ABOUT THERMAL FEEDBACK

Deserving of a name to describe an important phenomenon in some turbocharged systems, this concept came about. It wasn't to confuse, but rather to clarify. Nonetheless, in it's detailed explanation, it IS confusing...and can be intimidating.

Forget all that, wipe the slate clean. It is very simple. You know that these are all air cooled vehicles, in fact the entire combustion engine premise of operation depends on having air for combustion that is cool, dense, and clean.... The more abundant, the better. Cooler air cools the vehicle better than hotter air. Cooler air has more power potential than hotter air. Allowing this air to be heated before combustion leads to the demise of power production and cooling.

Cool is good, hot is bad. Thermal feedback is just a fancy term to describe a mechanism where this air gets pre-heated from the byproducts of the engines power process itself. The harder the engine works, the warmer the air gets...and the worse the engine performs...a cycle that kills power and vehicle longevity. Worse yet, this heat must come from your fuel tank, indirectly of course, but to the detriment of economy nonetheless.

It's a cyclical process of deteriorating performance, that happens over minutes, during sustained high power demand conditions. Eliminating it leads to increased MPG and better sustained high load performance, activities like heavy towing on steep grades. Once it starts, it is a rapidly deteriorating condition. A performance "death spiral" if you prefer. Power will steadily decline until the load conditions that are stimulating the TF mechanism, are reduced.

The removal of the wastegate was complicit in worstening it. Identifying and removing the key instigating TF elements, restriction and replacement boost control, is the focus of the Thermal Feedback Primer article. I hope you enjoy it as much as I enjoyed producing it. Michael Patton