume too much. Electric systems have clear advantages, too. Electric motors are more efficient than their hydraulic counterparts, and they tend to have more reliability regardless of climate. Emission permits and trying to stay compliant with the constant-changing tier ratings are also a non-issue with electric power.

If a larger single or dual generator to power the

electric motors is the desired configuration in a portable system, this will still yield an easier challenge than trying to permit multiple diesel engines in many areas.

From a service standpoint, while a skilled journeyman is required to maintain the electric system, such systems will not incur downtime stemming from a dusted engine due to a neglected air filter, a bypassed oil filter or a blown hydraulic hose.

Do you remember when, around the turn of the century, the industry started marketing self-contained tracked and wheeled systems? While many producers jumped on the diesel bandwagon to reap the benefits they provided, many did so begrudgingly.

Several producers I was involved with on large, self-contained systems have long been pushing their suppliers to develop similar solutions that provided the same conveniences but without the baggage of the engines. I have even witnessed a few retrofit existing plants, replacing engines with electric motors.

THE BOTTOM LINE

The reality today is that unstable liquid fuel costs and geopolitical issues alone are shifting market demand around the world toward increased development of electric-driven, self-contained portable and mobile systems. Even simple tracked machines that were previously diesel-hydraulic configurations are now being supplied with standard or optional electric power configurations.

Such plants, when equipped with on-board generators, electric motors, etc., obviously come at a premium price. However, they can provide most of the same benefits that conventional plants provide.

So, does this mean electric systems are always the best choice? Of course not. In my view, the simplicity of a diesel-hydraulic configuration can't be overlooked in certain scenarios. Whether on wheels or tracks, there are a number of examples for which I'd recommend a diesel-hydraulic system: crushing on demolition sites, screening piles of recycled materials, renting on a month-to-month basis, and crushing base

material for a new runway 100 miles from the nearest city. Also, a complete system that can be relocated 10 to 15 times per year and can be broken into multiple configurations is an example for which I'd recommend a diesel-hydraulic system.

Fortunately, I am an employee of an organization that caters to all facets of the market. Therefore, while I know some of you will always have a strong preference for either completely electric or diesel-hydraulic systems, many of you will keep pushing the industry for innovations to meet today's needs.

Still, it is incumbent upon all of us as an industry to meet the needs you will be facing tomorrow.