

Specifying Hour Meters:

Making Sound Choices

An hour meter is one of those simple devices design engineers or maintenance technicians may rarely think about. Yet, they may provide the most inexpensive source of equipment reliability insurance that a manufacturer can offer with their product.

Honeywell offers some guidelines for making sound choices when specifying hour meters.

Let's look at what these simple yet reliable meters are, and what they can do for you. This paper will also explain how to select an hour meter, when and where you should use one, some unusual applications that could benefit by an hour meter, and how you can get the most mileage from this oft-time overlooked component.

What is an hour meter?

An hour meter is a gauge or instrument that tracks and records elapsed time, normally displayed in hours and tenths of hours. The majority of hour meters are used to log running time of equipment to assure proper maintenance of expensive machines or systems. This maintenance typically involves replacing, changing or checking parts, belts, filters, oil, lubrication or running condition in engines, motors, blowers, and fans, to name a few.



Where are hour meters typically used?

Most hour meter applications involve off-highway equipment with engines or products with electric motors. While some medical devices and recreational equipment track and record time, the bulk of the applications involve engines and motors. We will illustrate some atypical applications where an hour meter could be an asset.

Why use an hour meter? Why are they important?

The primary reason for using an hour meter is for maintenance. If you rely on the actual *running time* of an engine to schedule maintenance from the last service, rather than calendar days or miles driven, there is less guesswork and greater correlation to the true operating life of the equipment. Reasons for wanting to track and record elapsed running time fall into four categories:

Use hour meters for:

Equipment Service:
track running time
between scheduled
service

Equipment Warranty:
monitor elapsed hours

Equipment Resale:
record actual running
hours

Equipment Rental:
track elapsed time

1. Service

Performing regular, scheduled maintenance on engines, motors and other expensive equipment is critical, particularly if the equipment is running in harsh conditions like off-road excavation. Imagine the cost and lost revenue if an excavator or bulldozer working on a time-sensitive project broke down because routine maintenance was not done when it was due. Tracking running time to ensure that oil changes, belt changes, filter changes, calibration checks and other preventative maintenance tasks are done is critical to keep equipment running and jobs on schedule. If the equipment runs in harsh conditions or remote locations, or if it sees a lot of punishment, you need to judiciously monitor running time and perform service at regular intervals.

2. Warranty

Some equipment is warranted not by days or years since date of purchase, but by running hours.

Whether or not the equipment is still under

warranty would then depend on the number of elapsed hours. A good analogy is a car odometer. A car is warranted for 5 years or 50,000 miles. An hour meter is the equipment's "odometer." With many warranty programs,



measuring machine use is more important than how long ago the machine was purchased.

3. Resale

Virtually all large industrial, construction and agricultural equipment such as bulldozers, cranes, trenchers, forklifts, graders, compactors, tractors, combines, harvesters, shredders and the like are sold "used" based on age, condition and logged hours. A combine with 500 hours, for example, will be worth more than a comparable one with 2000 hours. Having an accurate accounting of elapsed time can make a big difference in price when selling used equipment.

4. Rental Products

Both professionals and the do-it-yourselfer can rent backhoes, skid-steers, log splitters, tree chippers, rug shampooers and other expensive tools. Depending on the equipment, rental agencies can charge by the day, the hour, or by the actual elapsed time in hours that the equipment was running. Often, franchise operations that rent to professional landscapers or excavation crews charge by elapsed time; local rental outlets rent equipment to homeowners by the day. More and more rented equipment will have an hour meter to track elapsed time for rental charges or for maintenance purposes.

Eliminating the guesswork.

The key to performing optimal maintenance is knowing when to perform it. Yes, the hour meter won't perform the task for you, but at least you have a record showing the hours of running time. The hour meter's main benefit is that it helps you better maintain your equipment by eliminating the guesswork. Equipment that is maintained at manufacturer's recommended intervals generally lasts longer, runs better, and is worth more than poorly maintained equipment.

Some unusual applications could benefit.



There are many applications that could potentially benefit from using an hour meter. Consider a motor home with a standby generator. While the motor home may have several thousand miles on it and be several years old, depending upon the owner's habits, the generator used to produce

electricity for lights and air conditioning may only see a few hours of use per year. Knowing age as well as running time is key for maintenance as well as resale.

Fleet vehicles are another interesting application. Fire trucks, ambulances, police cars may all have significantly higher running times compared to mileage. Trooper cars may be sitting at idle by the side of the road but their engines are still running. Fire trucks can be running for hours at the scene without clocking a single mile. The same is true with police cars, utility trucks and other municipal vehicles. If maintenance is performed on these vehicles based on odometer readings only, engine life may be affected. Maintenance personnel need to understand the wear issues surrounding a vehicle's engine hour time compared to road miles. It would be interesting to know how many "engine hours" are equivalent to a "road mile." Nevertheless, crews need to know running time as well as miles to accurately predict maintenance schedules on these vehicles.

Sun tanning beds are another somewhat unusual application that can benefit from an hour meter. The ultraviolet lamps in the beds have a stated life, and a salon owner can more accurately tell when to change bulbs if an hour meter records when the lamp is on.

In addition, many medical devices use hour meters to determine both service intervals as well as other product functions related to elapsed running time.

Types of hour meters.

Hour meters differ by power, display, shape and data. They are either AC or DC powered, and they can have electromechanical or liquid crystal (LCD) displays. They are generally round or rectangular in shape. While most meters communicate hours and tenths of hours, some also show combinations of data, such as volt/hours. DC powered meters are generally used on battery-operated equipment like trucks, tractors and airplanes. AC powered meters are generally used on equipment that plugs into the wall, like rug shampooers, equipment powered by electric motors, generators, and compressors.



Meters with an electromechanical display have numbered wheels that rotate to indicate running

hours and tenths. These meters look very similar to the traditional analog car odometers.

Meters with digital displays normally use LCDs, however, LEDs can be used in applications that are indoors in controlled lighting. LED displays can be less expensive, but do not work well outdoors, as sunlight tends to wash out the display.

Factors to consider when specifying hour meters.

Most hour meters are accurate and affordable. Personal preference regarding style and preference for analog or digital readout can be big deciding factors. Apart from styling, there are some other points to consider. With electronic digital meters, if there is a power outage, while the unit will record and save the total elapsed time, you will not be able to read the display if it has no power. This is not the case with an electromechanical analog meter. At present, digital meters tend to cost more.

Panel profile

LCD meters have a shorter depth than analog ones. Because they have a shorter profile, they can fit into skinnier panels. They also tend to weigh less than analog meters. This is obviously a bigger factor in an airplane and not an issue on the factory floor.

Ruggedness

Both analog and digital hour meters have comparable specifications regarding accuracy, power consumption, vibration, shock and temperature. Both are sealed and tamper-resistant.

Noise and on/off cycles

One distinction worth noting is that LCD meters are silent, analog ones may not be. Again, out in the field this may be a non-issue, but if one is in a hospital room or motor home, it could be a problem. Standard analog meters have a coil that pulls in the armature. This action makes a slight "click" every 3.6 seconds. It's a great feature when you are troubleshooting, but may be perceived as an annoyance when quiet operation is important. This 3.6 second timing update also needs to be taken into consideration if you're tracking elapsed time of equipment that runs short on/off cycles. For these applications, an instant start, three terminal LCD meter is your best option. These meters have an enable line that starts the unit immediately upon power-up.

Because electromechanical hour meters are designed and intended to track equipment total elapsed time, they will be more accurate over longer periods of on time. If your application requires the hour meter to switch on and off rapidly, you may consider using an instant start LCD meter. Other reasons to consider an LCD meter include the depth behind the panel, quiet operation and styling. On the other hand, if you need to be able to read elapsed time when the equipment is not running and power to the meter is off, the electromechanical model is a good choice, since most LCD hour meters require power for the display to be visible.

Terminals

Most AC meters have three styles of terminals. The spade terminal has a 1/4 inch blade with a fast-on attachment feature. The screw terminal allows for a lead wire held with a screw. The wire lead termination style is simply a plain wire.



Shape and decoration

You need to choose from two basic shapes, either round or rectangular. If other dials and instruments in your panel are round, it's best to select a round hour meter. Rectangular meters work best when there are few or no other gauges to match. If you have no panel limitations or restrictions, personal choice can prevail. Consider your panel real estate, both front and back, and choose accordingly.

Some manufacturers offer a wide array of customized looks for OEMs or distributors to add logos or have the meter painted in your corporate color. Round meter can have custom or standard bezels in chrome, stainless or deluxe shapes. Rectangular meters typically have fewer bezel options, usually black metal or plastic.

Delivery

Some custom meters have long lead times, so plan your order for specials well in advance. If your selection is more of standard configuration, check OEM and distributor price and availability.

Warranty

If warranty is important, make note that some economy models have a one-year warranty, while deluxe models can have a two-year warranty.

Consider Honeywell Hobbs Hour Meters.

Honeywell has a wide range of hour meters for recording and tracking elapsed time. The Honeywell Hobbs brand has round and rectangular analog and digital LCD and electromechanical hour meters, meter modules, combination volt/hour meters, hour meters and dozens of other combination quartz, AC, DC, bezel styles, mounting styles, reset capabilities, voltages, frequencies and colors. Choose from models that are UL Listed, CSA and CE Certified.

Visit www.honeywell.com/sensing for more information.