

IAQ QUALITY SUSTAINABILITY AWARD 2021 - ONE-PAGE SUMMARY

The One-Page Summary should be filled in and submitted as Appendix 1 to your Application. It will also be published on the IAQ Quality Sustainability Award Homepage; <http://iaqaward.com>. The length of this document must not exceed 1 page.

Project and contact details

The name of the quality sustainability project (max. 100 characters)

Application of Quality Management Tools such as TRIZ Method and 5W2H to Improve Power Supply Reliability and Environmental Sustainable Development

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Organisation(s), country, where the project-members are working, including Web-page links

Sheyang County Power Supply Branch of State Grid Jiangsu Electric Power Co., Ltd. People's Republic of China ; Working Place for Project Members: Sheyang County, Yancheng City; <http://www.js.sgcc.com.cn/yc/>

Project description

The project develops a frequency conversion ultrasonic bird repellent machine based on supersonic capacitor. This project won the grand prize in the national quality innovation project in 2021. The project starts in January 2020 and ends in December 2020.

At present, the bird repellent machine installed in the rural power distribution network line has some problems, such as large volume, difficult installation, single-bird repeller method, unable for live installation, short service life cycle and so on. It is urgent to develop a new frequency conversion ultrasonic bird repellent machine to solve the tripping fault caused by bird damage in the rural power distribution network line, so as to improve production efficiency, ensure production quality, and realize industry, innovation and infrastructure sustainable development goals such as terrestrial organisms. The project uses QC quality management method, six sigma design method system and on-site improvement method to complete the research and development of achievements. The specific use is as follows:

- 1、 Determine the R & D process of achievements through PDCA cycle method
- 2、 Analyze and determine customer requirements (design target value) through QFD method, and preliminarily determine the specification limit of quality characteristics.
- 3、 Determine the product R & D direction through TRIZ Method.
- 4、 To find out quickly the most economical and feasible test scheme through 5W2H on-site quality improvement tool.
- 5、 Formulate and implement countermeasures through affinity diagram, comparative analysis, flow chart and comparative test.
- 6、 Check the effect through the questionnaire and arrangement diagram, and determine the consolidation measures and next steps through the simple chart method.

The innovative feature of the project is that the frequency conversion ultrasonic bird repellent machine based on super capacitor is suitable for long-term outdoor use. The protection grade is IP65. The shell is waterproof and anti-corrosion, realizes live installation, can withstand the maximum current range of 20A-2000A, adopts frequency conversion ultrasonic bird repelling technology, and the acoustic frequency variation range is 20K-30KHZ.

Project effectiveness: By implementing the results of the project, the proportion of bird damage fault tripping of rural distribution network lines is reduced from 28.4% to 13.5%, which greatly improves the power supply reliability of rural distribution network lines, the project does not affect the reproduction of birds, and promotes the coordinated and sustainable development of power grid and environment. In addition, the flexible inductor power collection technology developed in the project, as an important measure for enterprises to practice social responsibility and achieve the grand goal of "double carbon". The company will continue to practice the pace of clean and low-carbon energy transformation, promote the construction of a safe and efficient energy system and contribute to green development. All the efforts realized and promoted the consistent development of the following goals of the United Nations: Goal 8: Decent Work and Economic growth; Goal 9: Industry Innovation and Infrastructure; Goal 11: Sustainable Cities and Communities; Goal 15: Terrestrial Organisms.

Project leverage potential

This achievement has been applied in the company's distribution network with good effect and strong popularization and application value. The project has prepared standardized documents and included in the company's technical specifications, including standard operation instructions and product operation instructions. At the same time, mass production has been realized, with an annual output of more than 60,000 units, and an economic benefit of USD623,500.00 can be obtained; Moreover, the integration platform has great scalability and reserves expansion space for the later construction of diversified and intelligent visual power grid.

Picture/Image describing the project

