

# **Fire and Explosion Risks when Fibre laser processing Aluminium and Titanium**

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With the recent fall in price, and increased availability of fibre lasers, their use in the processing of aluminium, titanium and other metals is increasing.

The fume generated by these processes includes a large number of small and sub-micron sized particles, having high metal/oxide and surface area/mass ratios, making them susceptible to rapid oxidation.

The exothermic oxidation reaction of these particles makes them potentially pyrophoric, or self-igniting, and introduces the risk of spontaneous ignition if agglomerated, or even explosion if dispersed into a cloud. There have been a significant number of fires on aluminium lasering processes in recent years.

This presentation examines the conditions under which fires and even explosions could occur on fibre laser applications and describes actions to reduce and mitigate the risk.