The production of Sugar places heavy demands on Machinery and Equipment. Corrosion, Abrasion and Erosion causes Equipment to wear out or break down.

Repairing and Hardfacing with Gold Maintenance welding alloys will increase lifetime of equipment, reducing breakdowns therefore resulting in significant savings.

Gold welding products are manufactured in EU and sold in Indonesia exclusively by.

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<thead>
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<th>APPLICATION</th>
<th>SMAW (MMA) (E)</th>
<th>GMAW (MIG/MAG)</th>
<th>OXY/FUEL Thermal spray (SF)</th>
<th>OTHER TIG (T)</th>
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<td>ANVIL PLATE Cane Schredder</td>
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<td>320 FC-O</td>
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<td></td>
<td>750 E/760 E</td>
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<td>720 E/750 E/1037 E</td>
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<td>750 E</td>
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<td></td>
<td>730 E</td>
<td>730 FC-O</td>
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<tr>
<td></td>
<td>750 E/760 E</td>
<td>750 FC-O</td>
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<tr>
<td>FAN (ID) BOILER</td>
<td>750 E</td>
<td>750 FC-O</td>
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<td></td>
<td>760 E</td>
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<td>GEAR WHEEL/PINION (steel)</td>
<td>330-E/641 320-E</td>
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<td>PUMP BODY SUGAR JUICE (cast iron)</td>
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<td>PUMP ROTOR IMPELLOR (Bronze)</td>
<td>620 E</td>
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<tr>
<td>PUMP ROTOR CAST IRON</td>
<td>420/707 E 620-E</td>
<td>865FB</td>
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<td>420-FC-G 24 B</td>
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<tr>
<td>SPROCKETS</td>
<td>320 E/710 E</td>
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<td>750 E/760 E</td>
<td>2040 SF</td>
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<td></td>
<td>770 E/1018 E</td>
<td>770 FC-O</td>
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**Cane Mill rollers** are used to extract juice from the sugar cane. Cane combs (baggassiere) recover the cane fibers after passing through mill roll. The combs' teeth are **subject to extreme abrasion and corrosion by the sugar cane.** The lifetime of cane combs can be increased many times by using one or more of the following Gold electrodes.

**Protect Cane scrapper (Bagassiere)** teeth by using an abrasion-resistant high chromium carbide alloy **GOLD 750 or 1037**  
For best results apply 2 layers  
Second layer will provide hardness up to 63 HRC  
The weld deposit has a high corrosion and abrasion resistance increasing the lifetime of the comb many times.

To achieve the longest lifetime we recommend to protect the points with a layer of **780/ 788 G** gas tungsten alloy or with thermal spray powder **2070 SF**  
(see Fig B)
MILL ROLLER ARcing / HArDFACING /ROUGHenING

ARcing /ROUGHenING
OF ROLLS  BY
ARCWelDING  (SMAW)

Arcing with hard facing rods such as GOLD 1037 reduces roll wear, improves gripping, resulting in longer life and increased production.
Arcing can be with the SMAW Electrode GOLD 1037 or HB 64 S using alternating current (AC) or Direct current (DC + reverse polarity)
Arcing is applied to the tips and flanks of the roller grooving
The electrode size 4 x 450 mm has proven to be the most popular
The recommended Amperage is between 160-200 amps.
At all different currents using AC current shows the fastest burn off rate,
Heat at the electrode (DC-) produces a higher burn off rate
Heat at the work piece (DC+) produces higher penetration or dilution.
The electrodes GOLD 1037 and HB 64 S contain between 25 and 27 % Chromium and 4-5 % Carbon and other alloying elements such as Mn, Ni and Mo which forms a austenitic matrix of chromium carbides with a high resistance to wear, corrosion and good impact resistance.
The hardness of the deposit is between 58 and 60 HRC
GOLD 1037 and HB 64 S have high metal recovery coatings, assuring easy arcing on most types of welding machines and do not overheat
Sugar cane press rolls are subjected to high pressure and mineral abrasion causing wear and cracking on rolls.

Base material: Cast Iron

Repair and rebuild missing or cracked roller teeth with GOLD 715/707.

Improving gripping function of roller:

- Use Electrode GOLD 1037 or HB 64 S and apply "dot" hard facing pattern.

Use Gold 110 to remove worn or damaged metal. Grind weld area. Use Gold 420/707 as first layer and Gold 715 for rebuilding broken roller teeth.

SUGAR ROLLER ELECTRODE 1037

GOLD 1037 or HB 64S are special electrodes with high chromium carbide elements for hardfacing of sugar mill rollers. The weld deposit will give high wear resistance improve gripping of sugar increasing production efficiency.

Hardness: ~ 61 HRC

Metal recovery approx 200%
Crushers, Feeders, Hammers, and Knives operating at full speed are subject to wear by mineral impurities and chipped sugarcane.

- Use Gold 320/E-312, 710 as buffer layer or build up material.
- Use Gold 750/1037 for hardfacing/protection.

**Preparation of knives for hardfacing**

Hardfacing cane feeders with Gold 730/750 or 1037 will result in longer part life and downtime reduction. For hardfacing by oxy acetylene welding, we recommend the use of Gold 1045 T.

**GOLD 750 and GOLD 1037** are Chromium carbide Electrodes with high abrasion and corrosion resistance. Parts protected with GOLD 750 or 1037 can last up to 20 times longer than unprotected parts.

**Knives hardfaced/protected with GOLD 750 (HRC 60)**

**Bufferlayer explanation**
• Fibrizor cutting knives and hammers are subject to impact sand corrosion causing wear and tear.

• Recommendations for repair and rebuilding

• Grind all surfaces to be hard faced, removing oxides and other contaminants.

• Remove fatigued or damaged metal and old hard facing deposit with gouging electrode (Gold110) followed by grinding

• Use GOLD 740/730 to rebuild worn section

• Apply 2-3 layer of GOLD 750 or gold 1037 for maximum protection against abrasion impact and corrosion

• KNIFE EDGES will last longest when hard aced by oxy acetylene welding using GOLD 1047T a cobalt chrome and tungsten alloy

**GOLD 750 and 1037** are high chromium carbide alloys offering maximum resistance to abrasion and corrosion increasing the life of knives and hammers many times

PS: ask for technical data sheet on above electrodes
FEED /EXTRUSION SCREWS

Base metal: Structural /Cast Steel.
Problem: severe wear on shaft and flights due to abrasion and corrosion causing great reduction in efficiency.
Solution 1:
Weld repair by SMAW
Rebuild worn sections using a abrasion and corrosion resistant chromium carbide alloy.
Welding process:
SMAW (stick electrodes)
Use electrode gold320/ 330 for rebuilding and thereafter apply top layer of gold 750
Solution 2:
Thermal Spray Repair /coating
Equipment: 2010 Spray Torch
Apply base layer/rebuild of 2040 powder
Spray top layer of 2060/Ni or 2070 Ni Tungsten powder (thickness approx. 1-1.5 mm)

PUMP BLADES/ PUMP SHAFTS

Rebuild worn blades with electrode GOLD 620 a wear and corrosion resistant aluminium manganese bronze alloy

Repair and rebuild worn pump shafts with GOLD 330/641 high alloy austenitic stainless steel type electrode. Shafts repaired/overlayed with gold 330 can outlast original parts up to 20 times
ROLLER JOURNAL of crushing roller are getting worn out on the bearing surfaces due to can juice corrosion and metal metal friction. Such journals are mostly made from cas steel and can be rebuilt by manual or semiautomatic welding.

The following products have proven successful for journal repair.

1) Welding process: SMAW(MMA)

A) Gold 330 high alloy Cr Ni. type electrode
B) Gold 641 high deposition Cr Ni electrode

Weld deposits made with the above electrodes are machinable but have high resistance to metal metal friction and corrosion. Journals repaired with GOLD 330 can outlast original parts up to **20 times**
SAVING TIME AND MONEY BY REPAIRING GEARS/PINIONS

By using the right technique and the right filler material large savings can be achieved. There are many shapes, sizes and materials in use today.

The choice of welding process will depend on availability of Equipment and/or size of gear to be repaired.

Depending on the base material of the gear the following materials have proven successful.

**Base material Low alloy steel**
- **Welding process: SMAW (Stick)**
  1) Gold 710 low alloy
  2) Gold 330 (High Chrome alloy)
  3) Gold 620 (Manganese bronze)

**Base material High alloy steel**
- **Welding process: SMAW (Stick)**
  1) Gold 330 (High Chrome alloy)
  2) Gold 620 (Manganese bronze)
  3) Gold 720 (High speed steel alloy)

**Base material Cast Iron:**
- **Welding process: SMAW (Stick)**
  1) Gold 420/707 (Ni Fe Alloy)
  2) Gold 620 (Manganese bronze alloy)

**All the above recommended Filler materials are also available as TIG Rods for TIG Welding**

**Hard facing of Gears/Pinion**
To improve the lifecycle of certain gears the application of hard facing alloys such as **Gold 710 or 720** (high speed steel) Are used to rebuild worn gear teeth..
REPAIR AND PROTECT PUMP HOUSINGS/CASINGS /IMPELLERS

Pump bodies are subject to corrosion, abrasion & erosion causing wear and reducing working life.

Basematerial: Cast iron.

MMA Welding:
- GOLD 410/420/707
- GOLD 620
For repair and rebuilding without heat
- CRC 5 cold repair compound

Wear / Damage on Pump Impellor

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

Base Material: low alloy steel /stainless steel

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

Repair worn or corroded pump housing with CRC 3 a two part cold repair Compound

PUMP IMPELLORS / WEAR ON BLADES.
Basematerial: Bronze
Fillermetal: Gold 620/907

Base Material: Cast iron

Filler metal: Gold 410/420

Basematerial: Stainless Steel

Fillermetal: Gold 310/330

2.22.2014