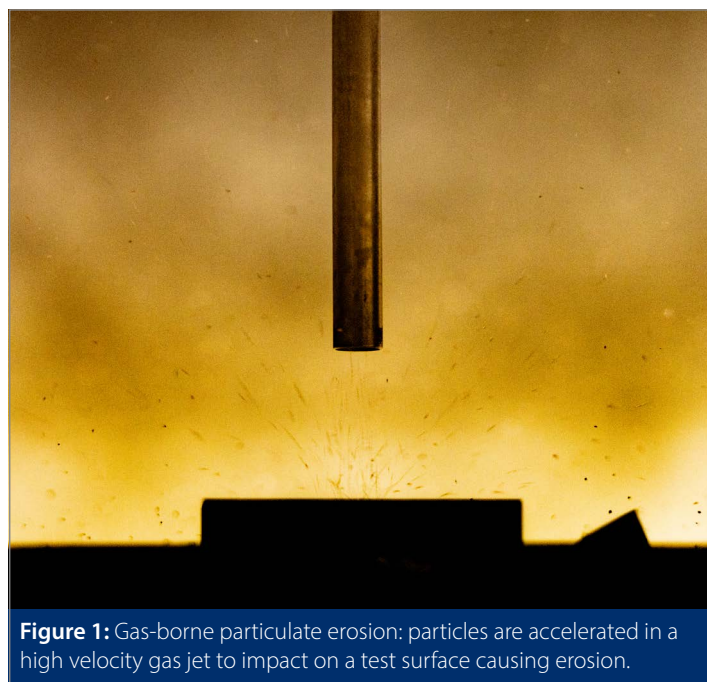
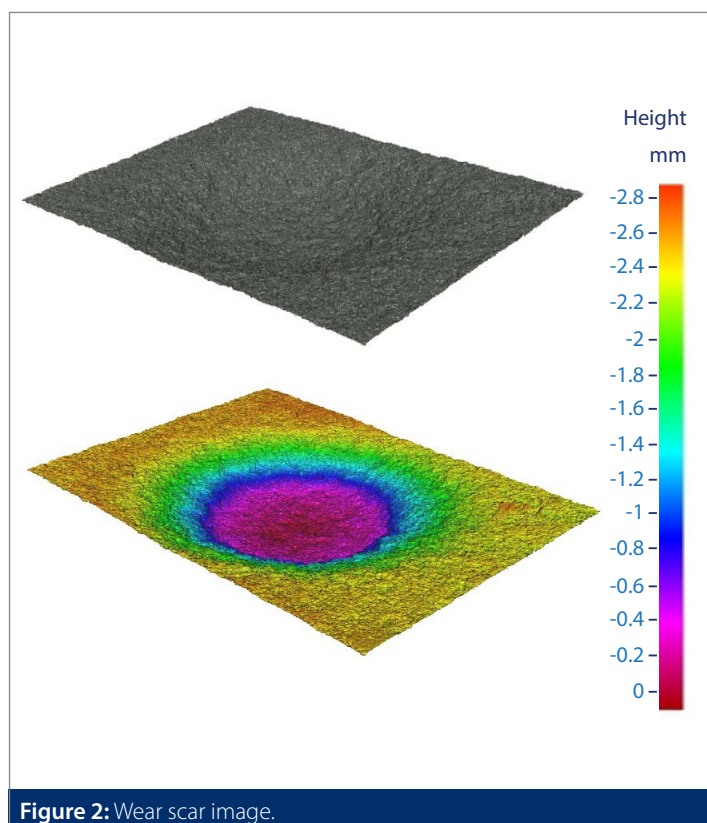


Solid particle erosion



Description

NPL's solid particle erosion capability consists of a TE68 solid particle erosion machine and an in-house high temperature solid particle erosion (HTPSE) rig. These systems are used to investigate the resistance of surfaces to damage from solid particle erosion following ASTM G76 and ASTM G211 - 14 2020 standards. Both systems use particles, delivered through a steel nozzle by a high velocity gas stream, to impact the sample surface. Measurements of mass loss are normally made after exposure, but the HTSPE rig also has in situ mass measurement capability. The mass loss measurements are normally combined with 3D optical imaging and profilometry to determine the magnitude and mechanism of damage to the surfaces.



Machine capability

	TE68	HTSPE
Particle velocity	25 - 150 m/s.	Up to 300 m/s.
Temperature	Ambient (20 °C).	Up to 900 °C.
Angle of incidence	20 - 90 degrees.	45 and 90 degrees.
Mass loss measurement	Ex situ incremental.	In situ incremental.
Erodent	Silica free bulk powders.	Silica free bulk powders.

Sample specification

Sample size: typically 40 x 20 x 2 mm (max size 50 x 50 mm).

Evaluation

Mass loss.
3D microscopy of wear.
SEM.