



CASE STUDY

Alloy wheel repair an all-round success with cold spray

Repairing deep cuts in alloy wheels typically involves welding on more metal to fill the grooves – a hot, slow, and difficult process that requires a skilled technician, and can cause cracking and damage to the heat treatment. Equipped with Titomic’s D523 cold spray system, one leading wheel repairer was able to turn that around.

Welding has always been the go-to technique for repairing alloy wheels. However, the age-old method can no longer keep up with the demands of modern manufacturing. Not only is it a slow and cumbersome process, but the use of heat also risks damaging both the wheel and its factory heat treatment – putting a significant dent in productivity and profitability.

Taking the pressure off

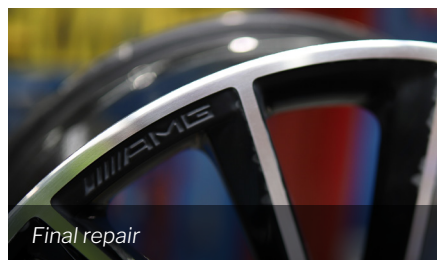
With our customer looking for an improved solution to repair AMG SUV alloy wheels, we proposed Titomic’s low-pressure D523 cold spray system with Aluminium Alloy K-10-01.

There were two main reasons for this approach:

1. Cold spray is directly machinable by CNC mill or lathe – the same process used after welding.
2. Unlike welding, the process doesn’t require surface preparation of hand grinding with a disc or angle grinder.

Before spraying the metal, the D523’s grit-blasting feature was used to remove excess edges and clean the surface for enhanced adhesion of the metal powder.

The alloy wheel was then machined back to OEM specifications with the damage quickly and effectively repaired. This process was remarkably faster, easier, and safer than welding.



Driving efficiency

Since the D523 can be used to fuse aluminium alloy onto alloy wheels with no heat, there is no risk of heat damage. As a result, wheel repairers can complete many more jobs per day without welding-related risks, providing an opportunity for significantly improved uptime.

Since it’s simply a superficial repair for aesthetic reasons, there are reduced expectations from the metal’s performance – although this is still well above what’s required (see table below).

Coating properties

Bond strength:	55-60MPa
DE:	30%
Hardness (HB):	50-60
Porosity:	1-3%
Temperature-resistant:	up to 500°C



Case study snapshot

What: Repair AMG SUV alloy wheel

Where: Leading wheel repair company

How: D523 low-pressure cold spray system with Aluminium Alloy K-10-01

Outcome: Wheel repaired in significantly less time, with less risk of damage

