



Coil report

Conductor acceptance

- Conductor cleanliness(oxydation,burrs stripes..)
- Conductor geometry
- Mechanical properties
- Supraconducting properties
- Consolidation

follower

Conductor insulation with fiber glass on taping machines

- Visual inspection(insulation cleanliness)
- Insulation quality(without wrinkle, tear)
- Insulation quality(start and stop)
- repeatability

follower

Check dimension insulated conductor with fiber glass

follower

Operation SHMS n° 4

Reserve Spool manufacturing

- Check the length during manufacturing
- Storage on the spool

follower

Operation SHMS n° 5

Dimensional and raw materials control of the spacers

follower

Operation SHMS n° 6

Winding the first double pancake

- Check the resistance during the winding



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follower

Operation SHMS n° 7

Visual inspection of quality winding

Coil report

Operation SHMS n° 8

Control

- Resistance measure (to detect short circuit)

Follower

Operation SHMS n° 9

Dimensional and raw materials control of the spacers

Follower

Operation SHMS n° 10

Winding the second double pancake

- Dielectric test between the first double pancake and the beginning of the second
- Check the resistance during the winding

Follower

Operation SHMS n° 11

Visual inspection of quality winding

Follower

Operation SHMS n° 12

Control

- Resistance measure
- Dielectric test between the first and the second double pancake.

Follower

Operation SHMS n° 13

Dimensional and raw materials control of the spacers

Follower

Operation SHMS n° 14

Winding the third double pancake

- Dielectric test between the first double pancake and the beginning of the second
- Check the resistance during the winding

Follower

Operation SHMS n° 15

Visual inspection of quality winding

Follower

Operation SHMS n° 16

Control

- Resistance measure
- Dielectric test between the three double pancake.

Follower

Operation SHMS n° 17

Dimensional and raw materials control of the spacers

Follower

Operation SHMS n° 18

Winding the fourth double pancake

- Dielectric test between the third double pancake and the beginning of the fourth
- Check the resistance during the winding



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Follower

Operation SHMS n° 19

Visual inspection of quality winding

Follower

Operation SHMS n° 20

Control

- Resistance measure
- Dielectric test between the four double pancake.

Follower

Operation SHMS n° 21

Qualification of the soldering process

- Samples tested at 4k
- Radiographic control?(other)
- Process monitoring of the soldering (send samples all the « x » soldering
- Soldering length

Follower

Operation SHMS n° 22

Clean double pancakes junctions

Follower

Operation SHMS n° 23

Soldering double pancakes junctions

Follower

Operation SHMS n° 24

Insulating double pancake junctions

Follower

Operation SHMS n° 25

Put the mould and curing the first coil

- Resin CTD-101K (60° C for the mixing)
- Heating

Coil report

Operation SHMS n° 26

Control

- Resistance measure (to detect short circuit)

Follower

Operation SHMS n° 27

Redo operation until having 4 coils of 4 double pancakes (with soldering)

Follower

Operation SHMS n° 28

Coils assembly

Follower

Operation SHMS n° 29

Control

- Dielectric test between the four coils

Follower

Operation SHMS n° 30

Clean coils junctions



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Follower

Operation SHMS n° 31

Soldering coils junctions

Follower

Operation SHMS n° 32

Insulating coils junctions

Follower

Operation SHMS n° 33

Control

- Resistance measure

Follower

Operation SHMS n° 34

Coils insulation

- Prepreg or fiber glass (and moulding)

Follower

Operation SHMS n° 35

Coils moulding or heating

Report

Operation SHMS n° 36

Control

- Resistance measure

Follower

Operation SHMS n° 37

Coil machining

Report

Operation SHMS n° 38

Machined coil dimensional test

Report

Operation SHMS n° 39

Control

- Resistance measure

Follower

Operation SHMS n° 40

Check collars dimensions

Follower

Operation SHMS n° 41

Collars heating

- Check the temperature

Follower

Operation SHMS n° 42

Coils collaring



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Follower

Operation SHMS n° 43

Collars cooling

Report

Operation SHMS n° 44

Control

- Collared coils resistance measure
- Conductor to ground insulation resistance
- Coil polarity control

Follower

Operation SHMS n° 45

Coil dimensional test

Report

Operation SHMS n° 46

Dimensional control of each vessel chamber parts

- Validate certificate raw materials before machining

Follower

Operation SHMS n° 47

Weld and welder qualifications according to ASME

Follower

Operation SHMS n° 48

Piping and plate vessel chamber welding

- Validate certificate raw materials before machining



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Report

Operation SHMS n° 49

Helium leakage test

- Bag test

Report

Operation SHMS n° 50

Dye penetrant test

Follower

Operation SHMS n° 51

100% Weld tests by radiography or ultrasonic tests according to ASME

Follower

Operation SHMS n° 52

Pneumatic pressure test according to ASME

- Air quality
- Humidity
- Gaz used?

Follower

Operation SHMS n° 53

Helium vessel inner tube wrapping with aluminized mylar sheet

Follower

Operation SHMS n° 54

Weld and welder qualifications according to ASME



Follower

Operation SHMS n° 55

N2 vessel parts dimensional control

- Validate certificate raw materials before machining

Follower

Operation SHMS n° 56

N2 vessel piping and plate welding

Report

Operation SHMS n° 57

Helium leakage test

Report

Operation SHMS n° 58

N2 vessels dye penetrant test

Follower

Operation SHMS n° 59

Pneumatic pressure test according to ASME

- Air quality
- Humidity
- Gaz used?

Follower

Operation SHMS n° 60

Process Control

- Instrumentation wires (temperature, Voltage, deformation gauges..)



Follower

Operation SHMS n° 61

Super insulation wrapping

- Cutting pattern
- Assistance supplier to practice cutting

Follower

Operation SHMS n° 62

Visual inspection of Super insulation wrapping laying

Follower

Operation SHMS n° 63

Outer vessel parts dimensional control

- Validate certificate raw materials before machining

Follower

Operation SHMS n° 64

Outer vessel piping and plate welding

Follower

Operation SHMS n° 65

Helium leakage test

Follower

Operation SHMS n° 66

Outer vessel dye penetrant test



QUALITY AND MANUFACTURING PLAN

Follower

Operation SHMS n° 67

Suspension link manufacturing and fitting

- Validate certificate raw materials before machining

Follower

Operation SHMS n° 68

Cryostat assembly

Follower

Operation SHMS n° 69

Piping welding

Report

Operation SHMS n° 70

Helium, N2, and outer vessels helium leak test

Report

Operation SHMS n° 71

Dimensional inspection

Report

Operation SHMS n° 72

Control

- Resistance measure
- Conductor to ground insulation resistance



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Follower

Operation SHMS n° 73

Pneumatic pressure test

Report

Operation SHMS n° 74

Magnetic measurement

- At room temperature (hot)

Follower

Operation SHMS n° 75

CCR disassembly

Follower

Operation SHMS n° 76

Shipping

- Rigging

Follower

Operation SHMS n° 77

CCR assembly

Report

Operation SHMS n° 78

In situ test