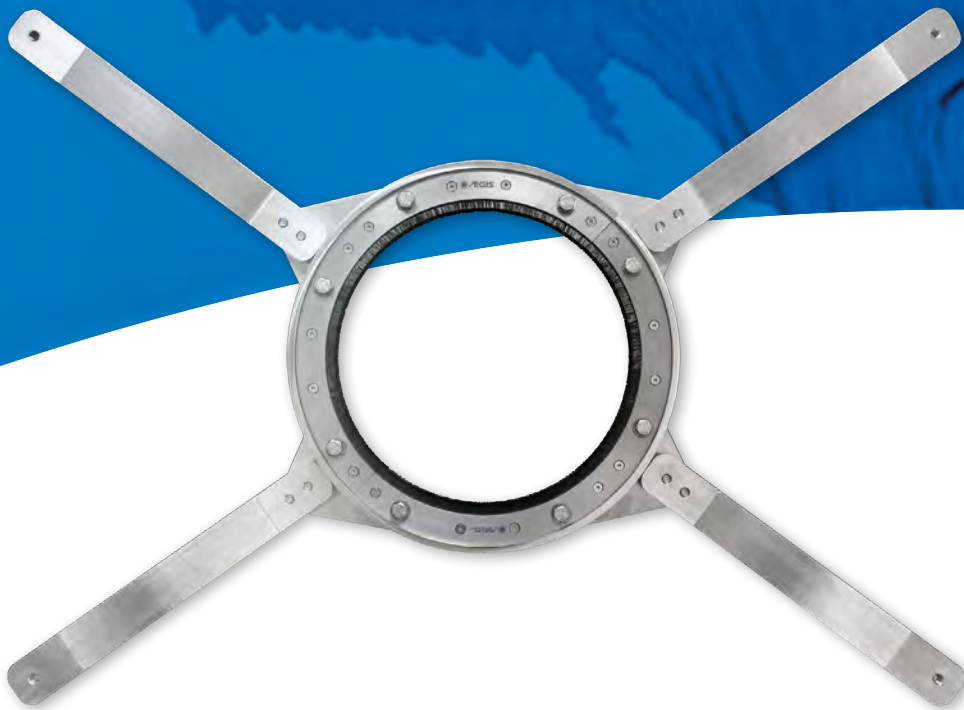




PROTECTING  
NUCLEAR REACTOR  
**RECIRCULATION  
PUMP SEALS**



## ELECTRICAL DAMAGE TO FACE SEALS CAN FORCE UNPLANNED SHUTDOWNS



Reactor recirculation pump (RRP) face seals are critical to the safe and efficient operation of nuclear reactors. However, these seals develop electric potential differences (voltage) between the seal faces. This stray voltage drives current across the seal, causing electrical damage to the faces.

Over time, this damage compromises the seals' effectiveness, potentially forcing an unplanned shutdown.

One instance of repeated unplanned shutdowns due to RCP face seal failure was detailed by van Loenhout and Hurni in a 2015 case study<sup>1</sup>. The devastating impact of these failures underscores the need for a proactive solution.

Unfortunately, awareness that a reliable, cost-effective solution exists remains low.

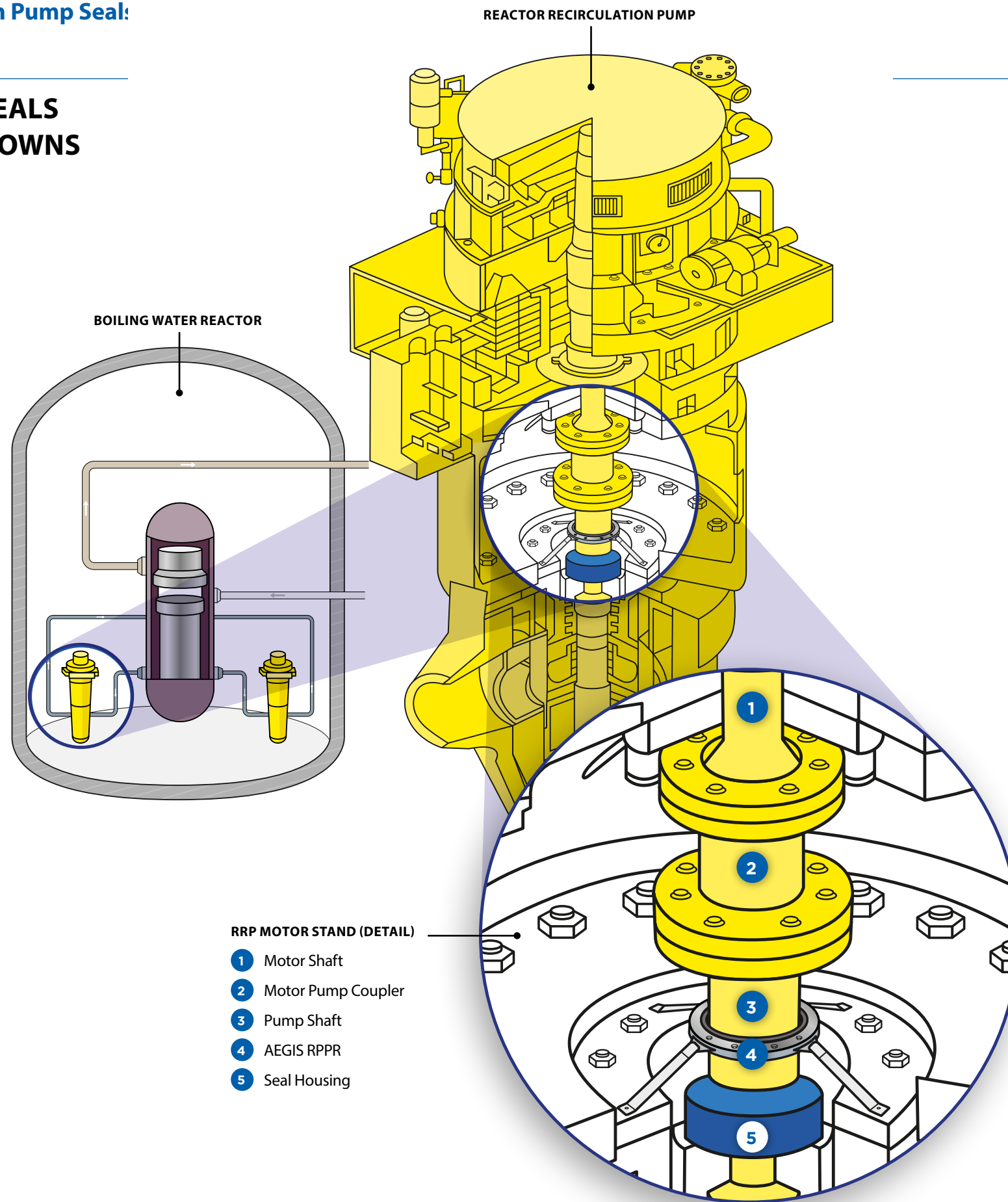


### A trusted solution: The AEGIS® RPPR

The AEGIS RPPR (Reactor Pump Protection Ring) is a specialized shaft grounding ring designed to mitigate electrical damage to RRP face seals. By reducing the voltage between the seal faces, the RPPR significantly slows the progression of electrical damage.

This is achieved through a proven grounding mechanism: The RPPR's conductive microfibers surround the pump or motor shaft, or motor-pump coupler, allowing current to flow safely through the RPPR. This reduces the voltage across the seal, mitigating the destructive flow of current through it.

The AEGIS RPPR's effectiveness has been validated in dozens of installations in the US and abroad over the past decade. The RPPR is a reliable field-tested solution to this critical issue.



## AEGIS RPPR ADVANTAGES

### 304 stainless steel construction

The RPPR's robust design is durable and does not contribute to the plant's combustible materials quota.

### Ease of installation

Engineered for convenience, the RPPR is machined into two mating halves, allowing for quick and efficient installation or replacement.

### Custom-engineered solutions

Each RPPR is tailored to the specific requirements of the destination plant's pump-motor assembly, ensuring seamless integration and optimal performance.

### Extended service life

Lab tests indicate a microfiber lifespan of up to 200,000 hours. While field conditions will shorten this lifespan, the RPPR's durability exceeds the interval between planned shutdowns, ensuring reliability for complete peace of mind.

### Low maintenance requirements

Once installed, the RPPR operates maintenance-free, requiring no adjustments. Replacement can be scheduled during planned shutdowns.

### Cost-effective replacement program

Most facilities opt for proactive replacement of RPPRs before their end of design life. Replacement rings benefit from a 30-40% cost savings due to the absence of additional engineering requirements.

### Protect your reactor's critical components

The AEGIS RPPR provides a proven, effective solution to mitigate electrical damage in reactor recirculation pump face seals, reducing the risk of unplanned shutdown due to RRP face seal failure.

With its robust design, ease of installation, and long-lasting performance, the RPPR is the smart choice for safeguarding your reactor's face seals.

1. atw Vol.60, Issue 5, p. 294  
2. Reproduced with permission.



## About us

Electro Static Technology (EST), an ITW company, is the global leader in the mitigation of damage caused by stray electric charge on rotating and moving surfaces. EST was founded in 1984, with an initial product line of antistatic brushes for the printer industry.

In 1999, Illinois Tool Works (ITW), a multinational manufacturer of highly-engineered components and systems, acquired EST. In 2005, EST introduced the AEGIS Shaft Grounding Ring, which protects electric motors from electrical bearing damage. The RPPR is only the latest innovation in EST's portfolio of solutions for stray voltage mitigation.



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