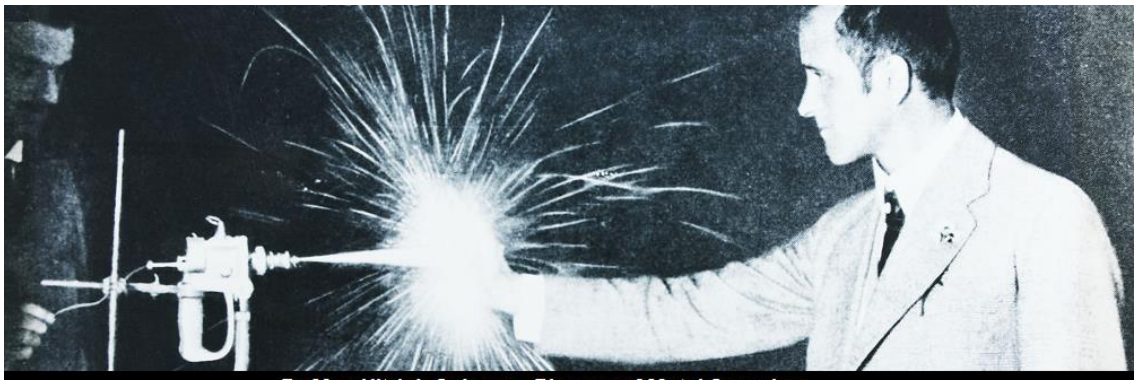
MSSA
METAL SPRAY SUPPLIES AUSTRALIA

Product Solutions
Engineered Surfaces for Exceptional Performance



Dr Max Ultrich Schoop - Pioneer of Metal Spraying

Welcome to MSSA NewsWire - Issue 1

The purpose of our quarterly newsletter is to inform you of new and existing products, training and other services MSSA offer.

One of the main areas we will be looking at in this newsletter is applications where the Metalspray process is used.

We at MSSA talk to Senior Engineers, Lecturers, University Students, and other relevant Professionals who have never seen or heard of the process. If they know nothing of the Metalspray process, how can they use it or specify it?

We would appreciate any Metal Sprayers sending/emailing us their component application information so that we can share the information with other Metal and Non Metal Sprayers.

It is down to us in the Metal Spray Industry to promote this special process which has existed for many years making a lot of components, and products we have today possible. We feature in this newsletter Jet Engines in the Aerospace Industry as one such example of what Metal Spray has made possible.

Click Here to Email

Interesting FACT

Dr Max Ulrich Schoop pioneered metal spraying in the early 1900's when he discovered molten lead and zinc would stick to almost any surface when firing pellets out of a toy cannon he had bought as a gift for his young son !!!! (Luckily nowadays we have playstations) See more on Dr Max Ulrich Schoop

If you have any interesting facts you would like us to include in future issues of NewsWire, please Click Here to Email

Feature Article - JET ENGINES

Without the Metal/Thermalspray process **we wouldn't be flying at the speeds or** distances that we do now.

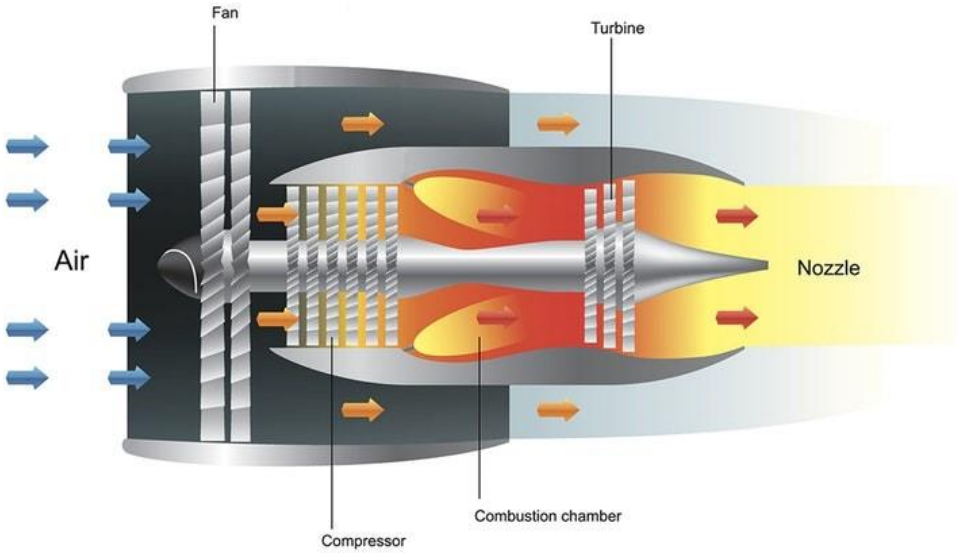
Why? Because Jet engines use over 100 applications for Metal/Thermalspray coatings. Modern aviation owes its success to the jet engine.

The technology was originally developed in the late 1930s and early 1940s for military use.

There are many different variations on the jet engine, but the one most commonly used in passenger planes is called a turbofan (because it contains a turbine and a fan).

So how does a Jet Engine work?

In the following diagram you can follow the airflow through the fan, compressor, combustion chamber and turbine drives the jet engine.



A jet engine can be reduced to just four words: suck, compress, explode, blow. The following page explain how turbofans operate, but much of it applies more generally:

Suck

When you look at a jet engine, the first thing you will generally notice is that the front is a giant many-bladed fan, inside what is known as the intake. The blades act in the same way as the blades on a fan, sucking air in and thrusting it out the other side at high speed. The fan in a jet engine does have a lot more blades than a standard fan, though: often more than 20.

In most modern jet engines, the fan alone can generate up to 90% of the thrust, or 'pushing power' of the engine. To find out where the other 10% comes from, we must continue to follow the air on its journey.

Compress

Once the fan sucks in the air, some of it is not just forced around the engine, but is funneled to what is known as the compressor. Inside, air is pushed along by many spinning disks loaded with small blades along a tube that gets smaller and smaller. This quickly squeezes the air, making it much more dense, hotter and more explosive when fuel is added.

Explode

Fuel is added to the compressed air, creating a highly volatile mix requiring a simple spark to burn. This is what happens in the combustion chamber, where the fuel/air mix is sprayed and ignited, rapidly expanding the air and generating the rest of the thrust of the engine.

Blow

The rapid expansion of the air during combustion generates a massive amount of pressure that needs to find a way out. The way out of a jet engine is at the end of another tube full of spinning disks bristling with blades that are spun by the force of the expanding gas. This part is known as the turbine. Once at the end of the turbine, the gases leave the engine at high speed, exerting a force on the engine in the opposite direction. (In accordance with Newton's third law: for every action, there is an equal and opposite reaction.)

The ingenious part of the modern jet engine is that the intake fan, compressor, combustion chamber and turbine are linked by a single shaft running along the inside of the engine. When the expanding gases spin the turbine at the back, it helps spin the fan at the front, which keeps the process going and generates more thrust.

The above images show the Arc Spray (left) and the Plasma Spray (right) processes of Aerospace components.

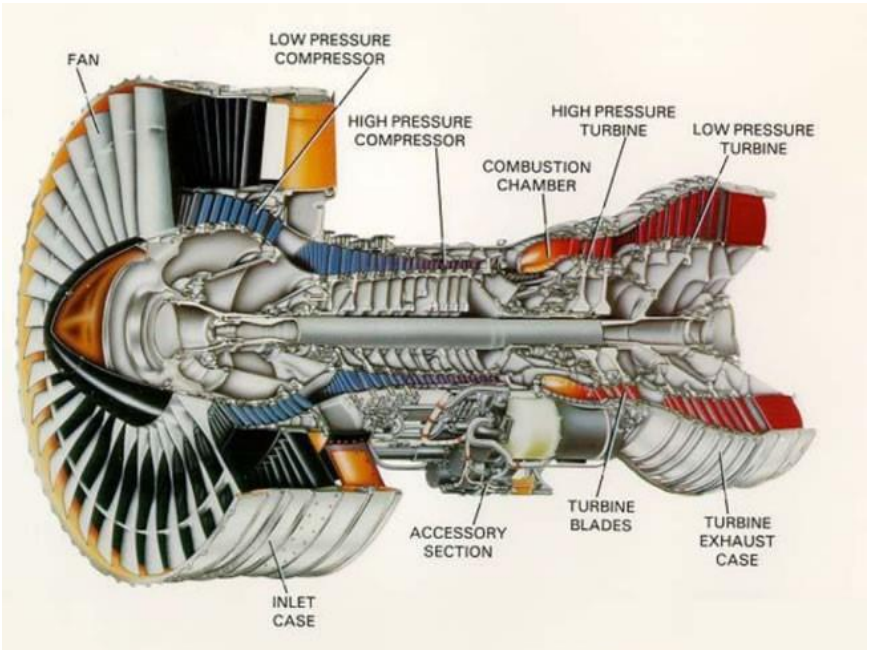
Typical AEROSPACE APPLICATIONS:

Industry	Surface Requirement	Component	Thermal Spray Coatings
Aerospace	Thermal Barrier	Rocket Combustion Chamber	Zirconium Oxide
	Resist Fretting	Compressor Air Seals	Aluminium Bronze
	Particle Erosion	Missile Nose Cones	Calcium Zirconate
	Shielding	Missile Systems	Pure Aluminium
	Oxidation Resistance	High Pressure Nozzles	Cobalt-Molybdenum
Turbine Engines	Fretting-Hi Temperature	Turbine Air Seals	Chromium Cobalt
	Corrosion Resistance	Fuel Nozzles	Aluminium Oxide
	Fretting-Low Temperature	Compressor Stators	Tungsten Carbide
	Particle Erosion	Turbine Vanes	Chromium Carbide
	Abradable Coating	Engine Compressor Stages	Nickel Graphite

For a more comprehensive list of Aerospace Components, Click HERE

It is not only the Jet Engine that gets coated HVOF thermal sprays have recently replaced hard chrome plating as the preferred method of coatings used in aircraft landing gear, in order to protect this equipment from the extreme forces experienced during take-off and landing.

Helicopter blades get sprayed with Centanin to form a heater track which, when a small current is applied melts the ice.



Interested in AEROSPACE? - Click Here for More Information

Feature Article in next issue of Newswire : AGRICULTURE

Product Focus: NO BOND:

Metal spray is designed to stick to the substrate through mechanical bonding, but sometimes you don't want the spray to stick. MSSA No Bond is a liquid brush applied coating that prevents undesired bonding.

Want to know more? Click to see our 'No Bond' Technical Bulletin

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Do you know about?

Metal Spraying	Flame Spraying	Arc Spraying
HVOF Spraying	Plasma Spraying	Masking

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