**Electronic Supplementary Material**

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**Thermodynamic properties of atrial fibrillation cryoablation: a model-based approach to improve knowledge on energy delivery**

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**Measurement and calculations datasets explanation**

In the Excel file reported as electronic supplementary material we provide the dataset supporting the results of this paper. Data for each sample are reported in different worksheets of the Excel file. Graphs showing the results are also shown: it is possible to visualize the method followed to create the graph by clicking on the different curves.

T\_π (°C) (column B) and T\_I (°C) (column C) represent temperature at Cold Finger-Peltier Stack and Cold Finger-sample interface, respectively. These two temperatures constitute the boundary conditions for the numerical solution of the thermal field inside the Cold Finger as described in Ref.16 of the paper.

Taking into account the slope obtained by the performed experiments on the bovine liver (columns Z, AB), the ice growth reconstruction about Simple #0 is proposed as an example in columns S - V, in which the abscissa is x=√τ and the incremented abscissa is x+Δx=√(τ+∆τ).

I1,I2,I3,I4 (also J2 and J3 for sample#2 since the heat subtracted flux has been reduced during the cooling process) cells show the data needed to determine ice growth in sample#1 and sample#2, according to the model described in Ref.16 and to the indication inside the graph of ice penetration.

The method followed to calculate the fraction *f* of the useful energy spent for ice formation is described in Ref.16 and 18, considering the liver thermal properties found in literature (Kim, C., O’Rourke, A. P., Will, J. A., Mahvi, D. M., & Webster, J. G. (2008). Finite-element analysis of hepatic cryoablation around a large blood vessel. IEEE Transactions on Biomedical Engineering, 55, 2087–2093.).