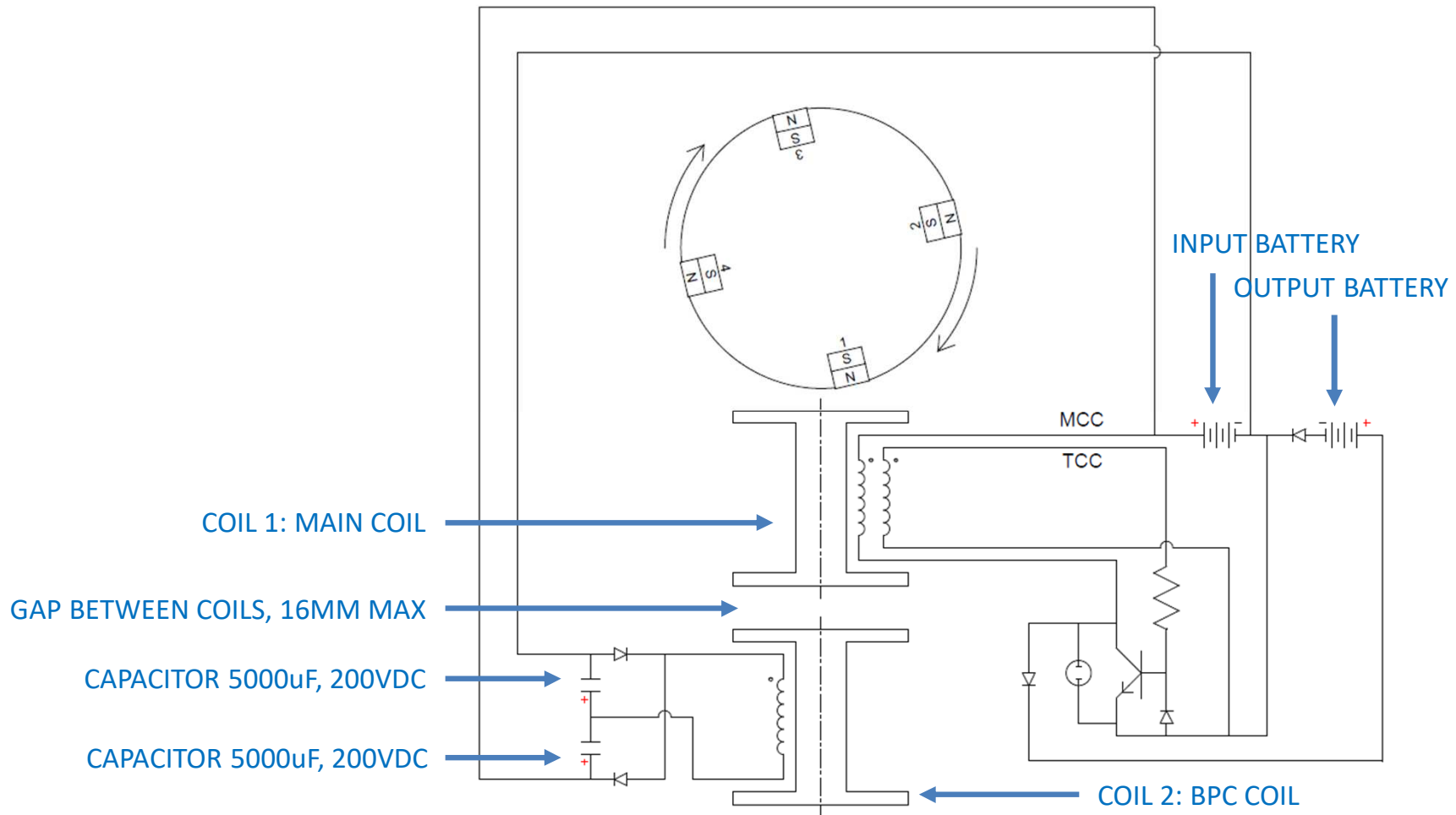


Back Pop Circuit tests

V1.0

2022-04



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Introduction

Introduction

The following tests are 'quick and dirty' tests to get a ballpark feeling for some parameters when using an extra coil underneath the main coil to catch 'stray flux' and feed this back to the input battery; a back pop circuit.

Main things I wanted to test are:

When the terminals of the capacitors are not connected to the input battery, how does the max voltage in the capacitors change when I:

- Increase the RPM (by changing my rotor)

- Decrease the gap between Coil 1 and Coil 2

- At which gap size does Coil 2 starts to pick up so much flux that it has an negative effect (voltage drop) on the charging process of the output battery.

The test where performed roughly in the following way:

- with terminals of the capacitors not connected to the input battery I would wait till the RPMs were mor or less stable and write down some parameters

- connect the terminals of the capacitors to the input battery and write down those same parameters

2022-04-19

Test 1.1: Baseline; Max gap, Rotor 1

Rotor 1, 24 / 22mm, 10mm gap
Gap between coils **16mm (max)**

Capacitors not connected -/ connected to input battery

RPM 202 / 203

Amp 1.2 / 1.2 A

Output battery voltage 14.50 / 14.51 V

Max voltage in capacitors when not connected to input battery: **18.53V**

2022-04-20

Test 1.2: Increase RPM; Rotor 3 (instead of Rotor 1)

Rotor 3, 21 / 22mm, 6mm gap
Gap between coils **16mm (max)**

Capacitors not connected -/ connected to input battery

RPM 265 / 265

Amp 1.40 / 1.39 A

Output battery voltage 14.72 / 14.72 V

Max voltage in capacitors when not connected to input battery: **19.4V**

2022-04-23

Test 1.3: Decrease gap; 12mm (instead of 16mm)

Rotor 3, 21 / 22mm, 6mm gap

Gap between coils **12mm**

Capacitors not connected -/ connected to input battery

RPM 265 / 265

Amp 1.39 / 1.38 A

Output battery voltage 14.72 / 14.72 V

Max voltage in capacitors when not connected to input battery: **22V**

2022-04-23

Test 1.4: Decrease gap; 8mm (instead of 12mm)

Rotor 3, 21 / 22mm, 6mm gap

Gap between coils **8mm**

Capacitors not connected -/ connected to input battery

RPM 268 / 268

Amp 1.42 / 1.39 A

Output battery voltage 14.90 / 14.86 V

Max voltage in capacitors when not connected to input battery: **27.7V**

Conclusions

Influence of RPM

When increasing the RPMs (changing from rotor 1 to rotor 3) the total voltage over capacitors increased from 18.53V to 19.40V.

Influence of gap between

When decreasing the gap from 16 mm(max) to 12mm:

- The voltage over the capacitors increased from 19.4V to 22V
- The amperage dropped slightly (when the terminals of the capacitors were connected to the input battery)

When decreasing the gap from 12 mm(max) to 8mm:

- The voltage over the capacitors increased from 22V to 27.7V
- The amperage dropped a bit (when the terminals of the capacitors were connected to the input battery)
- The voltage in the output battery dropped (from 14.90 to 14.86)

As mentioned in the introduction, these tests were performed very quickly, to get an initial idea for the influence of the Back Pop Circuit and its parameters. Although it seemed that the increased RPMs and a gap reduction to 12mm would influence the output of the Back Pop Circuit in a positive way without influencing the voltage in the output battery, only full charge cycles would show if a real overall performance increase is gained with this Back Pop Circuit.