Expensive equipment and industrial installations are subject to daily attack by abrasion, corrosion, erosion, wear and tear creating enormous costs to industries.

The application and use of our **anti-wear product range** consisting of welding and brazing alloys, thermal spray powders and cold repair compounds can increase the service life of vital machinery and parts dramatically.
HARDFACING MATERIALS FOR STABILIZER PROTECTION/REBUILDING

Stabilizers, tool joints, and drill collars are used extensively in drilling strings for earth boring. This part is subject to extreme mineral abrasion and protection or rebuilding is necessary. Depending on equipment and requirements we offer different materials for maximum protection.

STABILIZER BLADE

- **USING GAS BRAZING METHOD (OFW) WITH TUNGSTEN CARBIDE ALLOY 790 G**

1. Apply 865 FB a special nickel bronze layer as a bond coat
2. Coat blades with 790 G a gas torch rod containing tungsten in a nickel copper matrix (recommended thickness 4–5 mm)
3. Above method has proven to give longest lasting wear resistance

- **USING THE SMAW (MMA) WELDING PROCESS**

1. Use Gold 320 for rebuilding/restoring worn sections
2. Depending on requirement coat wear areas with one of the following electrodes.
3. For multiple wear and crack resistant deposit use gold 750 providing a chromium carbide weld deposit with a hardness of 58-62 HRC or gold 730
4. For high wear resistance use gold 760 (chromium niobium carbide) Hardness ~HRC 64 or gold 780 tungsten carbide.

Remarks:
Gold 780 or gold 760 will provide high wear resistance but the weld deposit will have surface cracks. If this is not acceptable use Gold 750 or Gold 730. Gold 730 can be applied to stabilizers in many layers without cracking

The above alloys are also available as flux cored welding wire for use with the FCAW welding process

**PS:**
We also supply thermal spray powders (tungsten carbide) for hard facing stabilizer blades by thermal spray.
PRODUCTS FOR REPAIRING DRILL BITS
(DRILL STRING)

Drill bits are subject to extreme force and abrasion which causes some inserts to break or fall out.

Inserts can be replaced by using the gas brazing method and the application of a low melting silver brazing rod Gold 850 FB (5056 F)

1) Gold 850 is available in foil and rod form
2) The use of additional flux Gold 810 Ag is recommended

PRODUCTS FOR REPAIRING DRILL TEETH

1) Use Flame brazing technique applying Gold 865 FB (nickel bronze alloy) as bond layer
2) Rebuild worn or broken teeth with 790 G a torch rod containing copper nickel and tungsten providing excellent wear resistance and also cutting action.

PRODUCTS FOR ANTI WEAR PROTECTION OF WEAR AREAS ON ROCK DRILLS USING MMA (SMAW) ELECTRODES

1) protect surfaces which are subject to severe abrasion with one of the following electrodes.
2) Gold 750 a chromium carbide (~ 30 % CR) electrode offering good abrasion and crack resistance Hardness HRC 58-60 this electrode can be applied in 2-3 layers
3) GOLD 760 a chromium niobium alloy providing a deposit of high wear resistance (~HRC 64) weld deposit will show small relief cracks on surface
4) GOLD 730 a martensitic type electrode for hard facing when heavy build ups are required and when the weld deposit must have good crack resistance (HRC 58-60)
Problem:

Winch drums and gears used for handling anchor chains on oilrigs etc. are subject to high friction and pressure causing wear on drums and gears:

**Base material**: Low alloy steel

**Solution**

Rebuild worn drums and gears by welding using a friction and wear resistant **Chrome Nickel Manganese Alloy**

**Recommended Gold Products**

- **Welding process**: SMAW (Stick)
  - 1) Gold 320 as base and build up layer
  - 3) Gold 740 as a wear resistant top layer

All the above recommended Filler materials are also available as Wires for semiautomatic welding (FCAW,MAG)

**Hard facing /repairing of Gears:**

To improve the lifecycle of gears the application of hard facing alloys such as **Gold 320, Gold 330** (Cr Ni) and **Gold 740** (Mn Cr) has proven successful.

**Welding Tips:**

Asses Analysis of base metal
Choose suitable filler material
Preheat accordingly.
Consider type of wear (metal/metal etc)
Gold products for repair of Valves
Globe and Gate Valves, Butterfly, Non-return Plug Valve etc.

Valves are subject to corrosion, abrasion, and friction which causes wear on seats and body.

With the following products Maintenance engineers are able to repair and rebuild all different kinds of valves by welding or cold repairing.

Welding process: SMAW (Stick)

Base Material: low alloy steel /stainless steel

1) rebuild worn section with Gold 320/330
2) Apply 2 layers of Gold 770 /(stellite type) or 1018 Cr Co type alloy

Welding process: TIG (GTAW)

1) rebuild worn sections with TIG 330
2) Apply 1– 2 layer of TIG 770 GT

Base Material: Cast-Iron

Welding process: SMAW (Stick)

1) rebuild worn section using Gold 410
2) Apply toplayer of Gold 420

Repairing Valves/Body with CRC 5 a wear resistant cold repair compound

CRC 5 materials require no heat or pressure and are designed for repairs and overlays where the input of heat or pressure Is dangerous or can influence the dimensions or characteristics of the part to be repaired.
CRC can be used to iron steel, cast-iron , aluminium, bronze, wood, glass, ceramic and many other surfaces.

Use CRC 5
CORROSION AND WEAR ON PUMPHOUSING.

Base material: wear resistant Cast iron. Difficult to weld, as material is hard and tends to crack when heat is applied.

Solution: Use BSW CRC 5 a epoxy base polymer material which cab be applied without heat or pressure and is resistant to wear and corrosion.

Wear on Cast Iron Bearing housings

Use Gold 410/420 a Ni based Welding electrode for rebuilding. Can be welded at low amperages (low heat input) Easy machinable.

Cracked Gear box housing.

Base material Cast Iron.

Use Gold 110 to prepare (open) cracks for welding. Then use Gold 410 or 420 to repair/join cracks. Apply low heat technique (lo amperage) and skip welding.

GOLD 110 FOR METAL PREPERATION

A use full product for gouging, cutting and piercing of cast iron steel and nickel alloys. Easy to use no special equipment or training needed, does not require compressed air or oxygen.
1) Axle shafts 
2) Cam shafts 
3) Crank shafts 
4) Drive shafts 
5) Crusher shafts 
6) Pump shafts 
7) Rotor shafts

With our material you can repair them and make them last longer.

Shafts are mostly made from low alloy heat treatable steels. However in the case of **pump shafts** high alloy stainless steels or nickel alloy are also used.

Shafts are subject to **metal/metal friction** and are showing wear after some time in operation.

New shafts can be expensive and are not always readily available.

By the method of repair welding or spraying such valuable shafts can be easily and quickly repaired.

The following products have proven successful for shaft repair.

1) **Welding process: GMAW(MMA)**
   
   A) Gold 330 high alloy Cr Ni.type electrode
   B) Gold 620 high alloy bronze type electrode

2) **Welding process: FCAW( MIG/MAG)**
   
   A) 330- MF fluxcored CrNi wire
   B) 620-MF gas shielded bronze alloy wire

3) **Thermal Cold spray system( Unispray)**

   **Powder:** 2021-CS (BONDLAYER)
   2400-CS (chrome alloy coating)