

# Why Engine Cooling Shouldn't be Last on the List

In automotive design, the engine is the heart of the machine and always comes first but the thermal management of the engine, which is crucial to protect it in terms of performance and reliability, often comes later in the build.

Here Matthew Morris, MD SPAL Automotive UK explains why optimum engine cooling should be a priority and what the main considerations should be in order to achieve this.

As a starting point, calculating the required airflow based on the power of the engine and factoring in the engine bay space, as well as the pressure drop through the radiator core along with its overall dimensions, is essential to avoid detrimental undercooling.

## Precision cooling

One area where engine cooling can be challenged is in extreme environments because suddenly the higher ambient temperature is battling with a hardworking engine, driving in difficult dusty terrain and the risk of overheating goes up exponentially.

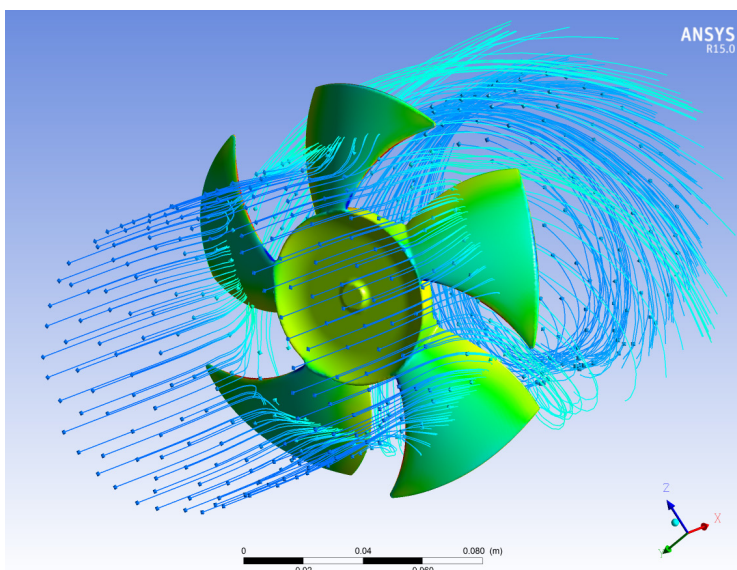
To offset these problems, choose a brushless fan with a fully sealed IP6K9K rated drive unit which is designed to keep out dust, moisture, and other potentially clogging materials to ensure the fan is free to deliver airflow no matter the external temperature.

Brushless fans are also software driven to keep the system temperature within what is normally a relatively small window, to maintain maximum efficiency and performance.

## Maximum airflow

Another consideration is having enough space within the engine bay to allow maximum airflow through the fan assembly in the most efficient way, avoiding as much turbulence to the airflow as possible.

SPAL fans are designed and engineered with as slim a profile as possible around the height of the drive unit.



## Lightweighting

Weight saving is the holy grail of racing so SPAL engineers have worked hard with automotive designers to achieve the same airflow in a more powerful fan, potentially meaning that a single fan can be used instead of two.

This results in less current consumption, allowing for a smaller alternator to be used and thinner diameter harnessing, which all contributes towards incremental weight reduction.

Addressing undercooling issues after the fact is notoriously difficult so that is why intelligent engine cooling should be built into a scheme and not be just as an afterthought.

For further insight into SPAL's brushless technology thermal management systems, call us on (01905) 613 714 or email us: [sales@spalautomotive.co.uk](mailto:sales@spalautomotive.co.uk)

