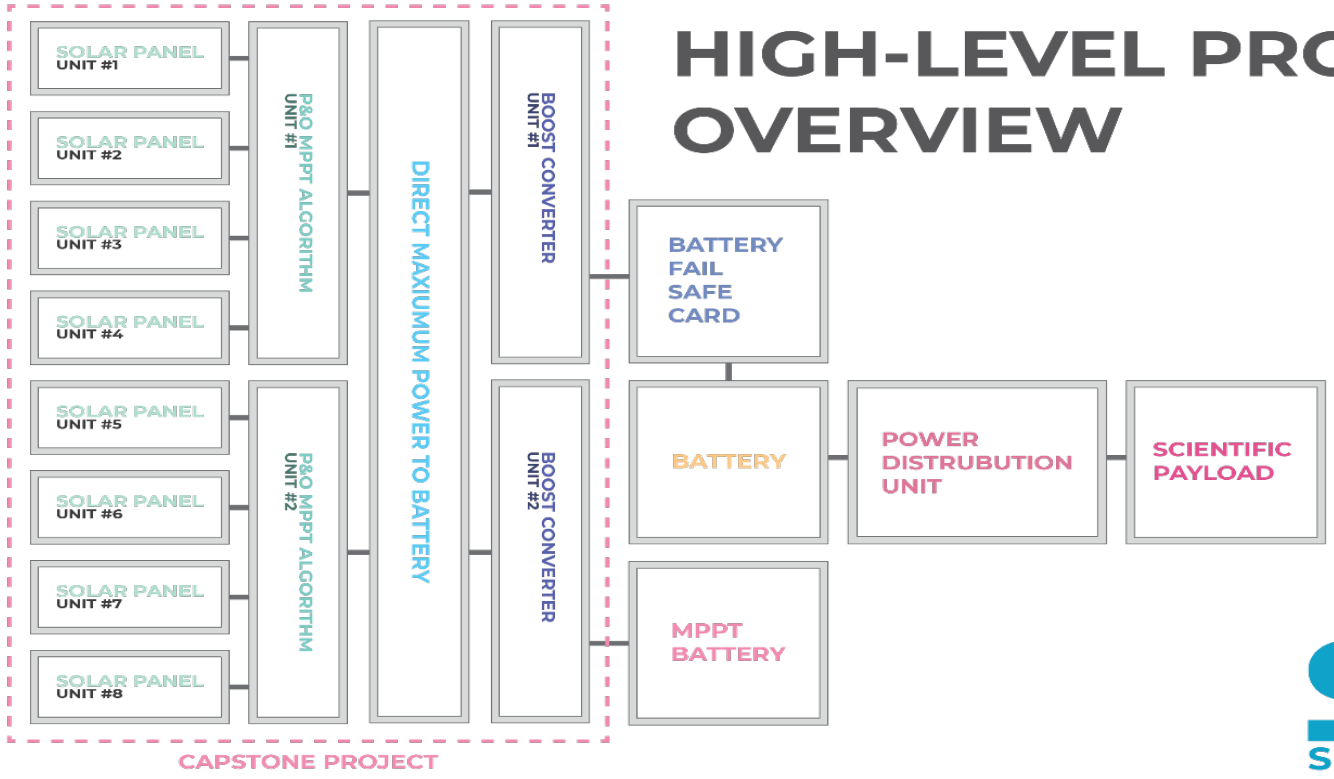
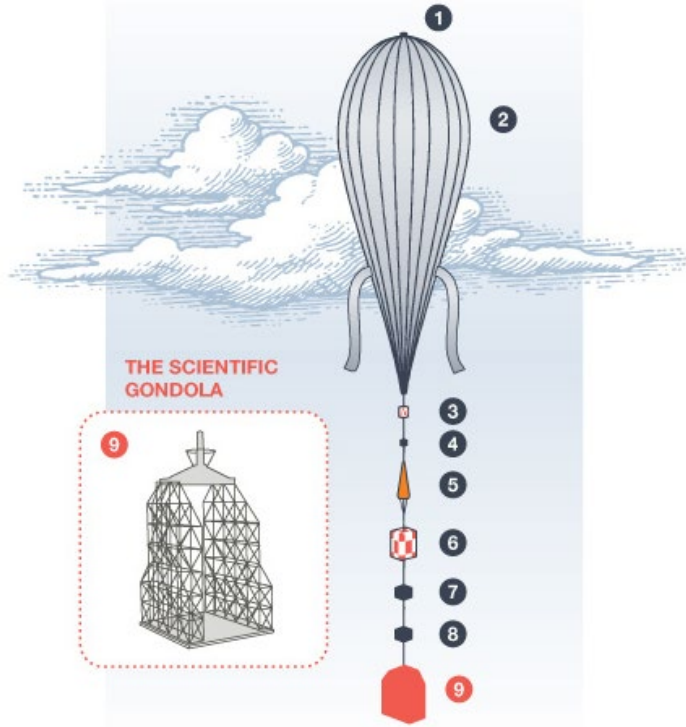
Solar Power Generation System for the Canadian Space Agency STRATOS Program

Amine Doulfikar[a] *, Ian Cabales[a], Akash Hossan[a], Jeff Bloemink[a], Pooya Taheri[a]

[a] British Columbia Institute of Technology, ECET Department, Burnaby BC, Canada, V5G 3H2

* amine.doulfikar@ieee.org





https://www.asc-csa.gc.ca/eng/sciences/balloons/about-stratospheric-balloons.asp

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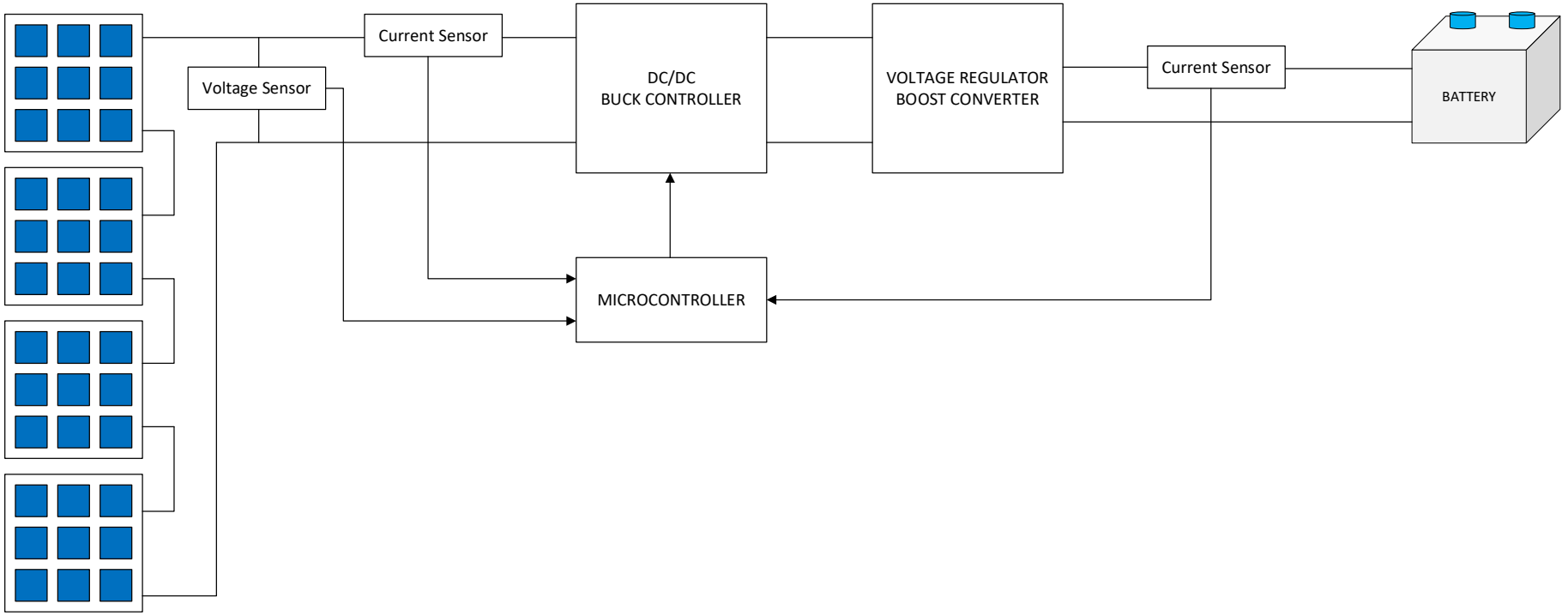

Figure 1 - High level design of one MPPT Controller

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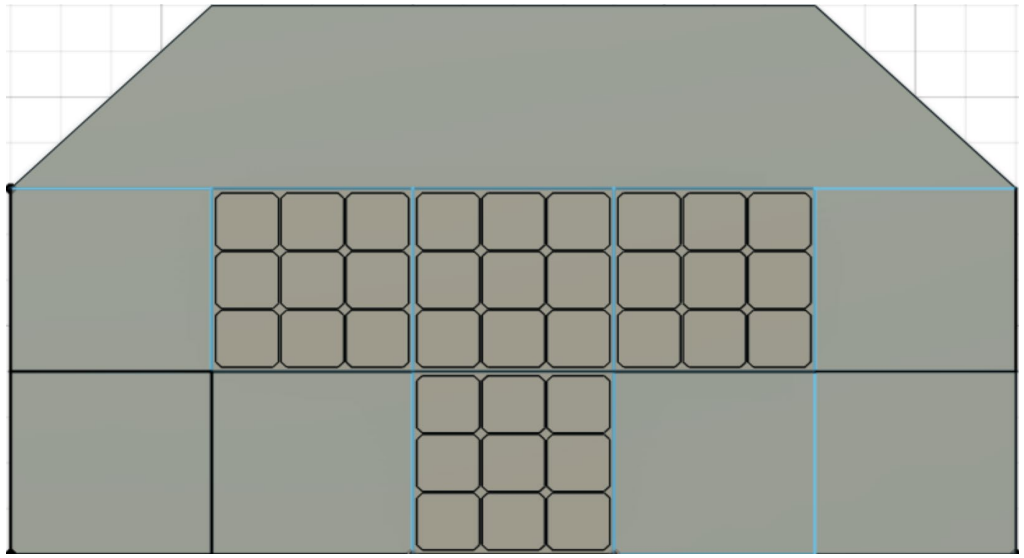

Figure 2 - Front Side of Gondola With Four Solar Panels using SOLAR CELL C60 Sunpower Solar Cells

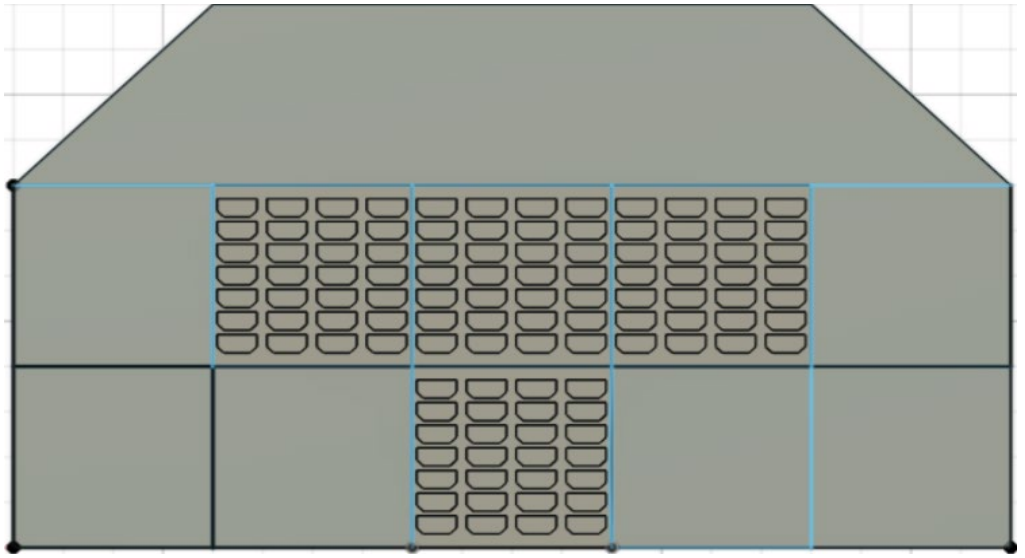

Figure 3 - Front Side of Gondola With Four Solar Panels using Azurspace Solar Cells

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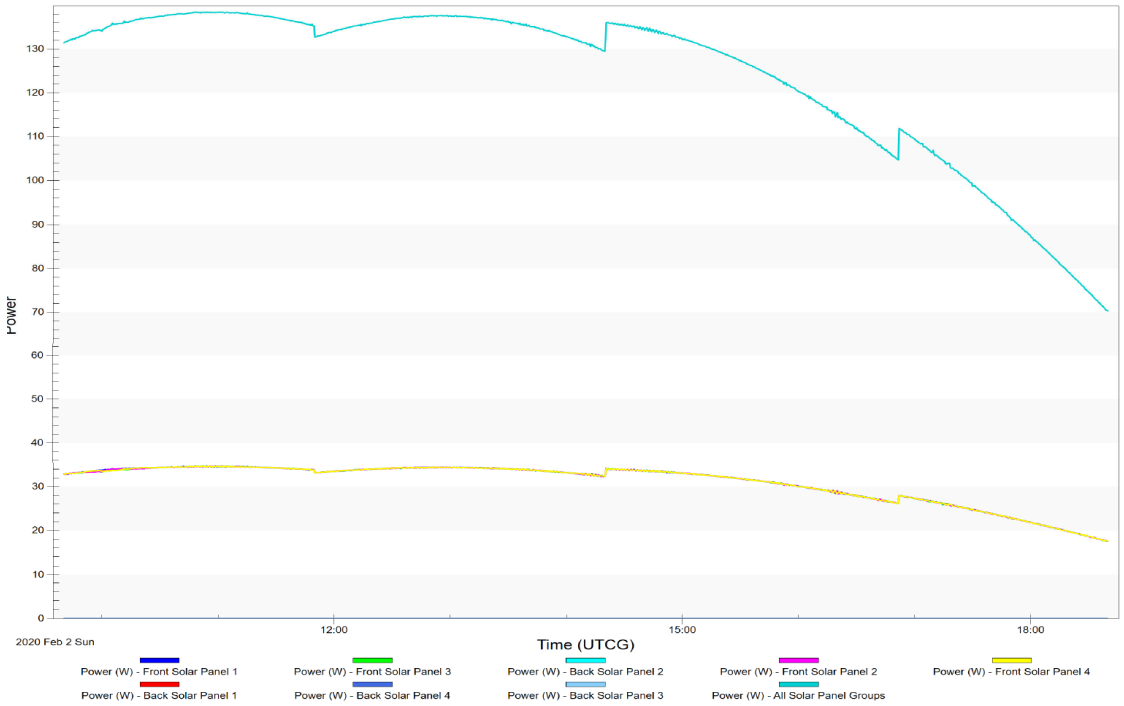

Figure 4 - Power Output Graph using C60 Sunpower Cells (19% efficiency)

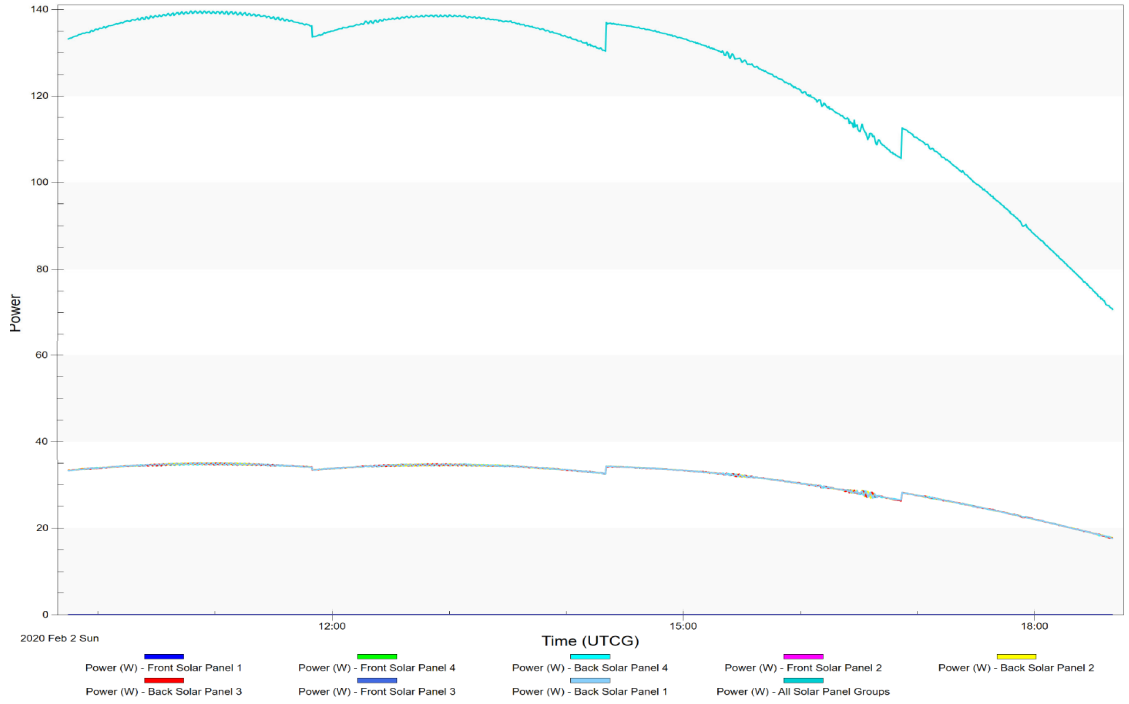

Figure 5 - Power Output Graph using Azurspace Cells (28% efficiency)

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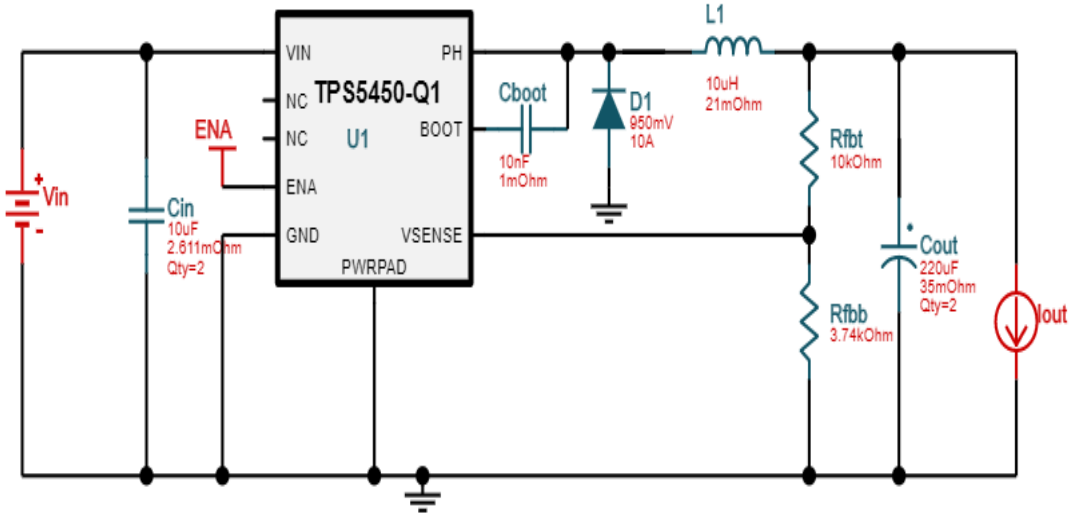

Figure 6 – Buck Converter Design

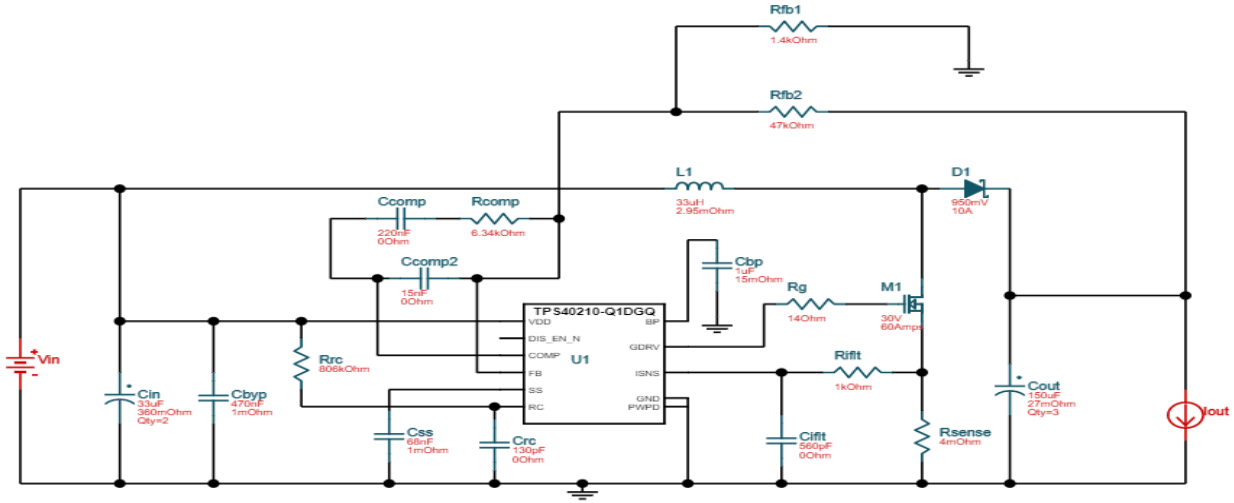

Figure 7 – Boost Converter Design

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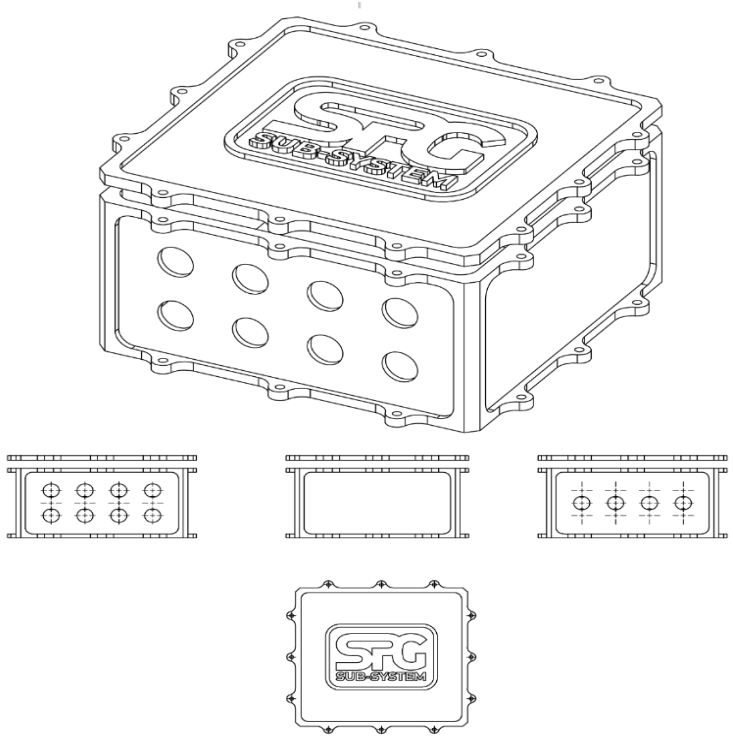

Figure 8 - Power Output Graph using Sunpower Cells (19% efficiency)

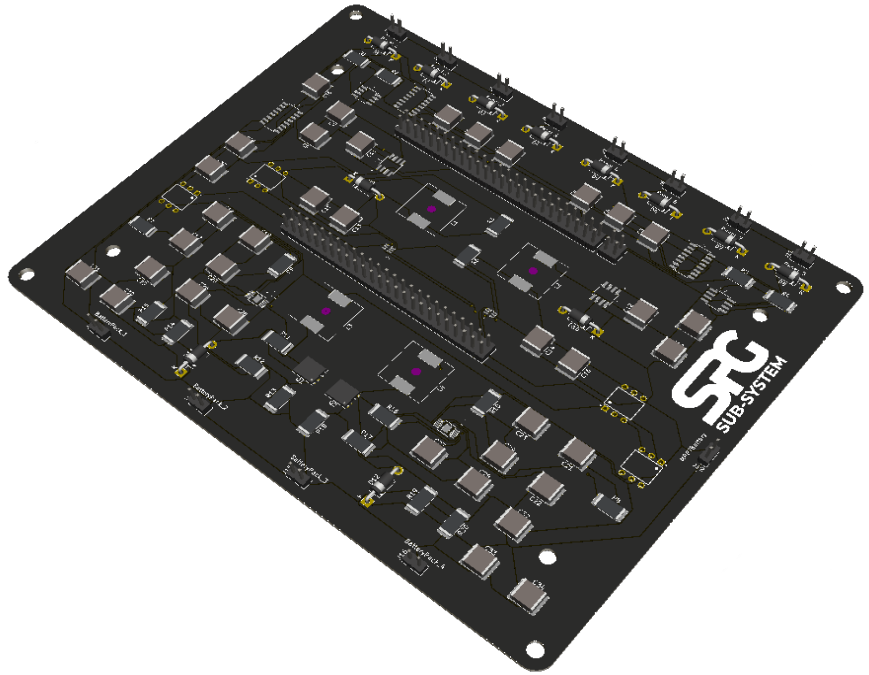

Figure 9 - Power Output Graph using Sunpower Cells (19% efficiency)