Meeting of the restricted Machine Protection Panel

BBCW readiness

April 9th, 2024.

Participants:

C. Hernaslteens (TE-MPE), M. Solfaroli (BE-OP), G. Sterbini (BE-ABP), A. Rossi (SY-BI), J. Uythoven (TE-MPE), J. Wenninger (BE-OP), C. Wiesner (TE-MPE), D. Wollmann (TE-MPE).

The slides of all presentations can be found on Indico.

Summary of measurements and WIC event (G. Sterbini)

Guido first summarized the measurements performed so far. A tune shift of -1.5e-3 was observed in the horizontal plane for Beam 2 when powering the wire with the new compensation scheme active. The OMC team measured the beta-beating but did not find significant different compared to the beta-beating without the wires. The tune shift was confirmed and a change of coupling below 1e-3 was observed.

Guido commented that the wires have a strong octupolar effect which change the transverse spectrum of the beam. This can cause tune measurement error which would explain the observed change.

When powering the wires at nominal current (350 A), the WIC triggered (over-temperature channel). The temperature is indirectly measured via the voltage drop at the wire and the temperature-dependent resistivity. Powering the wire at 315 A does not lead to the over-temperature.

Guido proposed to power the wires at 90 % (315 A).

Temperature interlock (A. Rossi)

Adriana detailed how the temperature interlock of the wires works: the voltage drop across the wire (measured where the wires connect to the flexibles coming from the power converters, and calibrated during tests of a wire-in-jaw under vacuum) is used to monitor that the temperature of the wire never exceeds values that could damage part of the collimators, since the resistance of the wire increases with temperature. The voltage threshold is set so that the wire (inside the jaw) would not exceed 200 C when the current is 300 A. At higher current, the margin left for temperature increase is even lower.

Discussion

It was agreed to power the wire at 315 A (90 % of the full current) during the next ramp-up fills when reaching 30 cm ß*.