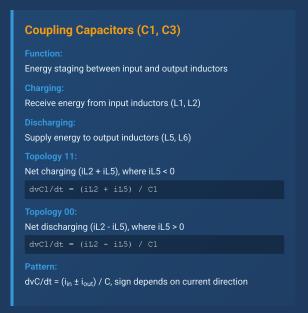
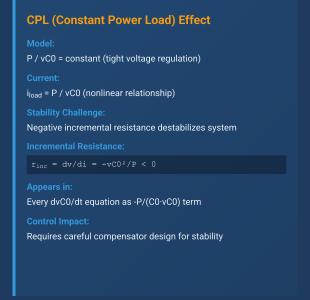
## Critical Insight 3: Capacitor Functions in Energy Transfer



```
Output Capacitor (C0)
DC bus voltage regulation and load supply
Pure discharge to CPL
dvC0/dt = -P/(C0 \cdot vC0)
Topology 10/01:
Partial recharge from one phase
dvCO/dt = (iL1+iL6-P/vCO)/CO
Maximum recharge from both phases
dvCO/dt = (iL1+iL2+iL5+iL6-P/vC0)/CO
Number of terms increases with active delivery paths
```



Energy Flow Summary: C1, C3 act as energy staging buffers between input and output stages. C0 regulates DC bus voltage against CPL load. The CPL's negative incremental resistance effect must be addressed in control design through appropriate damping and compensation to ensure stable operation across all operating conditions.