

## Selecting a Meter Register: Mechanical v. Electronic

### *New Electronic Meter Register Allows Direct Wireless Link to Base Office*

By Tom Duffey, Kelley Energy

When you have a new fuel delivery truck built, one of the decisions you face is what meter register to use. It is less obvious that you also face the same decision with your existing fleet of fuel delivery trucks. The technology and sophistication of meter registers has evolved significantly in recent years. It is possible that the registers on your existing fleet are not optimal for your operation. This is true whether you have 30-year-old mechanical meter registers or 3-day-old electronic meter registers on your trucks.

By their nature, all meter registers are quite remarkable. They allow us to consistently deliver (and typically produce a printed record of) a measured quantity of product to within a very narrow tolerance for error. This is the primary function of all meter registers, and we take it for granted that the register will perform this function well.

Generally, meter registers fall into one of two categories, mechanical or electronic. Mechanical registers offer a level of comfort, familiarity and simplicity, but are limited in functionality. Electronic meter registers are typically more reliable and can perform more functions, but tend to come across as more complex in their operation. Since functionality varies significantly from manufacturer to manufacturer, electronic meter registers also require the operator to get more educated about the options offered by each manufacturer.

The technology of mechanical meter registers is a century old and relatively primitive. Mechanical registers rely on a series of sprockets, shafts, wheels, pins, washers, and springs to provide a record of delivered product. The resulting number of moving parts makes the mechanical register prone to service problems:

sheer pins break; registers jam, and a host of other mechanical failures occur. With the exception of the old Lockheed register (which may be found in the Smithsonian and on a few antique oil trucks), most mechanical registers are limited to providing volume only; they are not capable of doing price, tax or discount calculations. Mechanical preset and mechanical temperature compensation devices also operate through the magic of multiple moving parts, and are also prone to mechanical failure. In addition to being less functional and less reliable, mechanical registers are less secure; the operator has to be concerned with the driver "riding the ticket". In the end, mechanical devices remain popular because users are familiar and comfortable with them; users accept the high maintenance nature of this tried and tested technology. However, there is a better way, the electronic option. The switch to electronic meter registers may be less painful than you think and more rewarding than you could imagine.

Most large fuel delivery companies have made the switch to electronic meter registers. In addition to proving to be more secure, dependable, and accurate, many electronic meter registers allow for point of sale invoicing (saving on postage), reliable temperature compensation (saving on shrinkage), and interfacing to other productivity enhancing technology. In Canada, the mandate to temperature compensate alone has justified the move to electronic meter registers. Today, nearly 100% of Canadian fuel delivery trucks are equipped with electronic registers. Even in markets where temperature compensation is not permitted, the other advantages of electronic meter registers are compelling enough to warrant the switch. The big companies have figured it out; the return on investment from switching to electronics makes sense.

Electronic meter registers have been around for over twenty years. The first manufacturer of electronic meter registers to make a significant market presence in the fuel delivery industry was MID-COM. Rick Salvesen, of Midwest Computer Company (MID-COM's parent), pioneered the technology. As part of a

college project, he adapted a device that measured electronic pulses to a device that interpreted, displayed, and printed a calibrated, measured volume. The pulses are generated by the actual rotation of the meter shaft. A known number of rotations produces a predictable number of pulses and can be related to a known number of units of product to produce a very accurate measure of volume. The concept was very simple and remains the accepted method behind the design of most (if not all) electronic meter registers available to the fuel delivery industry today.

In addition to MID-COM, a number of other manufacturers have introduced their versions of electronic meter registers. The functionality of each electronic meter register currently available in the market today varies greatly from manufacturer to manufacturer, and within a manufacturer, functionality can vary significantly from model to model.

At a minimum, all electronic meter registers duplicate the primary function of their mechanical cousin; they all produce an accurate measure of volume pumped through the meter. However, this is where the similarity between electronic meter registers ends. Some provide only this "pump and print" function. Others allow basic price and tax computations and preset volumes. More sophisticated models have the native intelligence to do more complex calculations and generate detailed reports, while others rely on interfaced computers to do the "smart" work. The most advanced electronic meter registers have superior processing and storing abilities, are flexible to meet different variations of the industry's needs, and are designed to communicate with third party solutions. Of the meter registers researched by this author, the unit that scored the highest is the EMR3 from Veeder/Root.

It is no surprise that Veeder Root, the world's largest manufacturer of mechanical meter registers, for more than 60 years, has produced a

powerful, versatile and low cost electronic meter register. Veeder Root's EMR3 electronic register is an effort by Veeder Root to grow its market leading position as industry demands shift from mechanical to electronic meter registers. The EMR3 is a great start; it is setting a new value standard for the electronic meter register industry, worldwide. One example of the register's power and versatility is demonstrated by its interface with Digital Dispatcher, a wireless software solution.

The combined Veeder/Root-Digital Dispatcher solution allows the user to route, track, and manage vehicles, inventory, work orders and personnel. A driver's entire day's work can be loaded into a simple cell phone. New orders can be automatically sent to the phone throughout the course of the day. The phone communicates with the register, and the register communicates with the phone; this eliminates the need for the driver to input data. The driver is left to do what he does best, deliver product. Open orders move from the phone to the EMR3 meter register; completed orders move from the EMR3 to the phone and automatically back to the base office. At any moment in time, the office knows the status of the trucks in the field. Among the benefits of such a system are: improved routing efficiency, tighter inventory control, increased office and field productivity, and better customer service. In addition to its communication capabilities, the EMR3 does not require a separate rugged computer to perform account receivable or reporting functions; the register has the native intelligence to perform those functions.

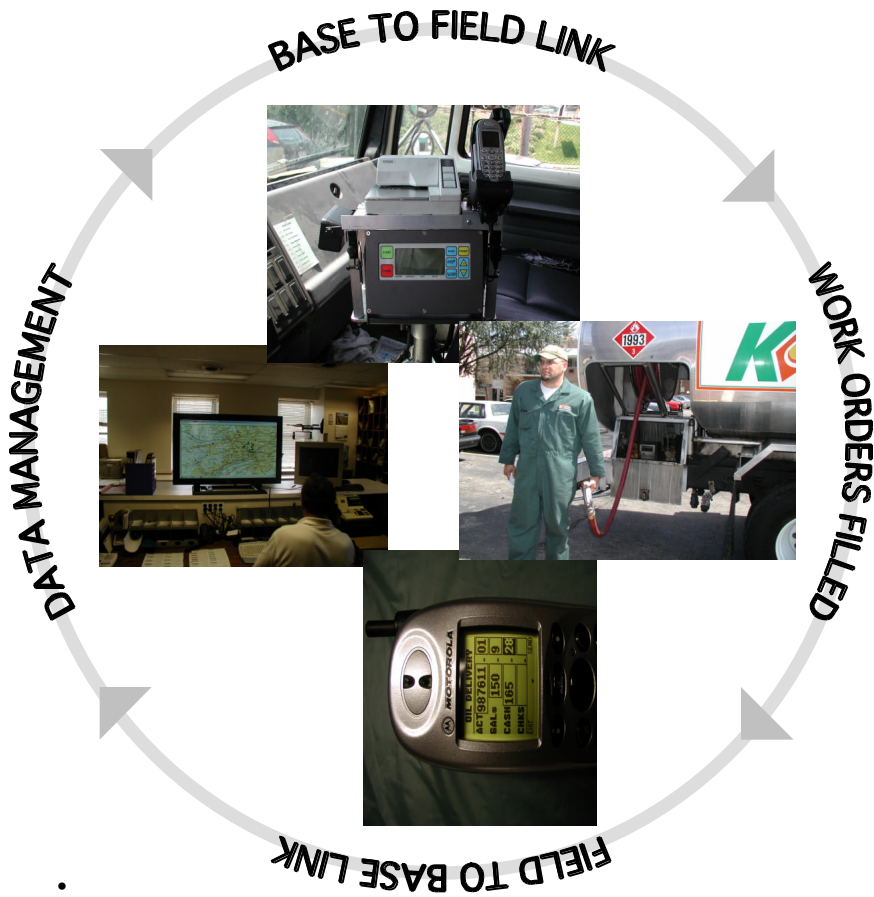
The developers at Digital Dispatcher are even working on a solution that would eliminate the possibility of "wrong deliveries". By communication with an intelligent meter register, such as the Veeder/Root EMR3, Digital Dispatcher is designing a

system that would lock out the valve at the reel using GPS or other geolocation information to verify the truck is at the correct location prior to pumping product.

The possibilities of electronic meter registers are impressive. The economics of electronic meter registers is cheap. Continued resistance to deploy electronics is insane. Even those with existing electronic meter registers should consider upgrading to the new generation of more powerful electronic meter registers. The cost to convert from mechanical to electronics is low; the cost to upgrade from electronics to better electronics is lower. When selecting a meter register, be smart; select a really intelligent electronic meter register.

*Supplement article with photos, graphics, charts and/or bullet points of old v. new meter registers.*

*About the author: Tom Duffey is an oilman; he runs Kelley Energy in Philadelphia. He occasionally teaches economic principles and energy economics at Temple University as an adjunct instructor. He was instrumental in developing and deploying the Digital Dispatcher - Veeder/Root EMR3 interface. He credits this technology to increasing his company's office and field staff productivity by as much as 20 percent. Tom Duffey is available for comments about this topic at 215-225-5400.*



The Veeder-Root/Digital Dispatcher solution allows companies to complete the information loop: Delivery tickets can be loaded on a cell phone or automatically sent to a phone that communicates with the meter register; upon completing a delivery, the meter register can print the ticket and send the completed delivery information to the phone that automatically sends the data back to the base office.

Mechanical



V.  
Electronic

