Sensors and actuators used:
- Pressure: PT580
- Valve: FV090, FV091NO, FV092, FV600, FV601, FV602, FV640, FV641, FV642, FV643, Switch valves
- Control valve: CV600, CV601, CV602, CV603, CV580, CV590, CV-He-liquefier
- Purging system: vacuum pump P090

The user chooses:
- Number of cleaning cycle: Nb cycle
- Delay: tstarting, tvac1, tvac2, tp1, tp2
- Mode: Vacuum, Liquid or Magnet
- Pressure: Pvac, PvacMax, P He, P He min

Initial conditions:
- Sequences from 5 to 20 stopped

0 Stop

Start conditioning

4 Prepare for purging | Open CV580, FV641, FV643, Open CV601, CV602, CV603, Close Switch Valves "Valve Box Circuit" | Close FV640, FV642 Open CV600, FV601, FV602 Close CV-He-liquefier, CV590

t > tstarting & (CV-He-liquefier & CV590) closed

6 Start the Pumping | Close FV091NO Open FV090 Start the Pump P090 | CV580, CV600, CV601, CV602, CV603 opened FV601, FV602, FV641, FV643 opened

P090 running

8 Pumping | Open FV600 Delay tvac2 | CV580, CV600, CV601, CV602, CV603 opened FV090, FV601, FV602, FV641, FV643 opened FV091NO closed, P090 running

t > tvac2 & PT580 > Pvac   PT580 < Pvac

22 Vacuum Alarm | Close FV090

10 Leak test at low pressure | Close FV090 & FV600 Delay tvac1 | CV580, CV600, CV601, CV602, CV603 opened FV601, FV602, FV641, FV643 opened FV091NO closed, P090 running

Alarm validated

PT580 ≥ PvacMax & t < tvac1   PT580 < PvacMax & t > tvac1

24 High level vacuum alarm

26 Do you want to stop the conditioning?"

CV580, CV600, CV601, CV602, CV603 opened FV601, FV602, FV641, FV643 opened FV091NO closed, P090 running

Alarm validated

12 Flushing with GHe | Open FV092 & FV600 Delay tp2

Yes   No

28 Do you want to keep lines under vacuum?"

t > tp2 & PT580<P He   PT580 > P He

36 Pressure Alarm | Close FV092

14 Leak test at high pressure | Close FV092 & FV600 Delay tp1

No

30 Close FV090

Alarm validated

PT580 ≤ P He min & t < tp1   PT580 > P He min & t > tp1

38 Low level pressure alarm

PT580 > P He min & t > tp1 & N < Nb cycle

Yes

FV090 closed

40 Do you want to stop the conditioning?"

Alarm validated

PT580 > P He min & t > tp1 & N ≥ Nb cycle

32 Flushing with GHe | Open FV092 Open FV600 Delay tp2

No

16 Valve Box circuits isolated | Close FV600

Yes

FV600 closed

t > tp2 & PT580<P He   PT580 > P He

18 Helium conditioning stopped | Close FV090, FV092, FV601, FV602 Close CV600, CV601, CV602, CV603, CV580, FV641, FV643

34 Not possible to pressure the line" | Close FV092

CV580 closed

Alarm validated

20 Pump stopped | Stop P090 Open FV091NO

1/1

P090 stopped