15 – Magnet - Cooling down

**Sensors and actuators used:**

- Pressure: PT660, PT681

- Flow rate: FT581, FT583

- Valve: FV640, FV642, FV680, FV681

- Control valve: CV601, CV602, CV581, CV583, CV680

- Level: LI680, LT682, LT683

- Temperature: TT662, TT665, TT680, TT685

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| **The user chooses:** | **Initial conditions:** |
| - Levels: LI680Maxi, LT682setpoint, LT683setpoint | - Magnet insert selected  - Sequences from 1 to 3 stopped  - Sequences from 16 to 18 stopped  - Sequence 8 in operation |
| - Pressure: PT660Max, PT681Max, PT681setpoint, PT660setpoint |
| - Flow: FT581limit, FT583limit |
| - Control valve: CV601%opening, CV602%opening, CV581%opening, CV583%opening, CV680%opening |
| - ΔT/ΔLmagnetMax (TT665-TT662)/ΔLmagnet, dT/dt\_magnetMax (TT662), ΔLmagnet |
| - Temperature: TT680setpoint, TT685Max  TT680 < TT680setpoint OR  LT683 > LT683setpoint  Cooling Magnet  Open FV640, FV642, FV680  CV601 regulated  FT583=FT583setpoint  ΔT/ΔL magnet<ΔT/ΔL magnetMax  dT/dt\_magnet<dT/dt\_magnetMax  CV583 regulated  PT681=PT681setpoint  TT685>TT685Max  Cooling HX680  & HX683  Open FV681, CV680  CV581 regulated  FT581=FT581limit  PT660<PT660Max  Close FV681, CV680  CV581regulated  PT660=PT660setpoint  Stop  Cooling  LI680 > LI680max  Close CV601,  FV640, FV642 opened  FV680 opened  CV581 regulated  PT660=PT660setpoint  Start  CV601 closed  Finished  Cooling  Stop  (FV642 & FV680) closed  CV602 regulated  LT682=LT682setPoint  FT583<FT583limit  PT681<PT681Max  CV583 regulated  PT681=PT681setpoint  CV581 regulated  PT660=PT660setpoint OR  PT661=PT660setpoint  Regulation  CV680 regulated  LT683=LT683setpoint  FT581<FT581limit  PT660<PT660Max  FV642, FV640 opened  FV680 opened  CV583 regulated  PT681=PT681setpoint  “ Have you chosen the recovery circuit for the cryostat? “  Stop  Yes  Close FV642, FV640  Close FV680  Close CV602, CV680  Stop  Cooling  CV583 regulated  PT681=PT681setpoint  CV581 regulated  PT660=PT660setpoint OR  PT661=PT660setpoint |