

Repair & Maintenance is one of the widest application fields in welding. In principle, all activities not being involved in joining new structures are to be considered as repair & maintenance. Generally speaking, repair & maintenance is an everyday routine in all aspects of the welding industry.

Hardfacing

A particular area of the repair & maintenance field is hardfacing or surfacing parts subject to wear. Hardfacing is a low-cost method of depositing wear resistant surfaces on metal components to extend their service life. Although used primarily to restore worn parts to usable condition, hardfacing is also applied to new components before being placed into service. Hardfacing provides the following benefits:

- Extension of the life cycle of workpieces
- Fewer replacement parts needed
- Increased operating efficiency by reducing downtime
- Less expensive base materials can be used
- Reduction of overall costs

Restoring worn parts normally involves the following steps:

1. Buttering = a deposit will dilute the C and alloy content of base materials
2. Build-up = seriously worn areas are rebuilt close to their working size using crack resistant welding materials
3. Hardfacing = wear resistant surfaces are deposited on the base materials or on build-up deposits

Welding material selection depends on three major factors:

1. Base metal - primarily affects the choice of build-up materials
2. Type of wear -
 - a. metal-to-metal friction - wear from steel parts rolling or sliding against each other with little or no lubrication
 - b. severe impact - wear from severe pounding tends to squash, gouge and crack the surface
 - c. abrasion + impact - wear from gritty material accompanied by heavy pounding which tends to chip or crack, grind away the surface
 - d. severe abrasion - wear from gritty materials which grind or erode the surface. Severe abrasion is often accompanied by heavy compression or moderate impact
 - e. metal-to-earth abrasion - wear from earth like materials accompanied by moderate impact
 - f. corrosion - chemical attack.
3. Arc welding method - depends primarily upon the size and number of components, available equipment and frequency of hardfacing. All general welding techniques can be applied.

Fighting wear

In order to combat against wear, it is important to determine the types of wear as well as the situation of the workpiece in practice i.e. its function. For each type of wear guidelines can be given with which a hardfacing alloy should comply. Some of these guidelines are to be found on the following pages. For general information about hardfacing and specific information on how to combat wear in your typical application we recommend that you contact us.