|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PI COMPENSATOR OF A BUCK CONVERTER** | | | | | | | | |
| **Various Detected Faults PI controller in the presence of faults with deviations (5% – 15%) & (20%-50%)** | | | | | | | | |
| **Injected Faults** | **=500** | | | | **=1000** | | | |
| **Optimal Order – 6th, =0.0162** | | **Optimal Order – 7th, =0.0161** | | **Optimal Order – 6th, =0.0164** | | **Optimal Order – 7th, =0.0162** | |
| **No. of Coefficients Out of Bound** | **Fault Detection Status** | **No. of Coefficients Out of Bound** | **Fault Detection Status** | **No. of Coefficients Out of Bound** | **Fault Detection Status** | **No. of Coefficients Out of Bound** | **Fault Detection Status** |
| R1 6% **↑** | 0 | **X** | 1 | **√** | 0 | **X** | 6 | **√** |
| R1 5.5% **↓** | 0 | **X** | 1 | **√** | 0 | **X** | 26 | **√** |
| Rf2 5.8% **↑** | 0 | **X** | 28 | **√** | 0 | **X** | 27 | **√** |
| Rf2 6% **↓** | 5 | **√** | 35 | **√** | 5 | **√** | 1 | **√** |
| Rf1 7% **↑** | 0 | **X** | 3 | **√** | 0 | **X** | 1 | **√** |
| Rf1 8.5% **↓** | 0 | **X** | 4 | **√** | 0 | **X** | 32 | **√** |
| Rcomp 9% **↑** | 20 | **√** | 33 | **√** | 16 | **√** | 25 | **√** |
| Rcomp 6.8% **↓** | 26 | **√** | 16 | **√** | 26 | **√** | 35 | **√** |
| Rcomp1 7.5%**↑** | 0 | **X** | 1 | **√** | 0 | **X** | 15 | **√** |
| Rcomp1 5.6%**↓** | 0 | **X** | 1 | **√** | 0 | **X** | 35 | **√** |
| Chf 8% **↑** | 18 | **√** | 27 | **√** | 3 | **√** | 2 | **√** |
| Chf 10% **↓** | 0 | **X** | 0 | **X** | 0 | **X** | 35 | **√** |
| Ccomp6% **↑** | 1 | **√** | 2 | **√** | 1 | **√** | 7 | **√** |
| Ccomp6% **↓** | 0 | **X** | 1 | **√** | 0 | **√** | 25 | **√** |
| R1 43% **↑** | 1 | **√** | 2 | **√** | 1 | **√** | 5 | **√** |
| R1 28% **↓** | 1 | **√** | 2 | **√** | 1 | **√** | 35 | **√** |
| Rf2 35% **↑** | 22 | **√** | 7 | **√** | 18 | **√** | 35 | **√** |
| Rf2 40% **↓** | 18 | **√** | 1 | **√** | 0 | **X** | 36 | **√** |
| Rf1 30% **↑** | 26 | **√** | 33 | **√** | 26 | **√** | 35 | **√** |
| Rf1 25% **↓** | 27 | **√** | 33 | **√** | 27 | **√** | 35 | **√** |
| Rcomp 42% **↑** | 0 | **X** | 24 | **√** | 0 | **X** | 18 | **√** |
| Rcomp 38% **↓** | 0 | **X** | 1 | **√** | 0 | **X** | 35 | **√** |
| Rcomp1 37%**↑** | 28 | **√** | 35 | **√** | 28 | **√** | 15 | **√** |
| Rcomp1 40%**↓** | 27 | **√** | 36 | **√** | 27 | **√** | 13 | **√** |
| Chf 28% **↑** | 0 | **X** | 1 | **√** | 0 | **X** | 8 | **√** |
| Chf 35% **↓** | 0 | **X** | 1 | **√** | 0 | **X** | 35 | **√** |
| Ccomp 32% **↑** | 27 | **√** | 35 | **√** | 27 | **√** | 35 | **√** |
| Ccomp45%**↓** | 28 | **√** | 36 | **√** | 28 | **√** | 34 | **√** |