

Results for running the 2D non linear test-nl example for a “generic” 1020 steel.

| HcMag | | MagSta_a_nl | MagSta_phi_nl | MagSta_a_pic | MagSta_phi_pic |
|---------|--------------------------|-------------|---------------|----------------|----------------|
| 500000 | Iterations to Mean Error | 72 @ 6e-7 | 7 @ 1e-8 | 46 @ 9e-7 | 100 @ 2e-3 |
| | H center core | 2,34E+2 | 2,29E+2 | 2,40E+2 | 2,41E+2 |
| | B center core | 4,88E-1 | 4,87E-1 | 4,65E-1 | 5,25E-1 |
| | H core near mag | 2,60E+2 | 2,70E+2 | 2,74E+2 | 2,73E+2 |
| | B core near mag | 5,81E-1 | 5,85E-1 | 5,82E-1 | 5,84E-1 |
| 920000 | Iterations to Mean Error | 7 @ 2e-9 | 15 @ 3e-8 | No convergence | 100 @ 1e-6 (1) |
| | H center core | 4,49E+2 | 4,70E+2 | | 4,74E+2 |
| | B center core | 9,01E-1 | 8,99E-1 | | 8,98E-1 |
| | H core near mag | 6,58E+2 | 6,06E+2 | | 6,14E+2 |
| | B core near mag | 1,07E+0 | 1,07E+0 | | 1,07E+0 |
| 1500000 | Iterations to Mean Error | 15 @ 5e-9 | 100 @ 5e-5 | No convergence | 100 @ 4e-6 (2) |
| | H center core | 1,63E+3 | 3,17E+4 | | 1,07E+3 |
| | B center core | 1,43E+0 | 3,84E+2 | | 1,44E+0 |
| | H core near mag | 4,79E+3 | 1,46E+6 | | 3,63E+3 |
| | B core near mag | 1,70E+0 | 3,19E+1 | | 1,72E+0 |
| 3000000 | Iterations to Mean Error | 22 @ 5e-8 | 68 @ 1e-8 | No convergence | 100 @ 6e-5 |
| | H center core | 7,99E+3 | 1,73E+6 | | 8,96E+3 |
| | B center core | 1,84E+0 | 5,80E+1 | | 2,15E+0 |
| | H core near mag | 4,99E+4 | 1,40E+6 | | 5,90E+4 |
| | B core near mag | 2,23E+0 | 2,88E+1 | | 3,08E+0 |

(1) 8 @ 5e-6
(2) 58 @ 6e-6

Notes:

- 1) 15 @ 5e-9 in the Iterations to mean error column means that after 15 iterations the mean error became 5e-6.
- 2) Iterative loop was bound to 100 iterations.
- 3) Convergence criteria was 1e-6 mean error. In some cases results were good even when this figure was not achieved.

“Generic” 1020 steel magnetization curve

Generic 1020 steel

