

## Application Note: ANIMATE

OPTIMUM Power Technology's VIRTUAL ENGINES engine cycle simulation software product provides the engineer with unrivalled insight into the gas dynamic and thermodynamic processes throughout the engine. The interaction of these processes leads directly to engine performance, whether it is measured in terms of power, fuel consumption or emissions. ANIMATE, one of several powerful post-processing applications in the VIRTUAL ENGINES suite, presents data to the user in an intuitive manner that greatly enhances the understanding of these processes.

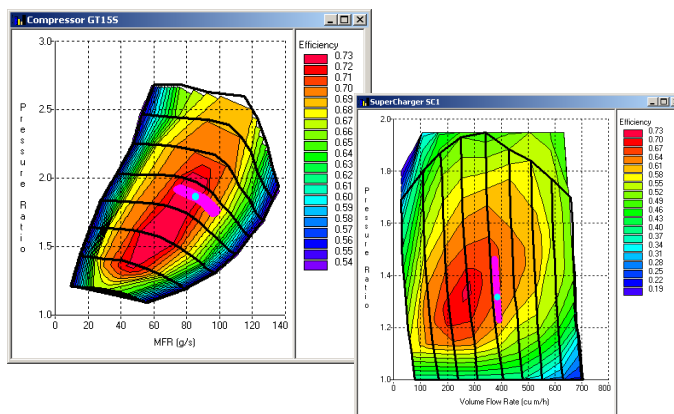
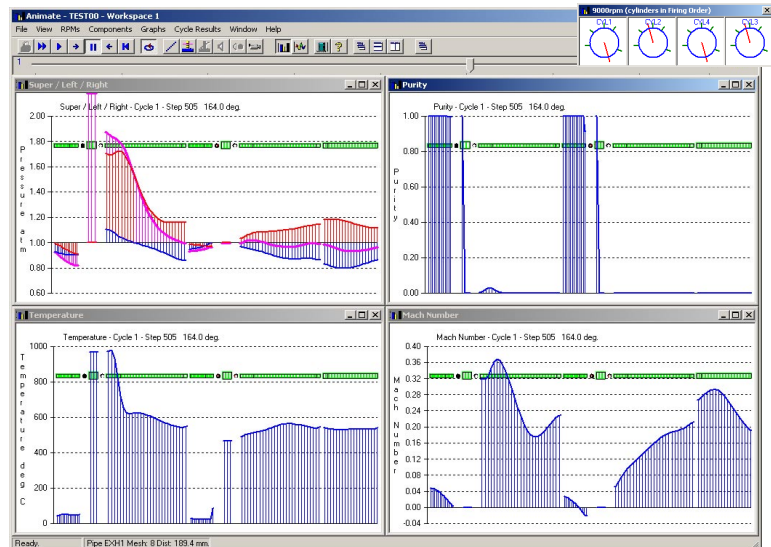
The flow processes through any engine component can be analyzed, including:

- Pressure wave action in pipe networks
- Gas species and purity throughout the engine
- Instantaneous turbocharger and supercharger operating points
- Conversion efficiency through catalyts
- Mach number through poppet-valves

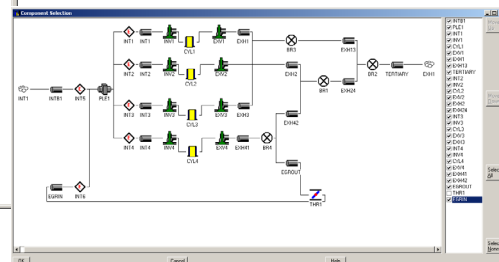
### Animation of flow processes through engine

Typical applications of ANIMATE include:

- Assessment of exhaust backflow into intake over engine speed range
- Analysis of EGR
- Intake and Exhaust system tuning
- Turbocharger matching



Animation of turbocharger and supercharger operating points over 1 engine cycle



Individual component selection