

# CASE STUDY

## How a medium-voltage GIS manufacturer improved safety and optimized equipment with an innovative rupture disc design

### SITUATION

This story begins when, during leak testing on a medium-voltage transformer, the rupture disk fragments violently, causing damage to equipment 19 feet away. The GIS manufacturer investigated the causes for this and found that:

- The o-ring seal between the disc and the hold down ring had allowed the disc to slip so that it was no longer seated correctly and could not withstand the pressure as intended.
- The hold down ring itself had also deflected over time, reducing the hold down force on the disc.

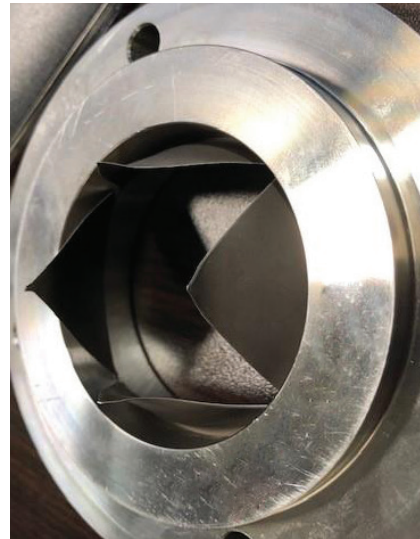
### ACTION

- Switch from a circular scored disc to a four-petal PCR disc to prevent fragmentation
- Weld the disk into an insert-and-shell design to prevent movement, slippage and deflection of the disc. Welding also protects the disc from damage when handling it.

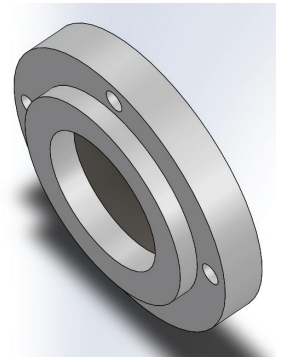
### RESULT

The welded rupture disc design provides a drop-in solution that eliminates extra components, offers simple installation and provides a secure, leak-tight seal with a non-fragmenting disc. As a result, the manufacturer has improved the safety and performance of their equipment, with:

- A safer design
- Quicker and easier construction and maintenance
- Reduced inventory
- Reduced training needs and complexity for new staff



The dual-welded disc assembly with a cross scored disc solves fragmentation and installation challenges



Contact us today for a no-obligation discussion on how you can optimize design and improve pressure safety across your switchgear units.

Our Design Engineers will work directly with your team, using their technical expertise and knowledge of industry codes to design a custom rupture disk solution that will meet your individual requirements and integrate perfectly with your equipment.

# CASE STUDY

## How a high-voltage GIS manufacturer improved safety and equipment longevity through collaborative engineering

### SITUATION

A global manufacturer of high-voltage switchgear was looking for a way to stop the rupture discs on their units bursting prematurely. They wanted the discs to be ready when needed and only burst in a real emergency. They were hampered by not being able to identify the root cause of the problem and therefore specify a disc that would burst as required every time.

### ACTION

By pooling knowledge with our Design Engineers, the manufacturer realized that the mating surface on the switchgear was not lining up 100% with the rupture disc support ring. The resulting strain on the disc was causing the premature failures. To solve this:

- The manufacturer revised their housing design process to ensure the mating surface design matched the rupture disc's interface requirements perfectly;
- Our Design Engineers modified the rupture disc's support ring design to offer more robust support;
- Together, we developed a comprehensive test program that included burst tests with the discs installed on the new housings.

### RESULT

The new designs and test program confirmed the compatibility and robustness of the housing and disc interface. Since using the new designs, the manufacturer has been successfully making safe switchgear units, free from premature burst failures in outdoor conditions, for over a decade.



Collaborative working enabled a successful re-design of both the rupture disc and the switchgear housing



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