

Marine Repair Workshops / Maintenance & Repair Solutions

Filler Materials for rebuilding and hard facing of Valves, Valve Spindles & Valve



Valve seats rebuilt by GTAW Process,
Filler rod ARCWEL 625 T



Valve coated using PTA Process

Filler: Metal powder Ni Co

“ARCWEL 2006 PTA” powder

Valves and Valve seats of Diesel engines are subject to wear by high temperature and metal to metal friction

Depending on Welding equipment available the following Filler metals have proven successful for

- ◇ **SMAW 1 : E-625 (Ni based alloy)** as build up and or final layer (**CO6**) as final Top layer
- ◇ **SMAW 2 : E-808** as build up /E -6C- as top layer
- ◇ **GTAW: 625** as build up and or final layer/**1045 T (CO 6)** as final Top layer
- ◇ **PTA : ARCWEL 2006 PTA -Powder**

Above filler metals can increase the lifetime of Valves many times

Piston Crown -Welding Repair Solutions



Piston Crowns made from alloy steels are subject to high temperatures ,and friction.

The surfaces tend to wear down and need to be rebuilt .

Depending on Equipment available the following filler materials are suitable for **rebuilding piston crowns**.

1) SMAW (MMA) PROCESS

- E-804 HMR
- E-808

2) GMAW (MIG 330 1.2 mm)

Weld deposit made by above electrodes offer the following advantages.

- High mechanical strength
- Tough & crack resistant
- Machinable and high thermal resistance .
- Corrosion resistant

For full detail refer to TDA

Recommendations:

- Clean surface to be rebuilt by grit blasting or grinding
- Measure present size to original size
- Inspect inside and outside for cracks using ultrasonic or NDT detection.
- Remove all cracks and burnt surface by machining
- Preheat Piston crown to a temp of min 200 C and keep this preheat until welding is completed.
- Allow to cool slowly
- Stress relieving in controlled furnace according to base metal is recommended



Worn Piston crown totally rebuilt using ARCWEL E -808 stick electrode

Repair&Maintenance Welding Solutions for Propellers/Bearing & Pump housings

Propeller Base metal: Al Bronze

Problem: Wear and cracking

Repair and rebuild by one of the following methods

- SMAW: **GOLD 620 / GOLD 907 /CU 114**
- GTAW : **GOLD 628 T**
- GMAW :**GOLD 628 M**
- OXY ACETYLENE: **GOLD 865 FB**



Bearing Shell (housing) :

Coated with **white metal**

ARCWEL BABBITT 90 SN

Using GTAW Process

Babbitt 90 SN is supplied in wire and



Pump Bodys (Housing)/ Base metal : Cast Iron

Problem.

Severe wear on body by corrosion and abrasion.

Repair and rebuild by using one of the following methods.

- SMAW (Stickelectrodes) **ARCWEL-E 601**
- Cold Repair Compound **ARCWEL CRC5** used when welding is not possible due to danger of cracking
- Base metal : DUPLEX Steel use SMAW Electrode **ARCWEL E-206**



CYLINDER HEADS- DIESEL ENGINE- MARINE REPAIR SHOPS

Welding repair solutions and Filler metals



Base material : Cast Iron

Problem:

Wear and possible cracks due to high temperature erosion.



Cylinder heads and Engine blocks can be repaired by using one of the following methods

WELDING PROCESS : SMAW

using the following **Filler materials**.

- 1) **ARCWEL E-606** for cold welding of thin sections (up to 5 mm) and for best machinability
- 2) **ARCWEL E-601** for welding of thicker sections and for highest strength

WELDING PROCESS : GTAW (TIG)

Smaller cracks and surfaces/valve seats can also be repaired/rebuilt by using the TIG welding Process.

Filler metals recommended are.

1. **ARCWEL 410 T** for best machinability
2. **ARCWEL 420 T** for maximum strength and economy