Analysis of a Cam, Rocker and Valve System Using COSMOSMotion

ME345: Modeling and Simulation
Professor Frank Fisher
Stevens Institute of Technology

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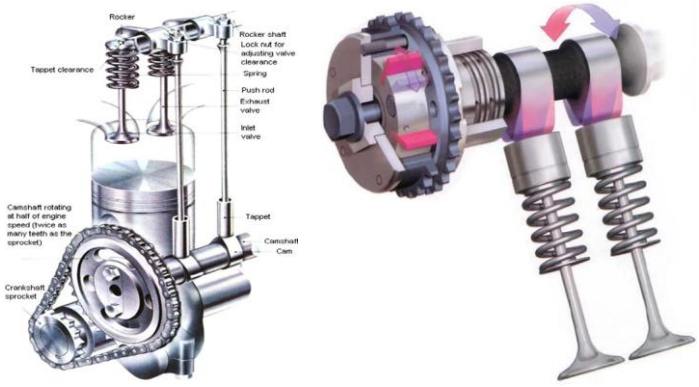
Software versions used in the tutorial:
SolidWorks 2007 SP4.0

Introduction:
A cam-follower system is a useful tool in machine design. It is often employed when a precisely timed and positioned path of motion is desired, such as in the valve train of an internal combustion engine. In this case, the system is extended to include a cam, a rocker arm (follower), and a spring loaded valve. A cam is an oblong shape that is machined onto a shaft. When the shaft rotates, the rocker arm drags along the cam surface producing a timed rising and falling output motion. As the end of the rocker arm that touches the cam rises, the opposite end of the rocker falls, and in doing so, applies a force to the valve. The valve is usually spring loaded such that as the rocker arm rises again, so will the valve, maintaining continuous contact throughout the cycle. In this tutorial the forces applied to the rocker from the cam will be measured using COSMOSMotion.



Instructions:
1) Complete the **Valve Cam** tutorial, which can be found on your computer located at:

C: > Program Files > SolidWorks > COSMOS > Motion For SolidWorks > lang > English

Open the file named **CMOnlineTutorials**. Under tutorials, choose the tutorial **Valve Cam**

2) For the assignment, copy the part and assembly files to a new folder. The original files can be found on your computer in the location:

C: > Program Files > SolidWorks > COSMOS > Motion For SolidWorks > Tutorials > valvecam

****Note****
In **Step 3-6** of the tutorial you will be asked to enter parameters for a spring, though no values are provided. At this point you should choose values for the spring parameters that you think are reasonable. As a result, the peak values of your graphs will be different from those in the tutorial. Ignore this difference and continue on with the tutorial.