

TEGnology Aps - SensEver HSI hot surface indicator

autonomous self-powered temperature indicator alerting its surrounding by a blinking light when the surface exceeds a threshold of 60°C.

the challenge

Contact burns in production:

Contact burns in the process industry mean a significant disruption of production efficiency and the work environment with consequences as follows:

- Injured workers need medical attention
- Downtime and decreased productivity
- Risk for contact burns can create a tense atmosphere, reducing employee morale and focus
- As a consequence of contact burns stringent safety protocols and training become necessary, further impacting the workflow
- History of contact burns in a workplace can cause struggle to attract and retain skilled workers

While many dangerous parts of the equipment are insulated or protected, parts of the process equipment cannot be protected due to space constraints or cost. In addition to that especially the food and pharma industry runs regular cleaning processes (CIP), where the production pipes are flooded with hot water or steam or cleaning solvents. At those occasions also the otherwise colder system pipes are at dangerously elevated temperatures. Employees touching pipes while cleaning or reaching out to manual valves or simply touching the area accidentally while passing through are not uncommon in those industries.



Installation of cabled sensors is cost intensive and so are battery driven systems which have reliability issues at elevated temperature and require periodic maintenance for changing batteries.

TEGnology addressed this issue with an autonomous self-powered temperature indicator alerting its surrounding by a blinking light when the surface exceeds a threshold of 60°C.

the innovation

The SensEver HSI hot surface indicator is an autonomous and thus maintenance free preventive safety device that can easily be installed on surfaces or pipes by a standard pipe hose. The SensEver HSI is battery and cable free because it generates its own supply power by converting the temperature difference between the surface and its surrounding air into electrical energy using thermal energy harvesting.

The internal power management reads out a temperature sensor and triggers a flashing LED light when a preset threshold value is reached. This value can be set during production. Thus, the device can also be used as a process monitoring device indicating that a process has reached a certain temperature.



The product consists of a base unit and an adapter that can be exchanged with different sizes matching different pipe dimensions. The device is ATEX Zone 2 certified and can thus be applied in critical environment containing explosive gases. It is also IP65 waterproof and can be cleaned with standard industrial cleaning processes.

how it was implemented

The device has been introduced to the market in August this year and is operating at Novo Nordisk, Novozymes, Bavarian Nordic and is under validation at a large international process equipment producer for being implemented into manufacturing equipment for the food industry. Also, a large industrial distributor headquartered in Germany is validating whether the SensEver HSI should be integrated to their product portfolio. Besides the functional value for their customer the reason for that interest is in the simplicity of the product and its application. It is not getting more “Plug&Play” then that.

result

Despite the rather short period where the product is on the market there has been only positive feedback.

No contact burn has been reported so far at the sites our product has been installed. In addition to that, it has been reported that the product increases in general the people's awareness that they are entering a dangerous area. Thus, the people entering the area have a general increased attention to their surrounding and how they move within the specific area. It has also been reported that the staff appreciated the additional effort that has been made to increase safety in their working environment. A welcome side effect, which has been recognized by responsible management.

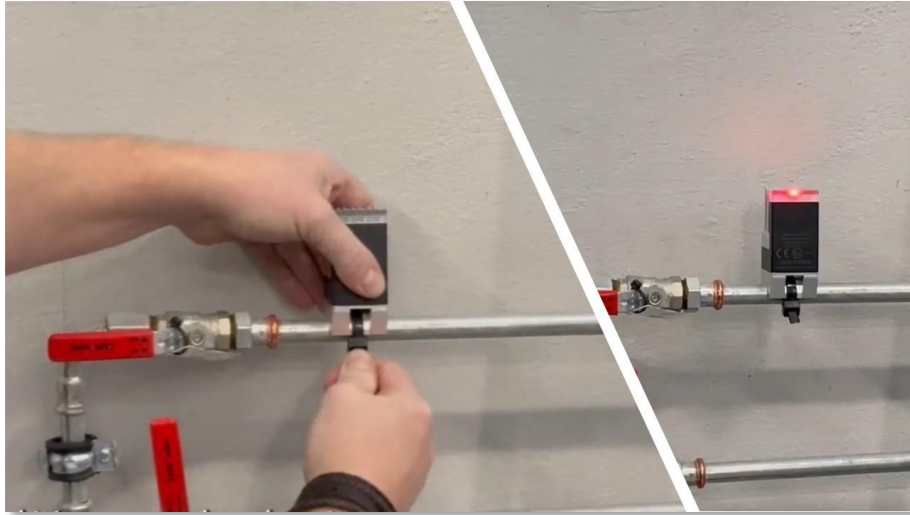
Our recent participation at a maritime event in Denmark opened up a couple of leads who see potential also in the maritime, where safety enjoys increasing attention and where narrow spaces and periodically hot processes seem to be as common as in other industries.



conclusion

There has been very positive feedback after introducing this product to the market, also because it is so simple to install and small in size. Furthermore, it has been a business enabler

for coming products based on thermal energy harvesting as there are autonomous IoT applications and process monitoring in general that greatly suffer from high installation costs for cabling or operational maintenance cost for battery solutions.



The currently biggest challenge for TEGnology is to reach a wider audience and generate the required market awareness for this technology. By entering this award we aim to raise the profile of the risk of contact burns and the technology which can help to eliminate or reduce that risk.

LINK: <https://tegnology.dk/>