

# Analisis Kualitas Baterai Menggunakan Excel

## Tujuan

Tutorial ini akan memandu kamu untuk menganalisis kualitas baterai dari data Excel menggunakan fitur-fitur **bawaan** seperti:

- **Conditional Formatting**
- **Pivot Table**
- **Visualisasi Grafik (Chart)**

Cocok untuk pemula yang ingin mulai eksplorasi data langsung dari Excel.

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## Persiapan

### 1. File Data

Gunakan file: battery\_data\_dummy2.xlsx

Data ini diasumsikan memiliki kolom seperti:

- Cycle – Jumlah siklus baterai
- Capacity – Kapasitas baterai (Ah)
- Voltage – Tegangan (V)
- Temperature – Suhu (°C)
- Status – Status kualitas baterai (jika tersedia)

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ | AR | AS | AT | AV | AW | AY | AZ | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BV | BW | BY | BY | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR |
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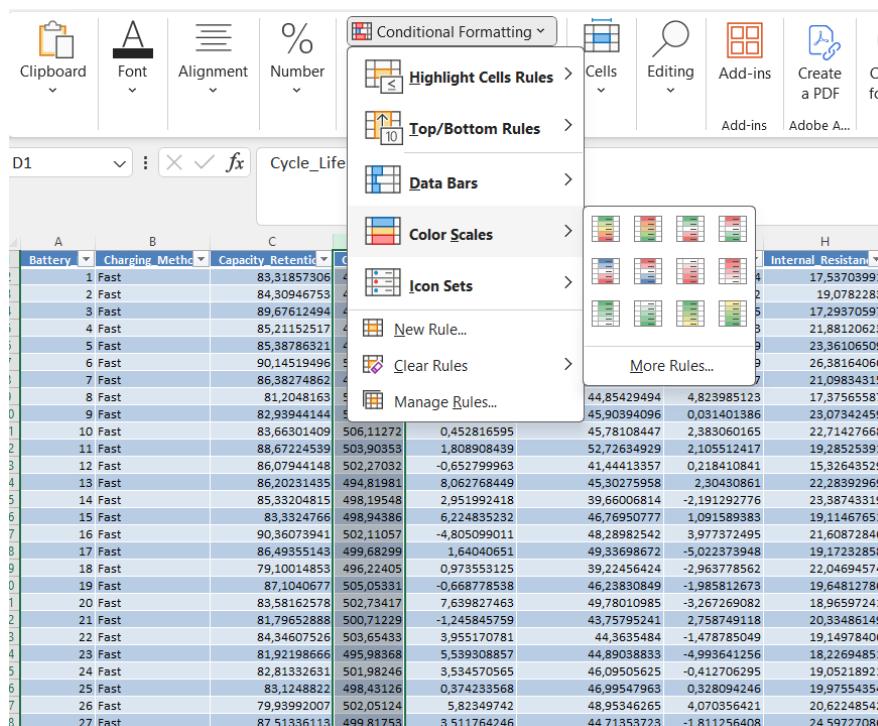
## Langkah-Langkah Analisis

### 1. Membersihkan Data dengan Filter

1. Buka file Excel battery\_data\_dummy2.xlsx.
  2. Klik tab **Data > Filter**.
  3. Pastikan semua kolom memiliki nama di baris pertama.
  4. Gunakan ikon  di tiap header kolom untuk menyaring atau mencari data spesifik.
  5. Hapus baris kosong atau anomali (misalnya, Capacity = 0 atau Temperature = -999).
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### 2. Analisis Cepat dengan Conditional Formatting

1. Blok kolom Capacity.
2. Klik **Home > Conditional Formatting > Color Scales**.
3. Pilih gradasi warna (misal: Hijau → Merah).
4. Kapasitas tinggi akan berwarna hijau, dan kapasitas rendah berwarna merah.
5. Untuk membuat ambang sendiri:
  - o Klik **New Rule > Format only cells that contain**
  - o Atur less than → pilih warna merah
  - o Atur greater than → warna hijau

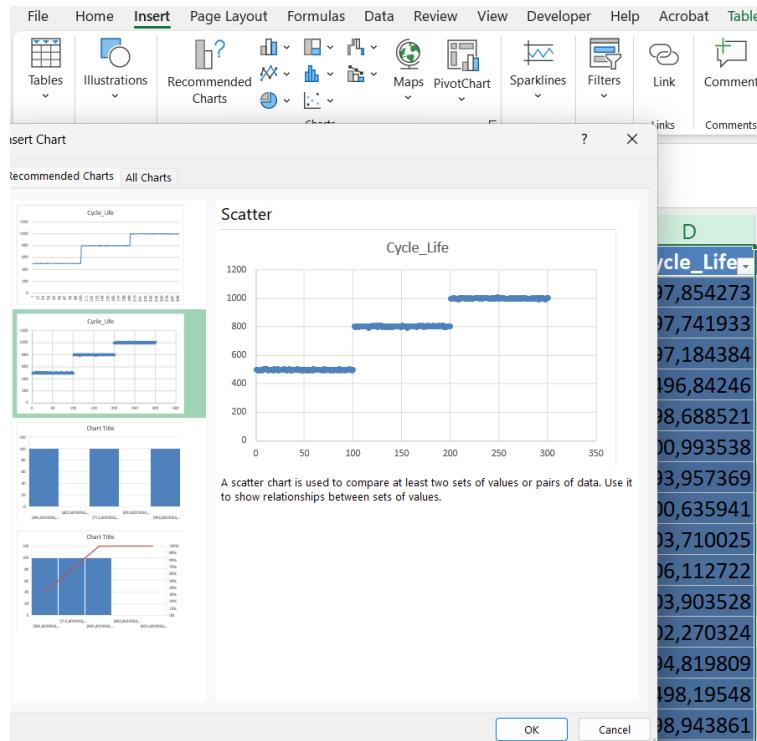


The screenshot shows the Microsoft Excel ribbon with the 'Conditional Formatting' tab selected. Under the 'Color Scales' section, a specific color scale is applied to the 'Capacity' column, where higher values are green and lower values are red. The data table below shows the 'Capacity' column with values ranging from 83,1857306 to 499,81753, illustrating the visual representation of the conditional format.

| Battery | Charging Method | Capacity    | Retention   |
|---------|-----------------|-------------|-------------|
| 1 Fast  |                 | 83,1857306  | 83,1857306  |
| 2 Fast  |                 | 84,30946753 | 84,30946753 |
| 3 Fast  |                 | 89,67612494 | 89,67612494 |
| 4 Fast  |                 | 85,21152517 | 85,21152517 |
| 5 Fast  |                 | 85,38786321 | 85,38786321 |
| 6 Fast  |                 | 90,14519496 | 90,14519496 |
| 7 Fast  |                 | 86,38274862 | 86,38274862 |
| 8 Fast  |                 | 81,2048163  | 81,2048163  |
| 9 Fast  |                 | 82,93944144 | 82,93944144 |
| 10 Fast |                 | 83,66301409 | 83,66301409 |
| 11 Fast |                 | 88,67224539 | 88,67224539 |
| 12 Fast |                 | 86,07944148 | 86,07944148 |
| 13 Fast |                 | 86,20231435 | 86,20231435 |
| 14 Fast |                 | 85,33204815 | 85,33204815 |
| 15 Fast |                 | 88,3324766  | 88,3324766  |
| 16 Fast |                 | 90,36073941 | 90,36073941 |
| 17 Fast |                 | 86,49355143 | 86,49355143 |
| 18 Fast |                 | 79,10014853 | 79,10014853 |
| 19 Fast |                 | 87,1040677  | 87,1040677  |
| 20 Fast |                 | 83,58162578 | 83,58162578 |
| 21 Fast |                 | 81,79652888 | 81,79652888 |
| 22 Fast |                 | 84,34607526 | 84,34607526 |
| 23 Fast |                 | 81,92198666 | 81,92198666 |
| 24 Fast |                 | 82,8132631  | 82,8132631  |
| 25 Fast |                 | 83,1248822  | 83,1248822  |
| 26 Fast |                 | 79,93992007 | 79,93992007 |
| 27 Fast |                 | 87,51336113 | 87,51336113 |

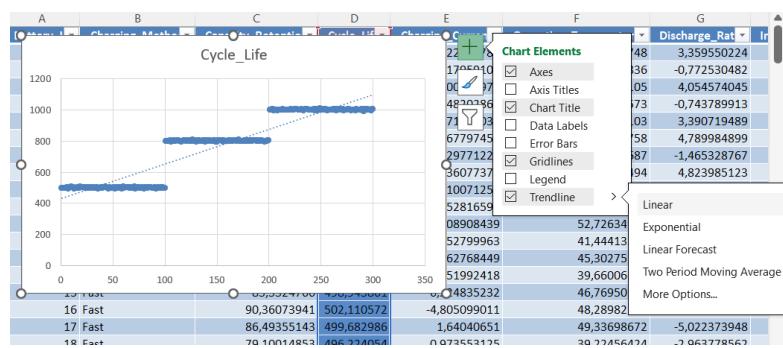
### 3. Cycle life (Scatter Chart)

1. Pilih kolom Cycle (tekan Ctrl untuk memilih dua kolom).
2. Klik tab **Insert > Chart > Scatter (X, Y)**.



3. Setelah grafik muncul, klik titik-titik data → **Right Click > Add Trendline**.
4. Pilih **Linear**, lalu centang:
  - *Display Equation on chart*
  - *Display R-squared value on chart (opsional)*

5. Hasil: Grafik tren penurunan kapasitas berdasarkan siklus pemakaian.



### 4. Ringkasan Data dengan Pivot Table

1. Blok seluruh data > klik **Insert > Pivot Table**.

PivotTable

Easily arrange and summarize complex data in a PivotTable.

FYI: You can double-click a value to see which detailed values make up the summarized total.

**② Tell me more**

| D  | E          | F           | G           | H           |             |
|----|------------|-------------|-------------|-------------|-------------|
| 06 | 497,000000 | 2,91753101  | 42,62305323 | 3,72530024  | 19,073222   |
| 53 | 497,7441   | 2,90000873  | 45,59078005 | 4,05457045  | 17,233705   |
| 94 | 497,3694   | 2,90000873  | 43,9175573  | -0,74378913 | 21,881206   |
| 17 | 496,8425   | -1,54820286 | 48,25305103 | 3,39007948  | 23,361600   |
| 21 | 496,8885   | 5,37116902  | 43,1175573  | 3,39007948  | 23,361600   |
| 30 | 496,8885   | 2,90000873  | 43,1175573  | 3,39007948  | 23,361600   |
| 48 | 493,9535   | 1,02977224  | 47,4777687  | -1465320767 | 21,096343   |
| 53 | 500,6353   | -1,23607738 | 44,85423493 | 4,82338512  | 17,759558   |
| 64 | 496,8885   | 1,02977224  | 45,59078005 | 3,39007948  | 23,361600   |
| 58 | 496,7441   | 0,45200000  | 45,30328447 | 3,39007948  | 22,747263   |
| 93 | 503,9035   | 1,80890849  | 52,28249323 | 2,10952497  | 15,285253   |
| 48 | 502,2703   | -0,65273956 | 41,44413537 | 0,21841084  | 15,326435   |
| 49 | 496,8193   | 0,45200000  | 45,30328447 | 3,39007948  | 23,361600   |
| 53 | 496,8193   | 2,52545248  | 33,63006914 | -2,19129277 | 23,361600   |
| 15 | 493,322476 | 6,22482532  | 46,76950777 | 1,09589383  | 19,116765   |
| 16 | Fast       | 80,36073941 | 502,1001    | 4,80593011  | 45,28962324 |
| 17 | Fast       | 86,17044763 | 498,8989    | 5,00000000  | 45,30328447 |
| 18 | Fast       | 87,10468771 | 505,0533    | -0,66877853 | 45,3245424  |
| 20 | Fast       | 83,58162578 | 502,7342    | 7,63382746  | 45,23830849 |
| 21 | Fast       | 89,71950000 | 500,7123    | 1,02977224  | 49,78010861 |
| 22 | Fast       | 94,34607526 | 495,9363    | 3,35570751  | 44,3655494  |
| 23 | Fast       | 81,32798668 | 495,9363    | 5,53393885  | 44,89038833 |
| 24 | Fast       | 62,81332631 | 501,9626    | 3,53457058  | 45,09505625 |
| 25 | Fast       | 89,93246261 | 495,9363    | 0,93457058  | 46,93642563 |
| 26 | Fast       | 79,33246261 | 502,0512    | 5,62345742  | 46,3534263  |
| 27 | Fast       | 87,51338113 | 493,8175    | 3,51704246  | 44,7153723  |
| 28 | Fast       | 65,46019335 | 501,8989    | -0,19043379 | 45,5886341  |
| 29 | Fast       | 89,15830000 | 495,9363    | -1,9043379  | 4,30366776  |
| 30 | Fast       | 88,75144476 | 500,0298    | 3,23015203  | 45,2332878  |
| 31 | Fast       | 88,27933268 | 503,0527    | 0,96443056  | 45,58625933 |
| 32 | Fast       | 64,11478555 | 496,4347    | -2,56671462 | 40,97327062 |
| 33 | Fast       | 97,02314353 | 495,9363    | 4,02960042  | 40,97327062 |
| 34 | Fast       | 87,63440044 | 494,5577    | 3,30363076  | 44,3300254  |
| 35 | Fast       | 87,46474932 | 501,1522    | -1,08150307 | 44,36686251 |
| 36 | Fast       | 87,05670576 | 493,8433    | -0,62896324 | 43,27374708 |
| 37 | Fast       | 89,88576576 | 495,9363    | 0,93457058  | 42,9337673  |
| 38 | Fast       | 84,51326487 | 493,8887    | 6,4319375   | 42,8337673  |
| 39 | Fast       | 84,0821201  | 502,5973    | 4,90837206  | 44,35648645 |
| 40 | Fast       | 83,856597   | 499,8364    | 1,52197728  | 43,10437978 |
| 41 | Fast       | 88,29289892 | 495,9363    | 0,93457058  | 40,97327062 |
| 42 | Fast       | 84,37624817 | 502,877     | 3,61320027  | 43,33002745 |
| 43 | Fast       | 81,20381045 | 505,0132    | 3,472060042 | 33,34225064 |
| 44 | Fast       | 91,50608793 | 500,1661    | 4,8931524   | 42,46624971 |
| 45 | Fast       | 88,33888888 | 495,8841    | 1,92680826  | 43,82678784 |
| 46 | Fast       | 81,63367425 | 496,7403    | 5,53836216  | 45,30340401 |
| 47 | Fast       | 89,70010404 | 495,9363    | 0,93457058  | 44,10979979 |

2. Di jendela popup, klik **OK**.

3. Dalam Pivot Table:

- Tarik Cycle ke **Rows**
- Tarik Capacity ke **Values** (otomatis pakai "Sum", ubah ke "Average")
- Tarik Methode ke **Filters**

4. Hasil: Tabel ringkasan rata-rata kapasitas per siklus.

Row Labels - Average of Capacity\_Retention

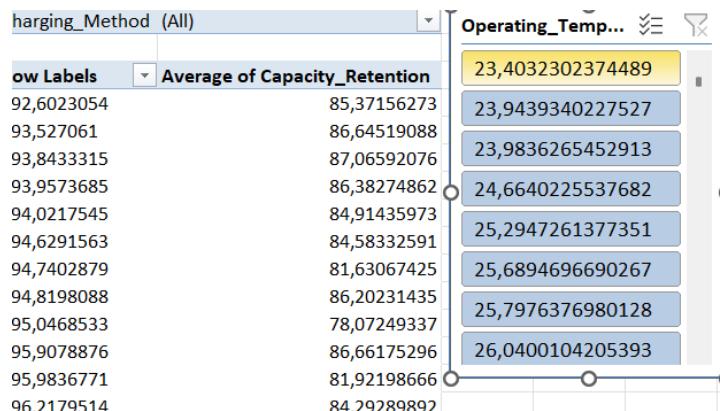
| A                     | B                             | C | D | E                               |
|-----------------------|-------------------------------|---|---|---------------------------------|
| Charging_Method (All) |                               |   |   | PivotTable Fields               |
| Row Labels            | Average of Capacity_Retention |   |   | Choose fields to add to report: |
| 492,6023054           | 85,37156273                   |   |   | Search                          |
| 493,527061            | 86,64519088                   |   |   | Charging_Method                 |
| 493,8433315           | 87,06592076                   |   |   | Capacity_Retention              |
| 493,9573685           | 86,38274862                   |   |   | Cycle_Life                      |
| 494,0217545           | 84,91435973                   |   |   | Charging_Current                |
| 494,6291563           | 84,58332591                   |   |   | Operating_Temperature           |
| 494,7402879           | 81,63067425                   |   |   | Discharge_Rate                  |
| 494,8198088           | 86,20231435                   |   |   | Internal_Resistance             |
| 495,0468533           | 78,07249337                   |   |   |                                 |
| 495,9078876           | 86,66175296                   |   |   |                                 |
| 495,9836771           | 81,92198666                   |   |   |                                 |
| 496,2179514           | 84,29289892                   |   |   |                                 |
| 496,2240541           | 79,10014853                   |   |   |                                 |
| 496,4346979           | 84,11478555                   |   |   |                                 |
| 496,5932346           | 86,30554447                   |   |   |                                 |
| 496,8349489           | 86,93312965                   |   |   |                                 |
| 496,8424602           | 85,21152517                   |   |   |                                 |
| 497,0096578           | 84,14568098                   |   |   |                                 |
| 497,0779713           | 87,33989536                   |   |   |                                 |
| 497,1637735           | 85,15901268                   |   |   |                                 |
| 497,1843839           | 89,67612494                   |   |   |                                 |

## 5. Tambahkan Slicer (Filter Interaktif)

1. Klik Pivot Table > **Insert Slicer**.

A screenshot of the Microsoft Excel ribbon showing the PivotTable tab selected. The PivotTable Fields dialog box is open, displaying a list of fields: Battery\_ID, Charging\_Method, Capacity\_Retention, Cycle\_Life, Charging\_Current, Operating\_Temperature, Discharge\_Rate, and Internal\_Resistance. The 'Operating\_Temperature' checkbox is checked, and the 'OK' button is visible at the bottom right.

2. Centang kolom yang ingin difilter interaktif (misalnya: Status atau Temperature).
3. Klik slicer untuk menampilkan data sesuai kategori.



## 6. Statistik Ringkasan (KPI Box)

Di lembar kosong, masukkan rumus-rumus berikut:

| KPI | Rumus Excel |
|-----|-------------|
|-----|-------------|

 Rata-rata Kapasitas =AVERAGE(...)

 Kapasitas Minimum =MIN(...)

 Siklus Maksimum =MAX(...)

 Suhu Rata-rata =AVERAGE(...)

| NO | KPI              | VALUE    |
|----|------------------|----------|
| 1  | Temprature       | 36,7482  |
| 2  | Capacity         | 89,1033  |
| 3  | Cycle life       | 766,6940 |
| 4  | Minimum Capacity | 78,0725  |
| 5  | Maximum Capacity | 99,7231  |

- Insert slicer for KPI
- Subtotal(....)
- Xlookup(....)
- Copy \$ Paste hasil xlookup dengan linked picture

The screenshot shows a dashboard with two cards and their respective slicer panes.

**Card 1: Cycle life**

- Slicer:** A vertical list of KPIs: Capacity, Cycle life, Maximum Capacity, Minimum Capacity, and Temprature.
- Data:** A table with columns NO, KPI, and VALUE. Row 3 shows Cycle life with a value of 766,6939947.
- Value:** The value 766,6939947 is displayed in a large blue box with the text "Cycle life" above it.

**Card 2: Capacity**

- Slicer:** A vertical list of KPIs: Capacity, Cycle life, Maximum Capacity, Minimum Capacity, and Temprature.
- Data:** A table with columns NO, KPI, and VALUE. Row 2 shows Capacity with a value of 89,10332422.
- Value:** The value 89,10332422 is displayed in a large blue box with the text "Capacity" above it.

💡 Tambahkan label, border, warna, atau ikon untuk membuat tampilannya menarik.

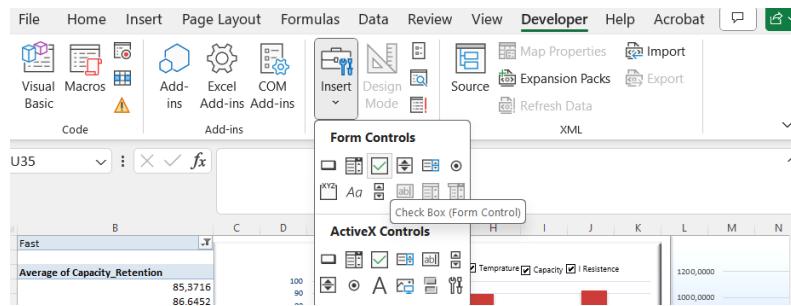
## ✳️ 7. Tujuan

**Membuat grafik interaktif di Excel, di mana pengguna bisa menyalakan atau mematikan data (misalnya per tipe baterai atau metrik tertentu) menggunakan Form Control: Check Box.**

Sisipkan Check Box (Form Control)

1. Klik tab Developer (jika belum muncul, aktifkan dari Options > Customize Ribbon).
2. Pilih Insert > Form Controls > Check Box
3. Tempatkan Check Box Li-ion dan Check Box NiMH di worksheet
4. Klik kanan pada masing-masing check box → Format Control
  - o Pilih tab Control
  - o Di bagian Cell link, tautkan ke sel kosong (misal F2 untuk Li-ion dan F3 untuk NiMH)

- Saat dicentang, sel tersebut akan menampilkan TRUE; jika tidak, FALSE



5. Buat Data Dinamis Berdasarkan Checklist. Dibawah merupakan data berdasarkan Average

6.

|        | K4          | =AVERAGEIF(\$B\$2:B301;J4;\$F\$2:F301) |                     |
|--------|-------------|--|---------------------|
| Method | Temprature  | Capacity                               | Internal Resistance |
| Fast   | 44,94242178 | 85,2712177                             | 20,10646085         |
| Normal | 35,35982173 | 89,6773596                             | 15,26710217         |
| Slow   | 29,94247333 | 92,3613953                             | 12,0931642          |

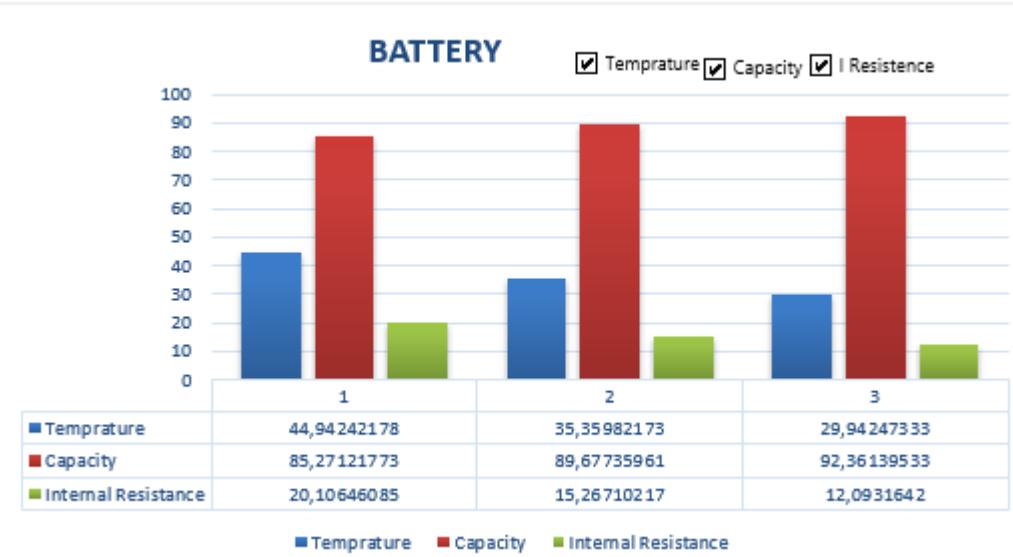
7. Di kolom baru, buat formula untuk menampilkan data hanya jika check box aktif.

| Method | Temprature  | Capacity   | Internal Resistance |
|--------|-------------|------------|---------------------|
| Fast   | 44,94242178 | 85,2712177 | 20,10646085         |
| Normal | 35,35982173 | 89,6773596 | 15,26710217         |
| Slow   | 29,94247333 | 92,3613953 | 12,0931642          |

9. =IF(K8=TRUE, IF(Tahle7[Temprature], NA(),

10. Kamu punya grafik yang bisa dikendalikan dengan checklist, sangat cocok untuk:

- Membandingkan performa baterai antar tipe
- Menampilkan/menyembunyikan metrik tertentu
- Dashboard interaktif di Excel



---

## 8. Susun Dashboard Akhir

Gunakan 1 sheet khusus ("Dashboard") dan sisipkan elemen-elemen berikut:

- Grafik kapasitas vs. siklus
- KPI ringkasan (rata-rata, min, max)
- Pivot Table + slicer
- Tabel berwarna dengan conditional formatting