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NEWSLETTER

HEGGEL® Fix

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Industrial Repair and Preventive Maintenance

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Repair & Maintenance Imperatives

Repair and maintenance, critical elements to any industry, aim to retain the equipment within the industrial processes to meet reasonable level of integrity and safety and to maintain reliability of industrial assets without any unnecessary investment.

Periodic inspections reveal that even the most resistant industrial components require repair and maintenance at regular intervals. Whether the flaw is thickness loss of coatings/linings or leakages, cracks, fractures etc., a high level of productivity and profitability can be maintained through scheduled repair activities.



Minimizing the associated operational expenses during repair is of great importance, while reducing the downtimes is another determining factor to lessen the impact on the continuation of business, ensuring survival and an effective and quick recovery to reach the planned targets successfully.

In this regard, the proper repair method/material enables industries to ensure repair durability and reliability while saving time and reducing expenditure.

Repair Challenges

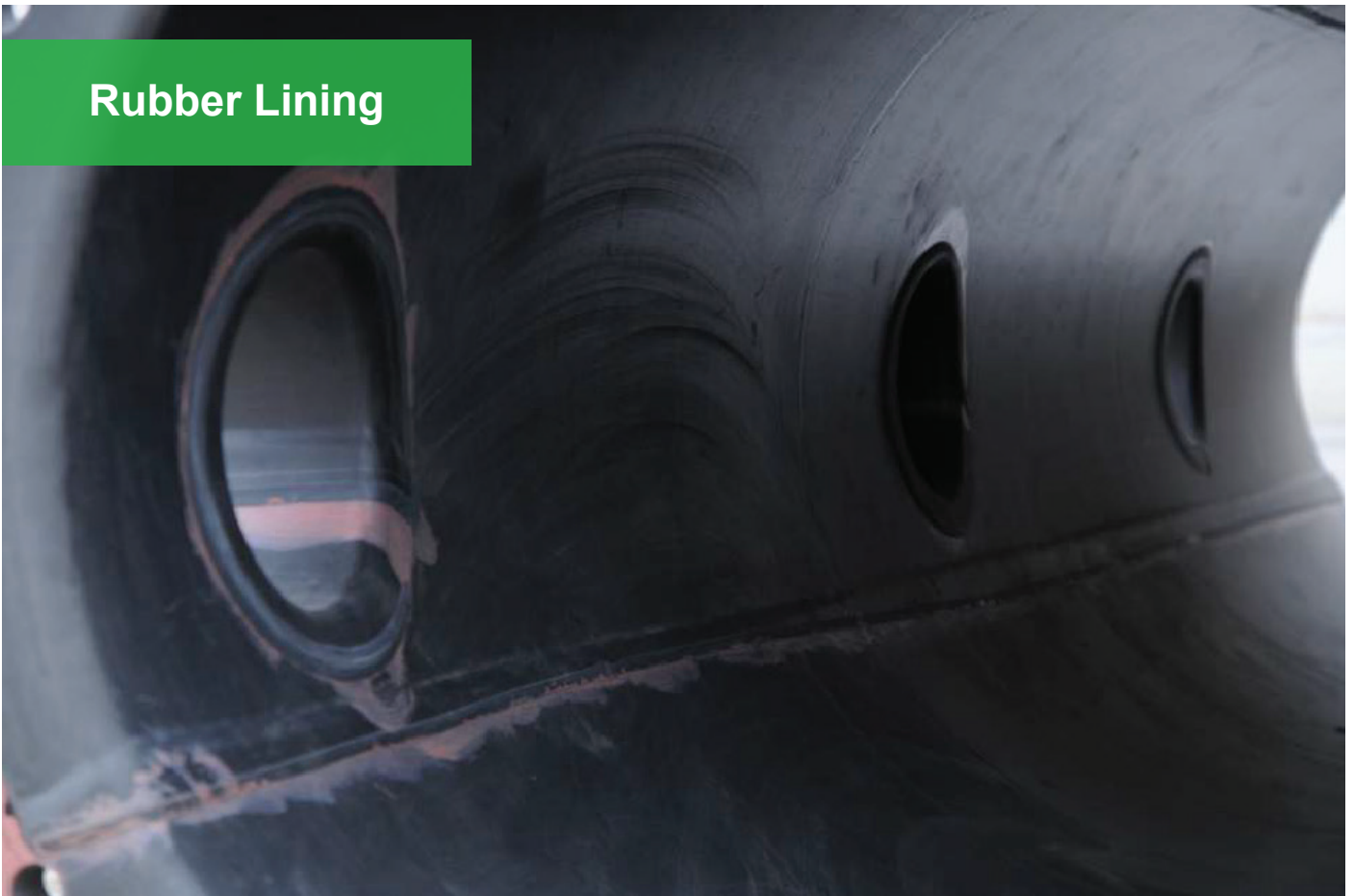
Industries are often pressured to sustain uptime and production, opting for a deferral, not maintaining the equipment using the right method/material and within the right time, and thereby exposing themselves to the risks of operational unreliability, loss of productivity and safety incidents. On the other hand, the repair strategies are commonly not the best fit for economic objectives, a consequence of which is unnecessary maintenance activities and the extension of planned maintenance intervals such as overhauls.

Even in the best-run operations with careful instructions, industrial repair would be inevitable. Repair may differ from tiny cracks on the equipment to the replacement of an entire lining. As the method of repair is dependent on various factors such as equipment type, defect status on the original substrate, extent of repair, service type and also available facilities, considerations should be defined exclusively for each case for a time- and cost-effective and maintenance to be carried out.



Protective coatings and linings need to improve performance sustainably and costs-effectively; their repair and maintenance procedure are desired to be efficient and rapid to lessen the backlog, reduce costs and ensure safety. Therefore, improvements on repair methods and specifications to overcome old and new challenges are constantly sought after.

Rubber Lining



Even the very resistant rubber lining systems pose difficult repair challenges such as storage and conditioning. Rubber material properties can be adversely affected by environmental conditions such as temperature, humidity, sunlight/UV exposure, etc.; restrictions which only get stricter when it comes to raw rubber materials. Moreover, rubber should be stored free from super imposed tensions and compressive stresses and must be kept away from other potential causes of physical deformation. The rubber storage conditions also directly influence the rubber shelf life; limited storage period due to the rather short expiry date of rubber compounds, as well as the short expiry date of adhesives pose yet another challenge.

Rubber lining application requires precision and expertise due to the complicated installation process. Several layers of the rubber lining may be required; therefore, it is crucial to follow application principles for adequate corrosion resistance. Either the primer applied ahead of the lining process or the adhesive, may not dry in a timely manner. Since following the order of the rubber installation is essential for a successful relining, the common repair processes are extremely time-consuming and costly due to the provision of repair requirements and downtime.

The life of rubber lined equipment could be prolonged by years through adequate repair. However, it is often not possible to re-cure the rubber in the original manner. Additionally, repairing damaged rubber-lined equipment using the same type of rubber compounds results in time and cost overruns. This turns out to be even more challenging when the design of substrates is complicated or the equipment is large. Therefore, more efficient alternative repair processes are extremely desirable. Designed to solve all the rubber lining repair challenges, HEGGEL Fix rapid-repair and time-saver product, reduces the cost significantly, whilst allowing an easy installation, maximizing the performance and life cycle of the lining system.

Repair Welding



A commonly used technique to fix incidental damages, cracks or corrosion-caused defects in heavy machinery as well as expensive tools, dies & other industrial service components, is repair welding. All application requirements of repair welding, such as removal of defects, joint preparation, welding consumables, pre-heat & post treatments, have to be taken into account to successfully execute the welding procedure and restore the worn out/damaged parts. Moreover, welding challenges such as porosities in welding bead, deformations, cracks, slag inclusions, etc. need to be corrected to carry out the standard repair process to prevent failure.

It is practically impossible to obtain a perfect welding in hard-to-access points. Limited space calls for great skill and reliable selection of the suitable welding position. The selection of a proper electrode is another determining factor in performing desirable repair welding. In addition, welding is considered a hazardous activity, the safety risks of which vary from overexposure to welding fumes & gases that results in severe health problems to electrical shocks, fire and explosion.

Welding repair process is always associated with unwelcome defects such as cracks, deformation, porosity, accumulation of droplets of molten material (spatter), etc. As a Metal-Build product, HEGGEL Fix is a superior alternative to the traditional repair and maintenance welding, avoiding welding pitfalls with the most up-to-date technology and decreasing the likelihood of defects. It performs in a similar fashion as cold welding with no heat affected zone, eliminating the risk of the base material being affected by chemical and mechanical changes during the welding process.



HEGSEL® Fix Innovative Solutions

Thanks to its advanced and innovative technology, HEGSEL Fix is an exceptionally capable solution for repair & maintenance optimization, meeting and surpassing stringent standards. This product group offers effective repair mortars, satisfactory for most damaged services, highly justified by cost and time considerations.

HEGSEL Fix repairing mortar efficiently fill surface defects for repair and maintenance of various types of metals, alloys and linings, such as glass/rubber or enamel lined vessels or tanks. Allowing for easy application, HEGSEL Fix putty adheres excellently to a variety of substrates, including surfaces coated with HEGSEL Corr products. Rapid repairs made by HEGSEL Fix putties, extend the lifespan of the machineries, process equipment and steel structures, while reducing the overhaul/downtime periods.

In addition to being an outstanding alternative to welding repair and for glass and rubber-lined equipment, HEGSEL Fix products can also be used in the surface preparation stage to fill the pitting, holes and flawed areas prior to the application of any coating systems, notably extending the coating performance and longevity.



HEGSEL® Fix Advantages

- ✓ Single layer self-priming mortar
- ✓ Easy curing at ambient temperature
- ✓ Easy application by brush or scraper
- ✓ Exceptional mechanical strength and abrasion resistance
- ✓ Excellent adhesive strength to a wide range of substrates
- ✓ Superior broad-range chemical resistance
- ✓ Thermal resistance at elevated temperatures
- ✓ Particularly smooth surface to improve fluid flow and reduce sludge formation
- ✓ Time-saving and cost-effective

PRODUCT	CHARACTERISTICS	PHYSICAL PROPERTIES	
HEGGEL® Fix 811 2-component corrosion-resistant high-tech repair putty	<ul style="list-style-type: none"> ✓ Recommended for repairing damaged equipment, glass/rubber lined vessels and defects in HEGGEL Corr coated equipment and tanks ✓ Excellent adhesive strength to wide range of substrates, such as steel and hard/soft rubber lined surfaces ✓ Excellent broad range chemical resistance ✓ Curing at ambient temperature 	Abrasion Resistance	ASTM D 4060 20 mg weight loss (Tabor CS-17/1kg/1000 cycles)
		Impact Resistance	ASTM G14 Forward: 13 Joules Reverse: 3 Joules
		Adhesives Strength	ASTM D4541 > 25 MPa (cohesive failure)
		TEMP Resistance	NACE TM0174 +225°C Immersed +280°C Non Immersed



PRODUCT	CHARACTERISTICS	PHYSICAL PROPERTIES	
HEGGEL® Fix 830 Super Abrasion Resistance Repair Composite	<ul style="list-style-type: none"> ✓ Ultimate wear resistant engineering grade repair composite. ✓ Specially designed to repair and rebuild machinery and equipment suffering from severe wear and erosion damage ✓ Easy application due to extended pot life with short hardening and service time. ✓ Self-priming bonding tenaciously to steel, stainless steel, cast iron, copper, bronze, aluminium, alloys and concrete. ✓ Excellent resistance to impact from impinging particles either dry or within fluid 	Abrasion Resistance	ASTM D 4060 4 mg weight loss (Tabor CS-17/1kg/1000 cycles)
		Adhesive Strength	ASTM D4541 235 kg cm-2 (cohesive failure)
		Compressive Strength	BS6319 Part 2 1983 814 kg cm-3
		Impact Resistance	ASTM G14 Forward: 12 Joules Reverse: 6 Joules
		TEMP Resistance	NACE TM0174 90°C Immersed +150°C Non Immersed



PRODUCT	CHARACTERISTICS	PHYSICAL PROPERTIES	
HEGGEL® Fix 831 High Abrasion Metal-buildings Repair Filler	<ul style="list-style-type: none"> ✓ Multi-purpose 100% solids engineering grade repair filler compound specially designed to repair and rebuild machinery and equipment suffering from severe wear and erosion damage ✓ Easy application due to extended pot life with short hardening and service time ✓ Self-priming bonding tenaciously to steel, stainless steel, cast iron, copper, bronze, aluminium, alloys and concrete 	Abrasion Resistance	ASTM D 4060 12 mg weight loss (Tabor CS-17/1kg/1000 cycles)
		Adhesive Strength	ASTM D4541 235 kg cm-2 (cohesive failure)
		Compressive strength	BS6319 Part 2 1983 814 kg cm-3
		TEMP Resistance	NACE TM0174 90°C Immersed +150°C Non Immersed

