

Ensure fastening is done right

Background

In most of the Schneider Electric Products, connecting and assembly processes are done by fastening and screwing.

There are clear parameters for the types of screws and tightening torque requirement.

These are measured very well with torque standards and measures applied to both manual and machine processes.

But, we have observed multiple times that the torque achieved even in half lock or cross thread conditions can give poor joining quality and leads to premature failure or non-functioning of the products.

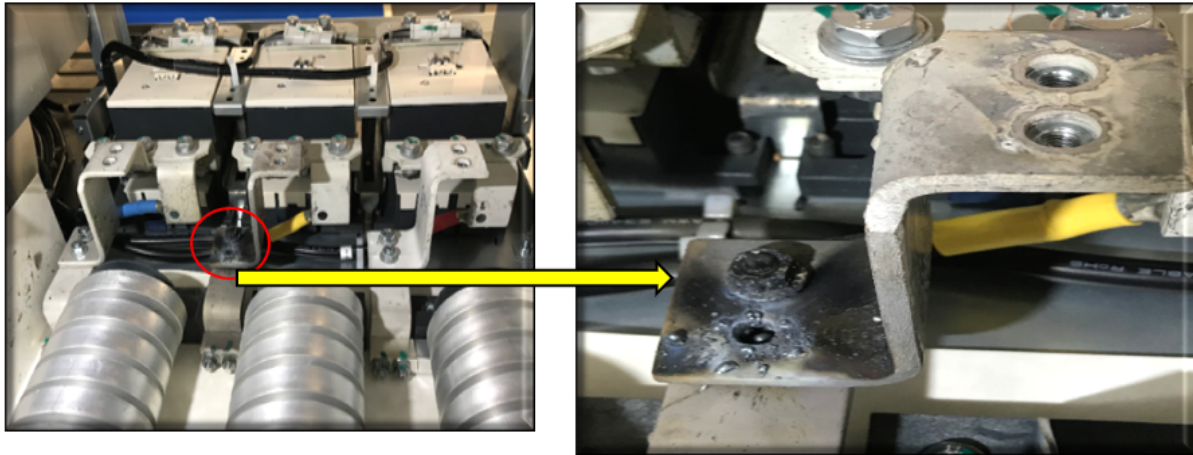


Figure 1: Busbar malfunction due to lose contact of fasteners

We have overcome this via 100% manual inspection which adds to loss of productivity and additional costs.



Also deployed advance torquing tools and controller with angle count and fasteners count having sequence monitoring functionality.



The challenge

Identify or eliminate the half lock fasteners or cross thread instances during the screwing and fastening process.

The screwing process may be both manual and automatic.

The solution needs to either eliminate or identify/alert and rework or scrap the out of specification materials produced via screwing operation.

The solution may be standalone or might be integrated with existing manual and automatic processes to make interlocks or alarm/alerts in case of improper fastening.

What are we looking for?

The main goal of this challenge is to remove the manual checking and additional costs.

The main steps to be supported by the solution:

- Automatic or manual
 - Identify half lock and cross threaded fasteners that have met the torque test.
 - Take action to segregate those incorrectly assembled products that will need later follow up actions.

What we are NOT looking for?

- The torque test by itself is not enough to identify those incorrectly assembled products.
- The tool angle count is also not a 100% full proof method.

Technology Specifications:

We do not insist on any specific technology.

- Automatic Lines
 - On automatic lines we do not always have an operator monitoring the line so we would need a solution that could segregate the incorrectly assembled products without manual intervention.
- Manual Lines
 - Since there is always an operator on manual assembly lines the solution could either be an alert to the operator or an automatic segregation.
- Manual and Automatic Lines
 - Another approach could be to create an alternative to the Torque Screwdriver that eliminates this problem
- Best Business Case: Initial investment (CAPEX) + operational cost (OPEX)

Evaluation Criteria

The solutions will be evaluated according to the following criteria.

- Has the highest identification ratio.
- Is easy to retrofit into existing lines.
- Covers both automatic and manual lines.
- Best Business Case: initial investment (CAPEX) + operational cost (OPEX)

Deliverables

A PDF including the following:

Brief description of the proposed solution, including a short specification of the equipment, materials, functioning scheme:

- Images, videos, 3D models, screenshots...
- Feasibility evidence
- Estimated investment and operational costs. Include the investment in equipment, the number of workers, operating time (estimation), and/or cost for the service.

Please, send a structured description of your solution, avoid long texts, and include an index and lists. Also, you can support your solution with images and sketches or diagrams.

For more details and to apply click [here](#)