INTELLURIC / SELECTED WORK

Hydraulic Quarter-Wave Stub Pulsation Suppressor

FEASIBILITY & ARCHITECTURE / TECHNICAL DOCUMENTATION

PROBLEM

A hydraulic line with periodic pump ripple needed a passive suppression architecture derived from wave mechanics and expressed as fabrication-ready geometry.

WORK

The specification derives quarter-wave side-branch lengths from transmission-line equations, defines harmonic targets, materials, interfaces, tolerances, and acceptance requirements.

OUTCOME

The concept becomes a buildable resonator network with explicit dimensions, tuning logic, and verification criteria rather than a qualitative damping idea.

REPRESENTATIVE CONTENT

- Closed-end side branches are sized from L = c_eff / (4 f) for the targeted pressure harmonics.
- Derived parameters are carried into fabrication tables and installation constraints.
- Variable-speed operation is addressed with an adjustable end-cap tuning provision.