Temperature observation of an ultra-low temperature freezer (-80°C) at the BMC

Freezer model: Thermo Fisher Scientific HFU400TV

Temperature of one ultra-low-temperature freezer set at -80°C was observed after it's door was opened for approximately 3, 2, 1 minute(s) or 10 seconds accumulatively. The range of normal temperature fluctuation of the freezer is illustrated with the red dotted lines, which is determined by the average peaks and troughs of the oscillations in the previous 3 hours (where the freezer stayed closed). The range of normal temperature varied between days of observation. The recovery period is defined by the presence of "irregular oscillations" (where the peaks and troughs exceed the range of normal temperature fluctuation; shaded) and ends at the onset of the next "normal oscillation".

Figure 1: Recovery period after opening for approximately 3 accumulative minutes.

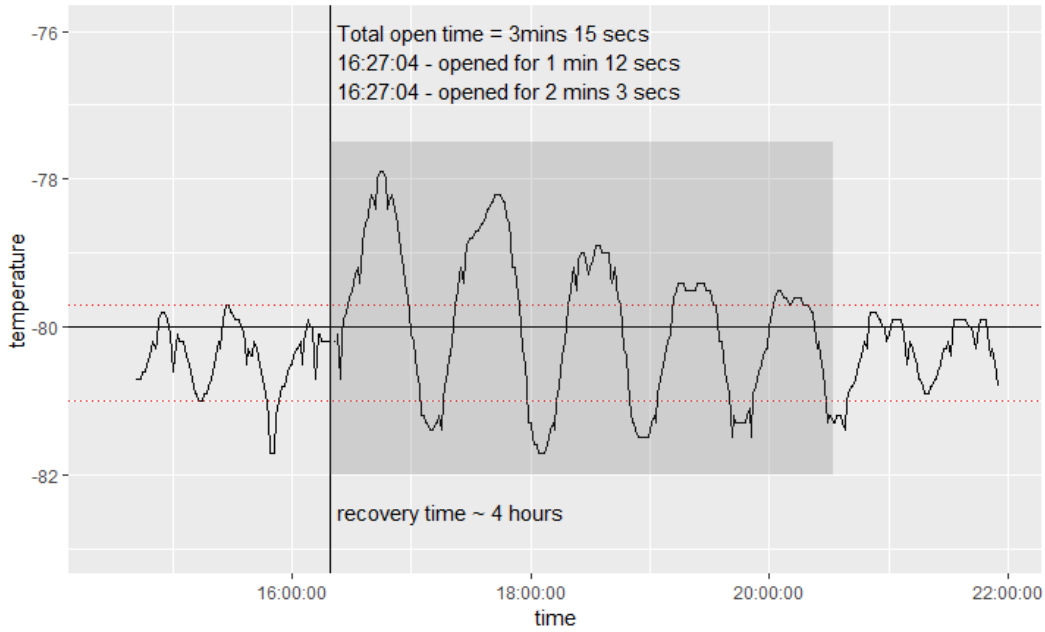

Figure 2: Recovery period after opening for approximately 2 accumulative minutes

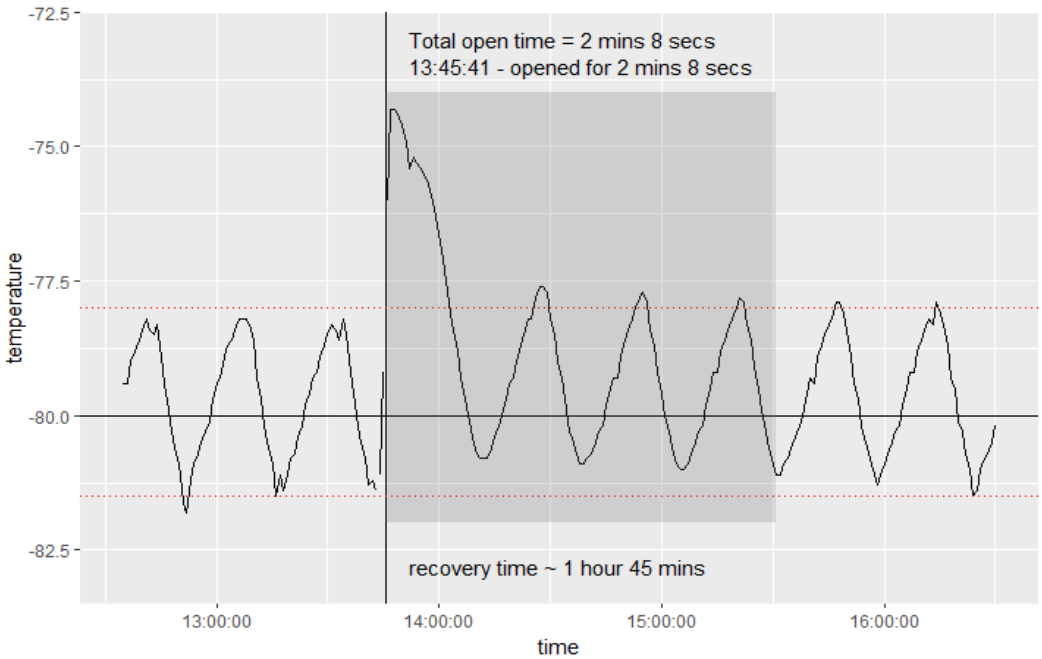

Figure 3: Recovery period after opening for approximately 1 accumulative minute.

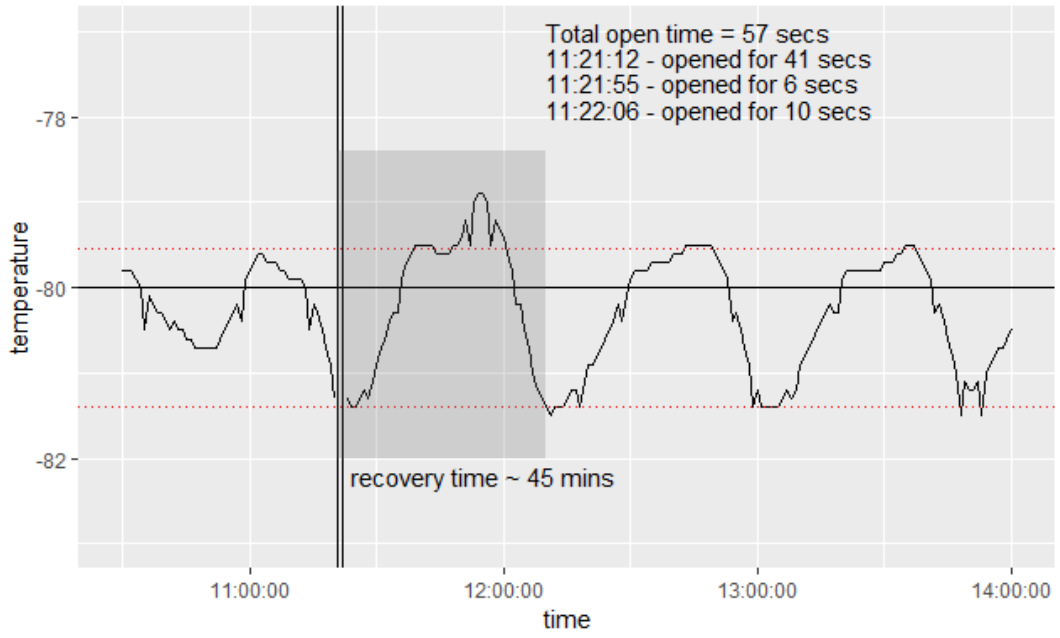

Figure 3: Recovery period after opening for 9 seconds