that servovalves do.

In non-aerospace applications, flow rating pressures are essentially arbitrary, bearing little or no resemblance to the flows required in the application. The lower rating pressure for proportional valves was done to avoid high flow forces and has nothing to do with their efficiency. In fact, in a given application, the efficiency will be exactly the same with proportional valves as with servovalves.

When sizing the valve, we calculate the K_V of the valve, which is a measure of how much the valve opens. This K_V value must be converted to rated flow at 1000 psi in order to choose a servovalve or to 145 psi to choose a proportional valve. The flow and pressure will be exactly the same in the application for the servovalves and the proportional valve. There is absolutely no efficiency advantage of one over the other.

Closing comments

We'll close this discussion with a few words of caution. If the proportional valve is not pilot operated, it may have a power limiting curve requiring a reduced supply pressure if the valve opening is to be maintained. This means that the application scenario may not be exactly the same when choosing the proportional over the servovalve. The power limitation is especially acute in direct-operated proportional valves.

Also, be aware that many pilot-operated servovalves use flapper-nozzle or jet-pipe pilot stages that constantly consume flow and hydraulic power. This could be important in applications where power consumption is a critical factor. This, some people will argue, is why they claim that proportional valves are more efficient than servovalves. I concede their point, but grudgingly, and with some qualifications.