Discovery of the fluidic seal-valve:

Bill Gallentine and Myron Tupper discovered the ***fluidic* seal-valve** while experimenting with designs to miniaturize the ***hydraulic regeneration circuit***. This circuit is typically used to create hydraulic cylinders that power stroke in either direction. Control is by spool valves plumbed in a manifold.

Myron and Bill postulated that the rod side of a cylinder could be used as a system's reservoir and that the only other fluid needed could be stored in an accumulator that would exchange the rod's volume during excursions. They believed this crucial to embedding hydraulics into small spaces.

Then something unexpected happened. The o-ring seal on the piston head blew-out of its seat primarily because the back-pressures contributed by the conduits and check-valves were too much. ***They had accomplished hydraulic regeneration without valves or plumbing!*** With a lot more tinkering, the *fluidic* seal-valve morphed into *fluidic* flow control; and, resistance or *fluid logic* regulated actuators into energy efficient—automatic linear transmissions. Annular pathways, low viscosity fluids and the elimination of orifices minimize entropy. Energy is consumed doing work and not in generating wasteful heat.

FastFlow® Microhydraulic Actuators are kinetic devises weighing ounces that hydraulically leverage pounds of torque into tons of linear force. As closed systems, ***fluidic* MEMS** represent a power density breakthrough and a **new paradigm** in the Maintenance, Repair and Operation of fluid powered systems. Fluid selection figures significantly into the functionality of ***FastFlow®*** Kinetic devises.

FastFlow® within is a deceptively sublime dynamic—*there is a lot going on in there!*

Bill Gallentine is an accomplished user-innovator/inventor. He has logged billions of board feet of timber throughout the Pacific Northwest. Myron Tupper, MSME, was a GE Fellow at their Schenectady, NY Research Center prior to becoming VP Research of Omark Industries, Portland, OR. He is LTG emeritus Chief Engineer.