How Lean Should You Run Your Engine

Often times aircraft manufacturers recommend best power setting at 50° rich of peak. It’s also common advice from many flight instructors.

The people at General Aviation Modifications Inc. (GAMI) in Ada, OK know more about proper engine management than anyone else. Years of running engines hard on test stands have produced data that is irrefutable and taught at their Advanced Pilot Seminars. Read more about GAMI at <http://www.gami.com>

Engines last longer if you can keep CHTs down and never over 400 degrees. You can see that operating leaner than best power (which is typically 50° rich of peak) provides for lower Cylinder Head Temperature (CHT) and lower Cylinder Head Pressure (ICP). How lean? As lean as you can and still keep the CHT below 400 degrees (below 380 is even better). So the age old advice of just leaning to peak then enrichening to about 50°-75° richer on the EGT, is about the worst place to run your engine. Remember that it’s CHT you’re trying to regulate not EGT. Keep your CHT at or below 380 and as lean as possible, and you may well get twice the TBO out of your engine. To do this, start leaning above 3,000 feet density altitude, and lean until the engine runs rough, then slowly enrichen until the engine is smooth. Don’t enrich the mixture any more than is required for smooth operation.

A more detailed video on leaning is available on my website here. <http://www.eaavideo.org/video.aspx?v=2274677932001>

