Rolls-Royce Power Systems

Engine warm-up MTU 20V4000G94LF

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A Rolls-Royce solution

Parameters & conditions

The following figures show emission trends for a MTU 20V4000G94LF NEA engine at about 30% load with different intake air temperatures. The basis for these results is a mathematical emission model with EN590 fuel which enables RRS to predict engine emissions under a wide range of boundary conditions. As this model has currently not been fully validated, the principle emission curves are shown.

In the following diagram the x-axis shows the temperatures directly before entry into the cylinder head. To obtain the ambient temperature about 25 °C must be subtracted from this temperature. Thus, a temperature in front of the cylinder (TLV_ZYL) of 30 °C corresponds to an ambient temperature of 5 °C. The ambient air increases in temperature with 25 °C as it is compressed by the turbo charger before entering the combustion chamber.

The influence of the combustion chamber wall temperature is not considered in this model.

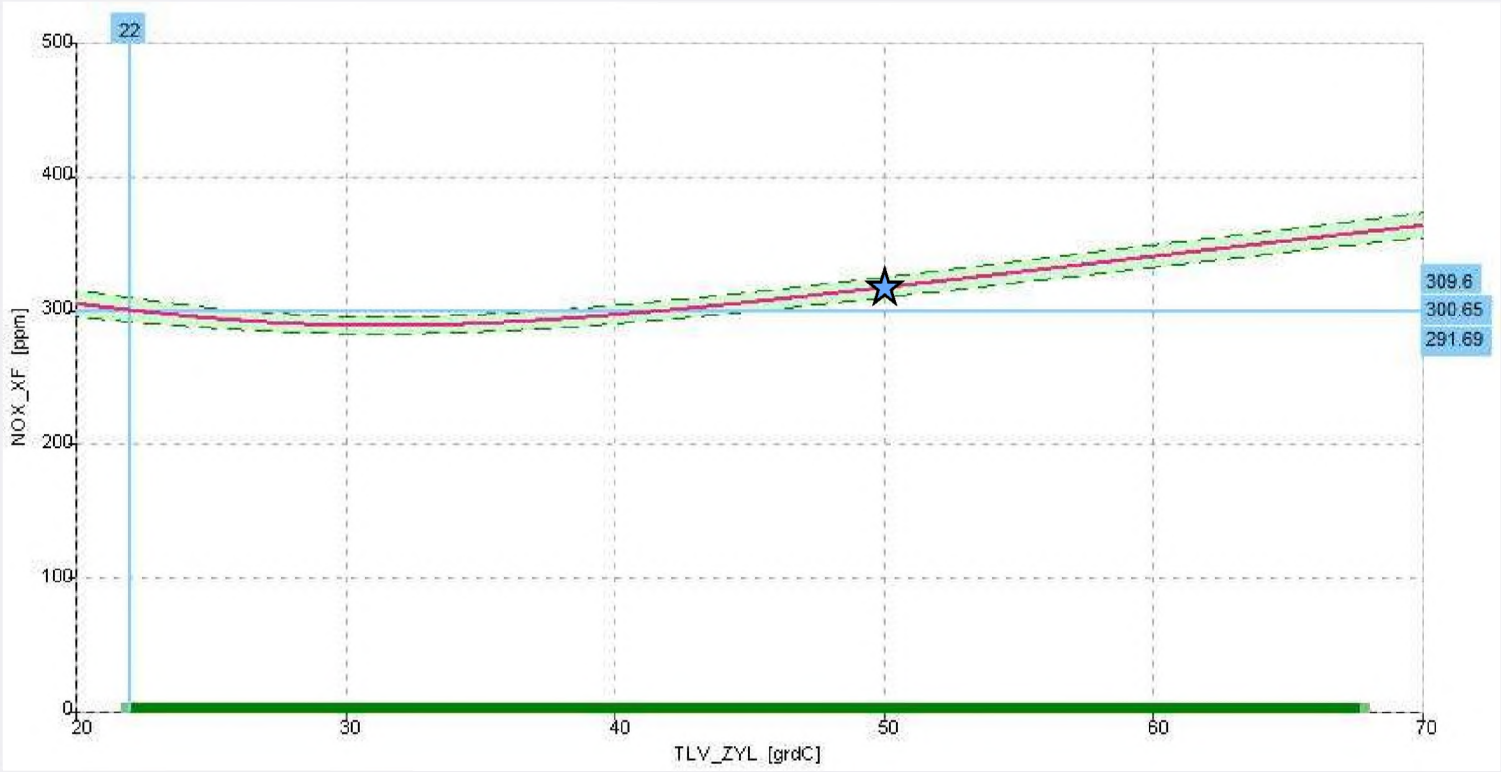
The green band shows the „design space“, were the emissions are interpolated. Outside the band the emissions are extrapolated. The red line represents the calculated emissions. The dashed green line is the confidence band of the emission model i.e. the emissions are expected to lie within this band.

NO_x [ppm]

Slight decrease of NO_x due to cold conditions

Falling air temperature leads to lower NOx but with falling temperature ignition delay impacts initial NOx formation

★Standard condition



THANK YOU