Criteria v10 (With Flowmeter Data).

Start Time

$$\blacktriangleright (F_{t_{start}+1} - F_{t_{start}} \neq 0) \lor (U_{t_{start}+1} - U_{t_{start}} \neq 0)$$

End Time

$$\forall t \in [t_{end} + 1, t_{end} + 5], \frac{dU}{dt} \le 0.005 \land \frac{dF}{dt} \le 0.005$$

Event Filter

$$ightharpoonup (F_{t_{end}} - F_{t_{start}} > 0.6) \lor (U_{t_{end}} - U_{t_{start}} > 0.05)$$

Combine Close Events

▶ condition: $t_{start+1} - t_{end} < 15s \lor (15 <= t_{start+1} - t_{end} < 60s \land \text{ number of valid flowmeter in } [(t_{end}, t_{end+1}] < 2)$

Adjust Start Time with Flowmeter Data

▶ Set the index of first valid flowmeter data in $[max(t_{end}, t_{start} - 300), t_{start}]$ as the new t_{start} .

Criteria v10 (Without Flowmeter Data).

Start Time

 $\blacktriangleright (F_{t_{start}+1} - F_{t_{start}} \neq 0) \lor (U_{t_{start}+1} - U_{t_{start}} \neq 0)$

End Time

 $ightharpoonup orall t \in [t_{end}+1, t_{end}+5], rac{dU}{dt} \leq 0.005 \wedge rac{dF}{dt} \leq 0.005$

Event Filter

 $ightharpoonup (F_{t_{end}} - F_{t_{start}} > 0.6) \lor (U_{t_{end}} - U_{t_{start}} > 0.05)$

Combine Close Events

ightharpoonup condition: $t_{start+1} - t_{end} < 30s$