



EDGE PREPARATION REDUCES CORROSION

THE PROBLEM

It is well known in the powder coating and lacquer industry that razor sharp edges reduce paint adhesion and increase hasten corrosion whereas cleaned and rounded corners considerably improve corrosion resistance. The same problems apply to sheet cut with oxygen which leaves an oxide layer with very poor paint adhesion.

THE CORROSION TESTS

Three 6 mm thick plasma cut steel blanks were prepared for powder coating.(see picture 1) One had only the dross removed manually with a chisel. The second plate had the dross and the oxide layer removed with a Lissmac machine fitted with six abrasive belts. The third plate had the dross and oxide layer removed and the edges rounded with a Lissmac machine fitted with eight abrasive belts. All samples were then powder coated with 70 microns thick RAL 9010 paint.

After that the powder coated samples were subjected to two tests: 1. A 150 hours salt spray test 2. A mechanical stress test.

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Picture 1
The sample part used for the salt spray test

The 150 hours salt spray test

On the sample which had only the dross removed, leaving a sharp rugged edge rust had formed along the entire cut edge. Picture 2 shows the rust in 50x magnification.

Picture 3 shows the sample which had the dross and oxide film removed.. There are only a few spots where corrosion has developed.

Picture 4 is the sample which had the dross and oxide layer removed and in addition the edges rounded. No corrosion can be seen after the salt spray test.

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Picture 2
The badly corroded edge of a plate which had not had the oxide layer removed prior to painting



Picture 3
Minimal corrosion on the edge of a plate which had the oxide layer removed but left with a sharp ed



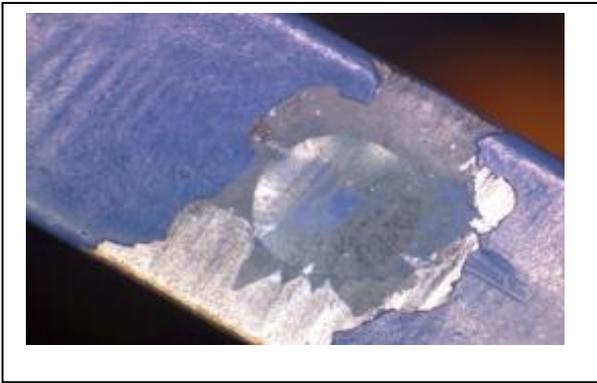
Picture 4
No corrosion on the edge of a plate which had the oxide layer removed and the edge rounded

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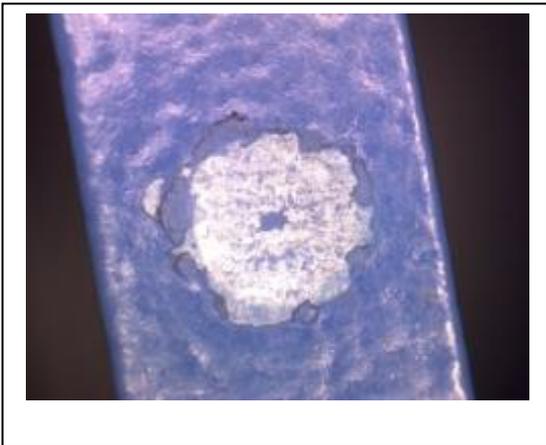
The mechanical test

A 12 mm dia. steel ball was shot on to the plasma cut edge. On edges which had not had the oxide layer removed the paint had flaked off in large pieces. (picture 5)

Where edges had the oxide layer removed paint adhered well and only showed paint flaking off in the very limited area where the ball had hit.(picture 6



Picture 5
Oxide layer not removed prior to painting. Paint flaked off Over a large area



Picture 6
Oxide layer removed prior to painting. Paint only flaked off where the ball hit

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THE SOLUTION

Germany's leading manufacturer of sheet deburring equipment, Messrs. Lissmac, with over 700 installations worldwide has the answer to the problem of paint adherence with their range of dedicated deburring and edge rounding machines.

Lissmac machines are the only machines capable of deburring and edge rounding of both sides of sheet in a single pass, even with the sheet being coated or having a protective film layer.

There are 3 basic Lissmac machine models:



Model SBM-M
4 abrasive flap belts for deburring and edge rounding or 4 wire brush belts for oxide removal or 4 power pin belts for de-slugging



Model SBM-L
2 abrasive cloth belts for removal of heavy burrs and 4 abrasive flap belts for blending and edge rounding



Model SBM-XL
4 abrasive cloth belts for removal of heavy burrs and 4 abrasive flap belts for blending and edge rounding or 4 abrasive flap belts for deburring and edge rounding and 4 wire brush belts for oxide removal

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The 4 belt unit with 2 heads
On the top and 2 heads on the
bottom



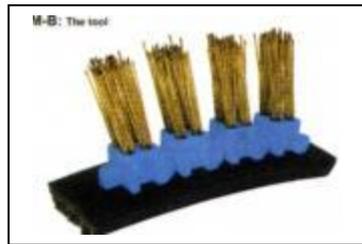
The 6 belt unit with
3 heads on the top
and 3 belts on the
bottom



The 8 belt unit wit 4
belts on the top
and 4 belts on the
bottom



A section of the abrasive flap belt



A section of the wire brush belt



The hardened steel power pins of the
power pin belt



A section of the abrasive cloth belt

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