Life-saving helicopters
Life-saving helicopters

Flying a helicopter is a very delicate task, especially when performing search & rescue operations in out-of-the-way places. The Arriel
turboshaft engine, light yet powerful, is the perfect powerplant for this type of mission, which saves people’s lives.
Complex flight conditions

“Skier off-trail on Fichtelberg with a fractured tibia.” For the third time that day, a warning sounds at DRF Luftrettung, the German air rescue service. The weather isn’t great, but still allows a helicopter rescue mission – and the crew has to take off in just five minutes.

With 1,500 flight-hours under his belt, Reinhold is very familiar with the risks inherent in helicopters. But he also knows that each flight has its own share of uncertainty. At this altitude in the mountains, weather and atmospheric conditions are unstable, and wind gusts can suddenly become violent, while clouds and fog may appear out of nowhere. Not to mention the hazards of running into birds and power cables...

An engine that does its job with no fuss
Flying under low visibility conditions, Reinhold trusts his machine, an H145 powered by twin Arriel 2E turboshaft engines from Safran.
The crew flies over the reported area and quickly spots the wounded skier. It's going to be a tough operation: since there are a lot of trees, the helicopter will have to hover to first ensure that the rotor meets no obstacles on landing. Reinhold focuses on the machine's stability, but...

runs into a strong gust of wind that destabilizes it.
Fortunately, the twin engines quickly throttle up to counter the wind. The Arriel 2E engine features a high-performance compressor, allowing it to accelerate or decelerate in record time. For Reinhold, that's essential. He doesn't have to check the engine's speed, but just focus on the machine's position.

Every 15 seconds

An Arriel-powered helicopter takes off somewhere in the world

46 million in-flight hours

logged in by the Arriel engine in the last 40+ years
More than 12,000 Arriel engines have been built.
Very powerful, very light

The Arriel 2E was designed from the ground up to maximize its power-to-weight ratio. For example, the compressor is made of light, yet strong alloys, to support a high pressure ratio. And the combustion chamber uses centrifugal injection, to effectively spray the fuel, even at low pressure. This simplified fuel system therefore provides non-negligible weight savings.

Heightened flight safety
The pilot lands smoothly. A quarter-hour later, the skier and rescue crew are back on board, and the doctor takes over.
The takeoff demands the same precision as the landing. Reinhold once again focuses on his position. He knows that he can trust his machine, since the Arriel 2E features a dual channel Fadec control unit. In other words, this digital engine control comprises two redundant circuits. If there’s a problem on one, the other takes over. Engines also include an OEI (One Engine Inoperative) function, meaning they can operate in “over-power” mode to compensate if one fails. This extra power can be provided as needed for 30 seconds to 30 minutes. Of course, the probability of an incident like this is about 1 in a million, but you never know…

**Less costly maintenance**

The crew drops off the unlucky skier at a hospital, where the staff is waiting for him.
Back at his base, Reinhold hands his helicopter over to the maintenance crew. In addition to daily inspections, these machines – and their engines – undergo more extensive checks on a regular basis. The Arriel 2E incorporates technical improvements that mean it is overhauled every 4,000 hours (about once every five years), versus every 2,500 hours for its predecessor. This considerably reduces the cost per flight-hour – and also burnishes the already excellent reputation of this engine.