Why Replace Your Circular Chart Recorder with an Electronic Data Recorder

A Better Method to Traditional Circular Chart Recording

Circular chart recorders have been in use since the earliest days of recording process values because of their cost effective, simplistic approach to reliably recording process data, but they have their limitations. Honeywell can now help you move seamlessly into the era of Electronic Data Recording, where you are assured of greater data reliability and lower costs plus other benefits.

Circular chart recorder advantages and limitations

The biggest advantage of a circular chart recorder is that it provides a quick “snap shot” of what happened in the process on a single chart. These chart recorders were typically designed to record data based on a 24 hour, 7 day or monthly basis, providing a historical record of one or several process variables at a glance. The limitation of this type of record is that the “snap shot” came at the cost of the resolution of the data because of the circular design and size of the charts which were typically 10 or 12 inches in diameter.

Another aspect that favored the use of circular chart recorders is the simple mechanical mechanisms for the pen and chart drives. This made for a cost effective solution when you only need to record a few inputs. This also made for a reliable instrument, since there are relatively few moving parts.

Circular chart recorders typically have a limited number of inputs due to each pen needing its own mechanical drive and the need for the pens to move pass each other when recording the data. This limited some of the applications that would use circular chart recorders. With the limited number of inputs, you will typically find them used in such applications as monitoring oven temperatures, test chambers, storage monitoring, batch reactors, pharmaceuticals, freezer farms, flow monitoring, water and waste water treatment areas, thermal heat treatment processes with a limited number of inputs, food processes like cooking or canning and sterilization processes.

Many circular chart recorders have limited display capabilities because the chart told it all. The display, if there is one, provides limited information and is used primarily for product configuration or observing the instantaneous display of the process value (PV).

A circular chart recorder cannot tell us

- The exact value of the PV at a particular time - The width of the pen trace, the chart range and resolution all contribute to the inaccuracy of the reading
- The alarm conditions that actually occurred - As alarms are typically displayed but only recorded as a PV deviation
- The duration of the alarm – as it is difficult to determine due to the chart resolution
- The details of the alarm - as additional messaging information related to the alarm is typically not supported
- If anyone noticed the alarm and did something to fix the alarm condition

Another key limitation of any paper recorder is the need for regularly servicing the instrument to replace pens and charts as they get used. The cost of the pens and charts and the cost of storing these records for the future can be significant in the long term. This is the on-going cost that you don’t have with an electronic data recorder.
**Trendview Paperless Recorders as a Replacement of Circular Chart Recorder**

Paperless recorders provide many advantages over traditional paper recorders. One advantage is the electronic format of the data that allows for faster, more comprehensive data analysis. The electronic data eliminates questions surrounding data resolution or the need for interpolating trace values from a chart and the associated errors of transferring 'analog' data to a spreadsheet for analysis. With electronic data recording, the actual measurement is stored as a digital value eliminating any of these types of interpolation errors.

In addition to these improvements in data reliability, the user also benefits from reduced maintenance costs resulting from eliminating the mechanical parts found in these electromechanical recorders. This would include items such as chart drives, pen arms and the pen servo mechanisms that are associated with conventional paper recorders.

Paperless recorders provide quick visualization of any process and documentation of the integrity of the process. Features like alarming, event recording, communications and flexible configuration enable safety, efficiency and reliability of the process.

- **Safety:** Since a recorder is designed to monitor and record critical process data; it has the ability to provide alarming of out of control process parameters; alerting an operator of the potential need to take action. Also, using the historical data, process analysis is able to be done to determine the cause of a process upset, allowing for corrective action to be taken to prevent future process deviations that could result in defective material being produced.

- **Efficient and Cost-effective:** Recorders provide a cost effective solution to view and document many processes, particularly standalone, batch type process that are not connected to continuous, large scale distributed control systems. They provide a local display of the process data, ready documentation and are typically low maintenance.

- **Quality:** In many processes, knowing what is happening in real time is critical to the overall quality of the product being produced. Recorders are capable of alerting the operator to process parameters that are starting to deviate from norms that could contribute to defective or out of spec product. With the records they produce, they also provide proof that the product produced has been process according to the requirements and allow the end customer to know for sure that the product they are receiving went through all the appropriate process steps and meets their requirements.

- **Compliance:** Recorders are used for many validated applications to ensure the process is being controlled properly and the product being produced is consistent with the product's defined attributes and properties. They provide the records needed to show that the process, once validated continues to perform as designed to produce a consistent quality product.

**Replacing Your Circular Chart Recorder**

Until now you could replace your circular chart recorder with a number of different types of paperless recorders but you were always faced with the need to modify the current installation because of the cutout size of the recorder and the depth of the replacement instrument. Many circular chart recorders used in industrial processes typically had a large footprint because of the chart size but they were not very deep instruments. This allowed them to be mounted in shallow instrument cabinets or mounted directly on a flat surface, like a wall, near the process. This made a simple installation; but to replace it requires an instrument with a similar profile. Most paperless recorders available do not fit these existing circular chart cutouts, thus requiring some type of "goof plate" to fill the hole. Also, they are much deeper than the circular chart recorder they are replacing; thus requiring major mounting changes in order to make them fit. Additionally, most have the wiring connections at the back of the instrument while the traditional circular chart recorder has these wiring connections internal to the case. This allowed for wall mounting of these recorders which cannot be done easily with most of today's paperless electronic data recorders.

**The Honeywell Advantage**

Honeywell has created a variation of the popular Multitrend paperless recorder that eliminates these mounting and installation issues. It is designed to fit directly into the existing circular chart recorder cutout without the need for a "goof plate", it only requires three inches of depth behind the panel and all wiring connections are internal to the recorder housing, allowing for easy mounting to a wall or other flat surface. This greatly simplifies updating you process recorder to the latest in electronic data recording without all the time and expense to make it fit into the same space currently occupied by your present circular chart recorder. You gain the advantages of better process visualization, better data resolution, faster data analysis and better access to secure, reliable data.
For More Information
To learn more about Honeywell’s Data recorders visit our website www.honeywellprocess.com or contact your Honeywell distributor.

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