Colmonoy CALLOY NEWS

Hard-facing and Brazing Alloys

Wearproot Castings

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Manufacturing Subsidiaries: Wall Colmonoy (Canada) Ltd., 3001 Broadway, Montreal East, Quebec; Wall Colmonoy (Canada) Ltd., Lanarkshire, Scotland Branches: Buffalo, N. Y.; Linden, N. J.; Chicago, III.; Pittsburgh, Pa.; Morrisville, Pa.; Birmingham, Ala.; Houston, Texas; Los Angeles, Calif.



PLUG VALVE components reclaimed by Hamer Valves, Inc. Left, plugs with fusion bonded Colmonoy alloy coating before grinding; right, smaller Colmonoy coated plugs after finish grinding operation.



SPRAYWELD SETUP used by Hamer Valves for reclaiming worn plug valves. Colmonoy No. 4 powder is sprayed uniformly onto rotating valve plug with mounted Spraywelder pistol.

# SPRAYWELDING INCREASES SERVICE LIFE OF PLUG-TYPE LINE VALVES

### Has Many Advantages Over Previous Arc-Welded Overlay Method

Service life of worn or damaged valve plugs and bodies is substantially increased by reclaiming with Spraywelded Colmonoy No. 4 at Hamer Valves, Inc., of Long Beach, California.

In this valve application, the Sprayweld process has many advantages over a previously used arc-welded method in that (1) warpage is not a problem — hence, the need for overlaying the plug neck packing area is eliminated, (2) rough machining before finish grinding is no longer necessary, and (3) the extra steps required for application of hard chrome plate are eliminated.

The 1-inch to 3-inch plug-type line valves being salvaged by Hamer are fabricated of AISI C1018 bar stock, cast 304 SST and cast carbon steel (ASTM A216 Grade WCB). Reclaimed valves of this type find extensive application in oil well drilling and cementing operations, and are giving excellent service life in controlling the flow of highly abrasive drilling muds and cement slurries.

### **The Sprayweld Process**

Spraywelding is the best process yet developed for producing an effective abrasion and corrosion resistant fusionbonded, nonporous welded overlay. The Sprayweld method is especially well suited for wear-proofing parts having a basically cylindrical shape. The uniformity of coating that can be achieved with Spraywelding makes it economical as well as effective. The first step in reclaiming valves at the Hamer plant is the removal of the original chrome plated tapered seating surface from the valve plug. The base metal surface is then thoroughly steel grit blasted and the sprayed deposit applied.

While still rotating, the sprayed-on powder is heated with an oxy-acetylene flame to a temperature of approximately 1900°F. This fuses the overlay resulting in a welded bond. The hard-faced plug is next ground to finish dimensions.

#### **Previous Method**

Previously, an arc welded overlay method was used. Possible warpage made necessary an arc welded overlay buildup of the plug neck packing area. This was then machined to run concentric with the plug taper. Next came rough machining and grinding, followed by chrome plating and finish grinding, to fit the seating surface of the valve body.

The Colmonoy No. 4 powder used has a Rockwell C hardness of 35 to 40. It provides high abrasion, corrosion and galling resistance, has a low coefficient of friction and is readily machined.

### SWEAT-ON PASTE REDUCES FARM COSTS

Steel

Stainless

To reduce repair and replacement costs agricultural implements subjected to extremely high abrasion such as plow shares and ensilage knives should be hard-faced with Colmonoy Sweat-On Paste for longer life.

For example, one Nebraska farmer realized large savings by hard-facing the cutting edges of his ensilage knives with Colmonoy Sweat-On Paste. One of these (see photo) chopped 4000 tons of material before a piece of tramp iron passed inadvertently through the machine. Inspection of the damaged knife revealed little wear and no chipping or break away of the hard-facing alloy at the torn area. Had the accident not occurred, the knife would have chopped thousands of additional



INSPECTION of hard faced ensilage knife after chopping 4000 tons of material reveals little wear and no chipping of hard-faced alloy.

tons without requiring repair or replacement. Ensilage knives normally last one day – are good for 30 to 50 tons of material.

### **Sweat-On Paste Properties**

Sweat-On Paste is a chrome-boride hard-facing alloy available as a paste in 1 and 5 pound cans. It is applied with a brush and fused by application of an oxy-acetylene flame. It is especially suited for application to working surfaces of agricultural implements, construction and dredging equipment and materials handling machinery. It is recommended for use wherever high abrasion resistance is required and low cost is an important consideration.

Colmonoy Sweat-On Paste has a hardness of 68-72 Rc. Coverage is about 3 times that of electrodes.

## COLMONOY PRODUCT OF THE MONTH

Colmonoy No. 1 Low Hydrogen Hard-Facing Electrode



Colmonoy No. 1 is an iron base chromeboride hard-facing alloy, available in the form of D. C. electrodes for general purpose wear-proofing applications to carbon and manganese steels. Low in cost, it is especially

well suited for use in applications where extreme impact and high abrasion resistance is required. Typical applications include dipper teeth, bucket lips, drag chains, mill hammers, tractor grousers, catalyst valves (as shown in photo), crushers, cable bits, grader blades, and shot blasting equipment.

Colmonoy No. 1 is easily applied by arc welding. It was developed by Wall Colmonoy's research laboratories to provide a low-cost, non critical material having superior welding characteristics. In addition to excellent weldability and arc stability features, this electrode provides a hard, dense deposit that does not require cleaning or slag removal by chipping or brushing before welding on successive deposits.

Another important feature is that Colmonoy No. 1 can be used in applications where the deposit must be welded on a vertical surface.

Colmonoy No. 1 has a Rockwell C hardness from 58 to 63. Available in 10 and 50 lb. metal containers.

# SPECIAL FACILITIES AVAILABLE AT STAINLESS PROCESSING DIVISION

Special facilities and skilled manpower are needed for the research and production work normally associated with successful bright annealing, bright hardening and brazing operations in processing stainless steel.

Such skilled manpower and facilities are available at Wall Colmonoy's Stainless Processing Division plants located in Detroit, Los Angeles and Morrisville, Pa.

• Brazing may be done with Nicrobraz\*, copper, silver or other alloys. When brazing is performed by Wall Colmonoy's controlled atmosphere techniques, assemblies remain clean and bright with virtually no distortion, scale or oxidation.

### Nicrobraz\*

Nicrobraz is a heat and corrosion resistant alloy for brazing stainless steels and special alloys used in many industries. A butt joint formed with Nicrobraz has a tensile strength equal to that of the parent metal at 2000°F and possesses excellent resistance to oxidation and corrosion.

Recent tests comparing Nicrobraz with copper and a high-temperature silver brazing alloy indicate Nicrobraz to have superior shear strengths between 70 and 2000°F and no loss in tensile strength after aging 50 hours at temperatures from 70 to 1600°F.

\*Registered trade mark of Wall Colmonoy Corp.



A 72 INCH DIAMETER hydrogen atmosphere furnace being lowered over a loaded bell in the Detroit plant. Diffuser casing assembly (insert) is made up of 18 components. All 18 individual parts are simultaneously Nicrobrazed in a single operation. Other facilities available at Wall Colmonoy include vacuum, pit, electric draw, open fired muffle furnaces, degreasers, salt pots, and freezers.

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