Corrections to “Techno-Economic Optimization of the NbTi DTT Feeders”

IEEE Access
Multidisciplinary | Rapid Review | Open Access Journal

Received 19 April 2023, accepted 19 April 2023, date of current version 4 May 2023.

Digital Object Identifier 10.1109/ACCESS.2023.3269312

COMMENTS AND CORRECTIONS

Corrections to "Techno-Economic Optimization of the NbTi DTT Feeders"

DANIELE PLACIDO[1], GIANLUCA DE MARZI[2], LUIGI MUZZI[2], (Senior Member, IEEE), AND LAURA SAVOLDI[1], (Member, IEEE)

[1]Dipartimento Energia "Galileo Ferraris," Politecnico di Torino, 10129 Turin, Italy
[2]Superconductivity Section, FSN Department, ENEA, 00044 Frascati, Italy

Corresponding author: Laura Savoldi (laura.savoldi@polito.it)

In the above article [1], an error in the units of measurement in Fig. 12 was identified. This error does not invalidate the discussion of the article findings and conclusions, as they were put in the form of comparison among different feeders. Fig. 12 with the corrected measurements units is included in this correction document, together with an explanation of the error and a calculation example.

Fig. 12 shows the estimated operating cost per year for the selected feeder configurations. By applying (8), a conversion coefficient was overlooked, leading to an operational cost expressed in M€/y rather than in k€/y as it results from the correct application of (8).

$$C_{power} = e \times \tau \times P_{feeder} \tag{8}$$

As an example, we propose below the evaluation of the operating cost for the A1 configuration of the Jumper feeder, considering a mass flow rate of 5 g/s.

The average power to be removed by the cooling system can be estimated from Fig. 8, and it is approximately 10 W, which, from (7), corresponds to a cryostat power of approximately 3.2 kW. For the jumpers the considered operation time is 180 d/y, equivalent to 4320 h/y. So, applying (8), we get:

$$C_{power,TFA_1} = 0.3\frac{€}{\text{kWh}} \times 4320\frac{\text{h}}{\text{y}} \times 3.2\text{kW} \cong 4.15\frac{\text{k€}}{\text{y}}$$

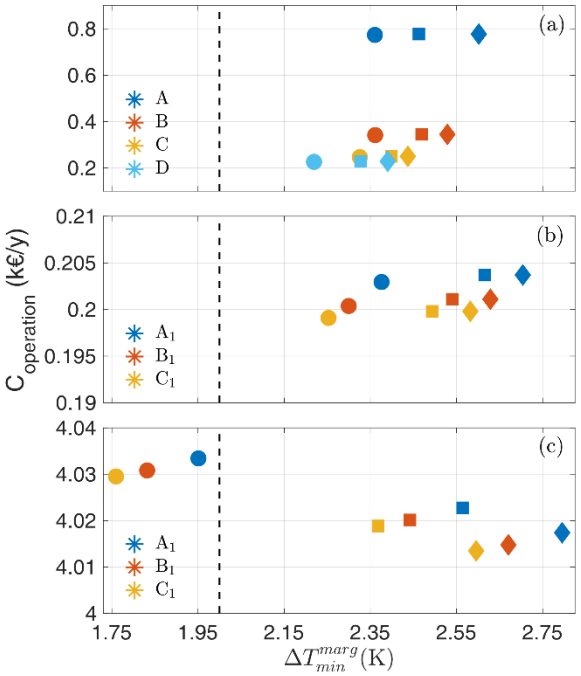

FIGURE 12. Operation cost estimated for the CS3U2 feeder (a), PF61 feeder (b) and TF jumper (c), respectively, reported as a function of the computed minimum temperature margin during the investigated plasma pulse, for different configurations and operating mass flow rate values: circle 2 g/s, square 5 g/s, diamond 10 g/s, respectively. The value of ΔT_{CS}^{min} is also reported (dashed line).

REFERENCES

[1] D. Placido, G. De Marzi, L. Muzzi, and L. Savoldi, "Techno-economic optimization of the NbTi DTT feeders," *IEEE Access*, vol. 11, pp. 15144–15152, 2023, doi: 10.1109/ACCESS.2023.3244984.