



At 4:30 p.m., employees' meeting in the cafeteria | apronic



Andon-Systems

Status displays and employee information for maximum transparency on the shop floor

Report machine downtime, communicate and respond quickly

Andon applications in manufacturing ensure higher employee motivation and a quick response to unplanned downtime.

In many manufacturing companies, a large number of work steps are still performed manually. Even though automation of production processes is already well advanced, there are simply some tasks, especially fine-grained or frequently changing tasks, that humans perform better than a machine could today and will continue to do so in the future. And even in highly automated manufacturing environments, there are machine operators, maintenance personnel or logistics staff who monitor production and intervene if necessary. What all manufacturing processes have in common is that they have to be operated, monitored and kept alive by people.



Cost pressure and employee retention must be on the minds of every manufacturing or operations manager. Only a motivated employee performs optimally.

Challenges in the manual manufacturing of products

In a high-wage country such as Germany, for example, it is important to encourage employees in manufacturing and adjacent areas of the company to perform at their best, if only for cost reasons.

Employees are becoming more demanding and want to be informed and integrated into production planning or execution. Against the backdrop of demographic change and the shortage of skilled workers, every manufacturing company has the task of retaining employees in the future. Long-standing employees have acquired a great deal of know-how over time, which must be put to optimal use. In addition, new employees or employees from temporary employment represent a challenge for many companies. They have to be trained and informed as quickly as possible so that they can participate productively in the production process within a short period of time.



Transparency as the key to employee motivation

Poor communication is one of the main reasons for unmotivated employees. Increase the motivation of your production employees through transparent communication of:

- Production plans
- Targets and goals for shifts
- Key performance indicators (KPI) such as actual piece counts or scrap rates
- Non-production messages about birthdays, break times, company meetings, etc.

Information about relevant messages from the corporate world promotes a stronger identification of employees with the company. Decisions are comprehensible and goals are clearly recognizable.

Andon boards present this information on large digital displays for all to see. Corporate communications via traditional media, such as in-house magazines, analog bulletin boards or handouts, are inefficient and highly time-delayed. This makes these ways of communication rather unsuitable.

Andon solutions create transparency and responsiveness in production environments



Andon is a method of visual data management, originated in Japan and was developed as part of the Toyota Production System. Andon systems visualize operating states of production lines or individual machines. The information should be displayed in a way that is understandable and immediately recognizable to everyone.

Originally, andon (Japanese for paper lantern) is a small light on the machine that visualizes problems in the production process. Even today, simple traffic lights or signal lights are still used for visualization on many machines. Commonly used here are Andon signal lights based on the traffic light scheme.

An Andon board is a display board for the production status of a production line. Here, very similar to the Andon light, the status is displayed with traffic light colors, which makes it very easy to visually check the production. Errors are automatically detected by the machines or by the operators and reflected on the display board.

Modern Andon boards are often implemented with very large displays, but the use of a beamer is also possible. The flexibility of these Andon display boards can also be used for more in-depth information. Today, these information boards are used to display process-relevant key figures (KPI = Key Performance Indicators).

Performance indicators for Display on Andon boards

There are numerous methods of process optimization, whether Total Quality Management (TQM), Kaizen, Lean Management, Lean Production or Six Sigma, all methods require the measurement and display of Key Performance Indicators (KPIs). The goal is to continuously improve productivity, quality and work processes, while reducing downtime.

KPIs are metrics with which performance within production can be measured and evaluated. The key performance indicators relate to utilization, time, material and personnel. By linking theoretical maximum performance and current actual performance, conclusions can be drawn about the effectiveness of a production. But also the comparison of actual performance and target, or line A compared to line B, provide important information about optimization potentials within a process.


Furthermore, these performance indicators can be used to measure and evaluate the effects of changes in the process. Studies show that the visualization of data on Andon boards increases the performance of personnel. Measurable effects can be seen in particular in competitive zeal, pride and alertness.

Report and alert malfunctions in a targeted manner

In addition to key figures, the status of each individual workstation of a production line can also be displayed on the Andon boards. By means of a color change and an incrementing fault time, every fault is thus communicated transparently in the factory hall and all those involved can react quickly.

The reporting options for malfunctions or other conditions at the stations often differ in practice. Some companies rely on industrial switch housings here, but many companies also use smart devices such as tablets, panel PCs or even smartwatches. With modern, industrial tablet PCs, information can be brought directly to the workplace instead of „only“ being displayed on the hall ceiling. In addition, this allows any malfunction to be defined and retrofitted on the software side. This makes the solution future-proof and integrable into the continuous improvement process via modern, smart devices.

Machines such as robot welding booths can also be integrated into an Andon system. This requires a machine interface via bus systems or I/O contacts.



Andon boards for each Manufacturing department

Andon boards display any information. This includes current key figures such as target and actual quantities, scrap rates, downtimes or complex calculated key figures such as OEE (overall equipment effectiveness). Current malfunctions at individual workstations or shift comparisons can also be displayed here. Message texts are displayed as continuous text at the bottom of the screen, for example as a kind of news ticker.

Due to the wealth of information that an Andon board can display, it is suitable for almost any production and almost all production-related areas that require information.

Production area: Here, production-relevant key figures, messages or malfunctions are displayed centrally and can be viewed from all locations. This means that every employee in production can see directly whether there are any faults and, if so, where they are.

Logistics area: Andon boards display logistics-relevant key figures or messages. Messages from the individual workstations can also be displayed. In this way, it can be seen at first glance at which workstations in production material has been requested.

Goods receipt and goods issue: Similar to logistics areas, Andon boards can also provide transparency here and display key figures such as average processing times or similar.

Quality department: The quality assurance department uses Andon boards to display current quality-specific key figures such as FPY or CPK. In addition, the quality department can trigger corresponding messages in production to indicate current quality measures (Quality Gate).

Production offices: With Andon boards, production managers get an overview of relevant key figures and malfunctions at any time and can thus intervene in a targeted manner.

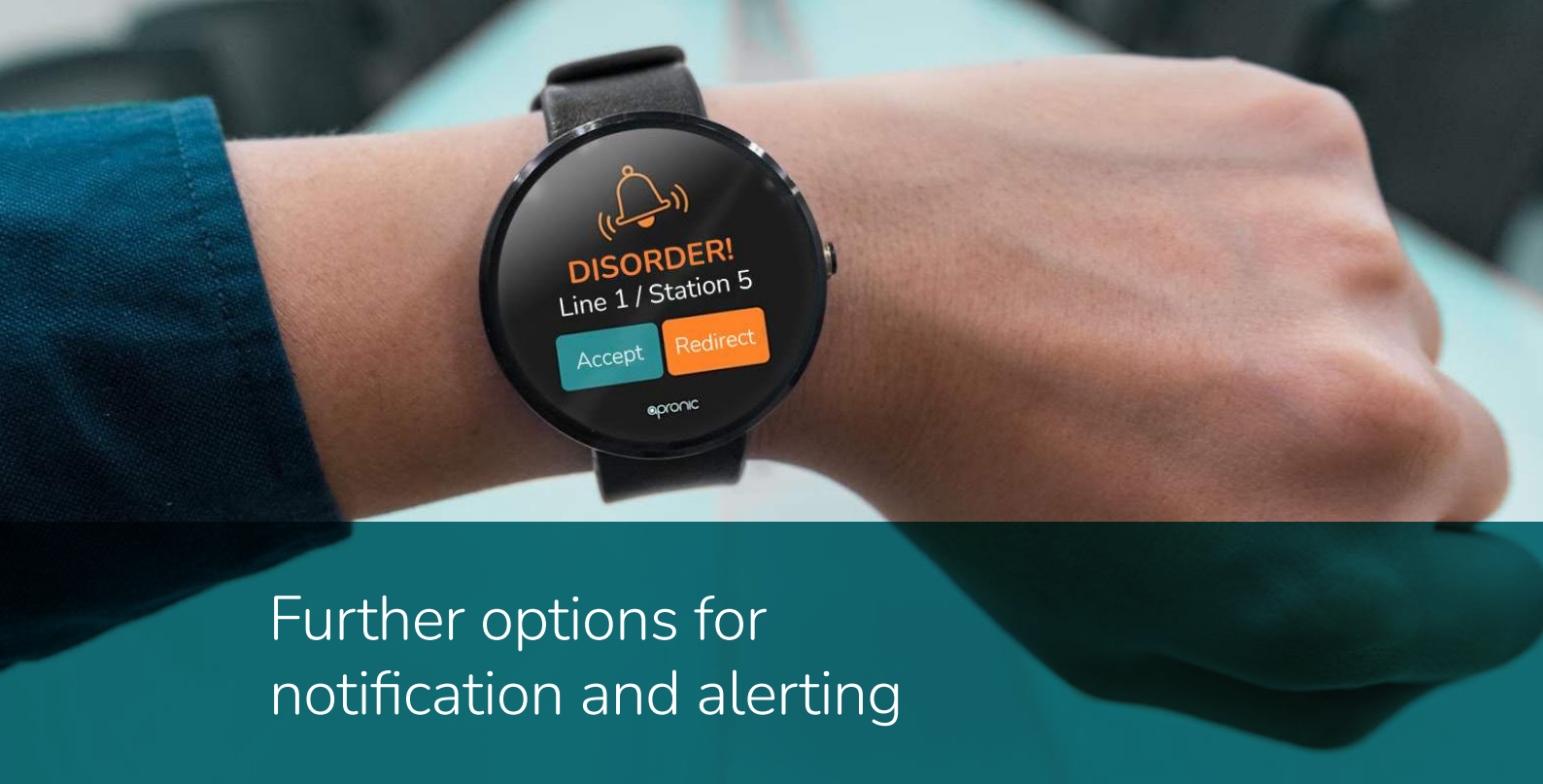
Reception areas: An Andon board in the entrance area of the production makes an impression on the workforce but also on any visitors such as customers or suppliers. It is also important to inform them as transparently as possible. A welcome screen for visitors to the production can also be set up in this way.



Visual and optical additions provide more transparency

In addition to Andon large displays, it also makes sense to use other aids to communicate at all levels. For example, stack lights or traffic lights have been installed on machines for many years. Using these, the status of each individual workstation can be read throughout the production hall. This is an additional way of indicating machine malfunctions, but the information content of three or more colors is relatively low.

Much more information can be conveyed via signal tones or announcements on the shop floor. It is thus possible to communicate malfunctions as announcements in different areas of production. The texts can be generated automatically via text-to-speech from error texts and are then played out in production when the error occurs. A live announcement would also be possible at any time, giving production managers another valuable tool for responding.



Further options for notification and alerting

In addition to displaying on various large screens, tablets or smartphones, other alerting methods can be used:



Phone calls: A telephone call is placed to the stored employee (e.g., the production manager) via a switchboard. A tape message is deposited, which can make statements about the place and the kind of the message. The corresponding employee can then accept or reject the message via the telephone keypad. In case of rejection, another stored secondary contact would be called.



Email and SMS notifications: The smartphone is a good way to distribute alerts for many manufacturing employees, as it is permanently worn on the body. Email and SMS alerts can be used to distribute entered trouble messages to the right places in the company.



Smartwatches: Smartwatches have the decisive advantage that they are always worn on the wrist and messages are registered directly by the person via vibration alarms. It is also possible to accept or forward the message via the display.



Audible notification of messages: A malfunction can be communicated quickly and effectively via voice announcements and message tones on the shop floor or in the individual production offices.

These measures mean that calls for help or fault messages can be responded to quickly and in a targeted manner. The employee no longer has to run to the production manager and verbally tell him that a problem has occurred. This significantly shortens the time it takes to restore the initial state and production downtimes can be reduced to a minimum.

Using Andon data for process optimization and increasing assembly performance

The data resulting from the messages of the production employees is important information. A freely definable reason for the fault and a free text can be added to each fault, which later makes it possible to avoid these faults in the future. The recorded times until the malfunction of the workstations can also be used to reschedule process steps with materials management or maintenance. This ensures a faster response to unplanned incidents in production in the future.

Andon Increase your employee motivation and responsiveness

We at apronic have been allowed to implement many Andon applications for our customers. Therefore, we have a comprehensive know-how of what is possible and how it can be implemented. In numerous projects a wealth of experience has grown, which has culminated in our manufacturing digitization software prodwatch. This offers you a comprehensive tool for all described Andon applications. We are looking forward to your call and to being allowed to bring you to new peak performances of your production in an exciting project!

We are glad to help you bring transparency to your manufacturing with Andon boards. Book an initial consultation appointment today:

