Over the past five years, the Cruise Ship industry has experienced significant transformations driven by evolving traveller demographics, technological advancements, and a heightened focus on modern entertainment experiences. There has been a notable increase in younger travellers choosing cruises. According to **Couriermail.com.au,** the average age of cruise travellers has decreased to 46; millennials and Generation Z now constitute approximately 36% of cruise passengers, drawn by the all-inclusive nature and diverse activities offered on modern ships.

These developments are centred on live entertainment experiences for passengers, and complex stage automation systems that bring productions to life require precision, safety, and reliability. These productions often require sophisticated control schemes, which are more usually seen in modern production environments. Variable Speed Drives (VSDs) are used in large numbers to control stage elements like hoists, turntables, lifts, flying systems, and even raising and lowering curtains.

According to Faraday's Law of Electromagnetic Induction, an electric motor works as a generator during deceleration, as the relative motion of the rotor conductors within the stator's magnetic field generates electricity. VSDs connected to the motor during deceleration have a limited capability to deal with this regeneration, and braking resistors protect the VSD from a voltage rise in the DC link. In addition, using a braking resistor allows faster, more repeatable deceleration, ensuring consistently safe system performance.

Stage automation systems require components to operate flawlessly during live performances, where timing and precision are critical, in addition, cruise ships represent a challenging environment; spatial limitations, requirements for reduced weight, and operational levels of shock and vibration mean that components used in the environment must meet the following criteria:

* **Space-Efficient Design:** Ideal for tight cabinet installations, allowing vertical mounting in areas with limited space.
* **Intrinsically Safe:** High overload capability, self-extinguishing construction.
* **Thermal Switch Integration:** To provide additional safety and monitoring.
* **Durability Under Vibration:** Designed to withstand continuous movement and vibration, ensuring long-term reliability in dynamic environments.
* **Low Audible Noise:** Conventional resistors can emit audible noise, affecting passenger comfort; REO resistors minimise these issues.

REO braking resistors use heat-conducting material to surround the resistive elements, achieving superior heat dissipation and dynamic behaviour. They are also short-circuit-proof and self-extinguishing. They guarantee a high level of operational safety and are resilient in case of short-term overloads and consecutive braking events.

Manufacturers supplying components for cruise ships need to ensure their products meet the rigorous demands of the marine environment; this involves adhering to relevant standards and obtaining certifications from recognised classification societies. Ensuring compliance not only guarantees safety and reliability but also enhances the marketability of components within the marine industry

The independent organisation "Underwriters Laboratories" (UL) has developed over 1,300 safety standards. Many of these standards are based on the American National Standards (ANSI). In addition to the requirements for electrical safety for electrical items, they often consider additional requirements related to flammability. The REO BW156/UL range of Brake Resistors conforms to these rigorous standards.

The resistors are made from anodised aluminium, which is naturally resistant to corrosion. If required, stainless steel mountings can augment this. The units can be supplied with ingress protection (IP) levels of IP20 or IP65, continuous power ratings up to 1500 Watts, and a working voltage of 900 VDC.

The successful integration of REO Brake Resistors into such a challenging application proves that, whether lowering massive props or transitioning intricate set pieces, the reliability of REO brake resistors ensures safety and performance under the most demanding conditions.

**Ends:** 569 words

**Editor’s note:** If you want to ensure you keep up to date with press material, opinion focused blog content and case studies from REO UK, you can visit their news page: <http://www.reo.co.uk/news>

**For further information or Press Enquiries contact:** Steve Hughes or Michelle Gillam

REO (UK) Ltd, Units 2-4 Callow Hill Road, Craven Arms Business Park,

Craven Arms, Shropshire, SY7 8NT
**Telephone:** +44 (0)1588 673411

**Fax:** +44 (0)1588 672718

**www:** http://www.reo.co.uk

**e-mail:** marketing@reo.co.uk

**Twitter:** <https://twitter.com/REO_UK>

**Facebook:** <http://www.facebook.com/pages/REO-UK-Ltd/263330563768795>

**About REO:** REO specialises in providing an extensive array of electronic power controllers and resistive and inductive wound components tailored for industrial use, particularly in demanding environments. As the company expands its footprint in renewable energy technology, ensuring exceptional power quality has become a paramount focus. With manufacturing facilities in Germany, the US, China, and India, REO stands at the forefront of innovation across the globe.