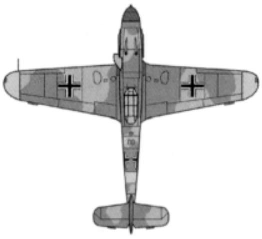
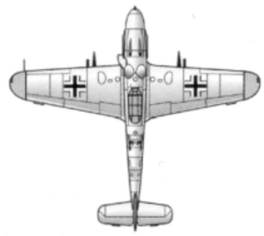


The Problem with Gustav...

A variant for the Bf.109 G in *Down in Flames*

By Toby Pilling



The Bf.109 and the Spitfire share the honor within the *DiF* aircraft pantheon of being represented by the most different models. We have the Spitfire I, V, IX and XIV alongside the Bf.109 E, F, G and K. This is wholly deserved, given that both aircraft types flew during the whole war in various incarnations.

Curiously though, while this progression is reflected in the game for the Spitfire through constantly increasing capabilities, the poor old 109 suffers from an incredible anomaly: the cards representing the F and G models are exactly the same!

This puzzled me. Willi Messerschmitt was a genius in aircraft design, if a flawed one. If he and his engineers had come up with a new model, it had to show improvements. Could they be so insignificant at a micro level as to not warrant an increase in game performance? I determined to study the differences in the two variants and see if any injustices should be righted.

Nuts and Bolts

The G (Gustav) model introduced a pressurised cabin and some minor modifications to the airframe, but the key difference which set it apart from the F was an enhancement to the engine— the DB605 came into service.

The Daimler-Benz DB600 series of engines are as famous as the Rolls Royce Merlin which powered the Spitfire (and later the Mustang). It was a superb piece of precision engineering. One modification was introduced after the E (Emil) and was included on all later models: the GM 1/methanol injection system. To prevent loss of power at high altitudes, the GM 1 apparatus could feed a nitrous oxide mixture into the engine. Use was possible at over 25,000 feet for about 17 minutes, producing an increase in speed of about 40-70 kph. At lower altitudes, the alternative was water- methanol injection. This helped cool the engine, bringing about greater manifold pressure. Used in periods of 2-20 minutes it could increase speed by about 30 kph at all altitudes up to full boost altitudes (where the engine had its best performance).

That this technical innovation was not introduced earlier was listed by Adolf Galland as a contributing factor in the Luftwaffe's loss of aerial superiority to the allies. Another ace fighter pilot pilot, Heinz Knoke (44 victories), mentions the system in his memoirs *(I Flew for the Fuhrer,* 1953), recalling among other things using it in a dogfight with some Thunderbolts:

> *Brand new aircraft arrive straight from the factory. They are equipped with supercharged engines and the new methane device. The latter is something which I myself tested. It makes it possible for us to obtain from the engine a power boost of as much as forty percent for several minutes in case of emergency. This power boost is obtained by the injection into the cylinders of a mixture of methyl-alcohol and water.*
>
> —28th April 1944

> *Evidently my opponents are old hands at the game. I turn and dive and climb and roll and loop and spin. I use the methanol emergency booster, and try to get away in my favourite 'corkscrew climb'. In only a few seconds the bastards are right on my tail. They keep on firing all the time. I do not know how they just miss me, but they do.*
>
> 29th April 1944

Reality to Game

How then to express this advantage in *DiF?* Thankfully, the answer is deceptively simple.

The GM 1/methanol injection system allowed only a temporary, one-off increase in performance. This can be recreated perfectly by allowing the Leader of an element of Bf.109 G's possession of a Full Thrust counter at the start of play. It can only be used once, functions exactly as if played by a jet, is never replaced, and is lost if the plane is flipped to its damaged side. In effect, the Bf.109 G now has a Speed of 1 and a Thrust of 0 on its undamaged side.

This small modification brings the Gustav an improved identity all of its own and worthy of its higher Victory Point value relative to the Bf.109 F. It increases realism at no cost to published scenario balance simply and without doctoring any cards. I hope you find it useful.