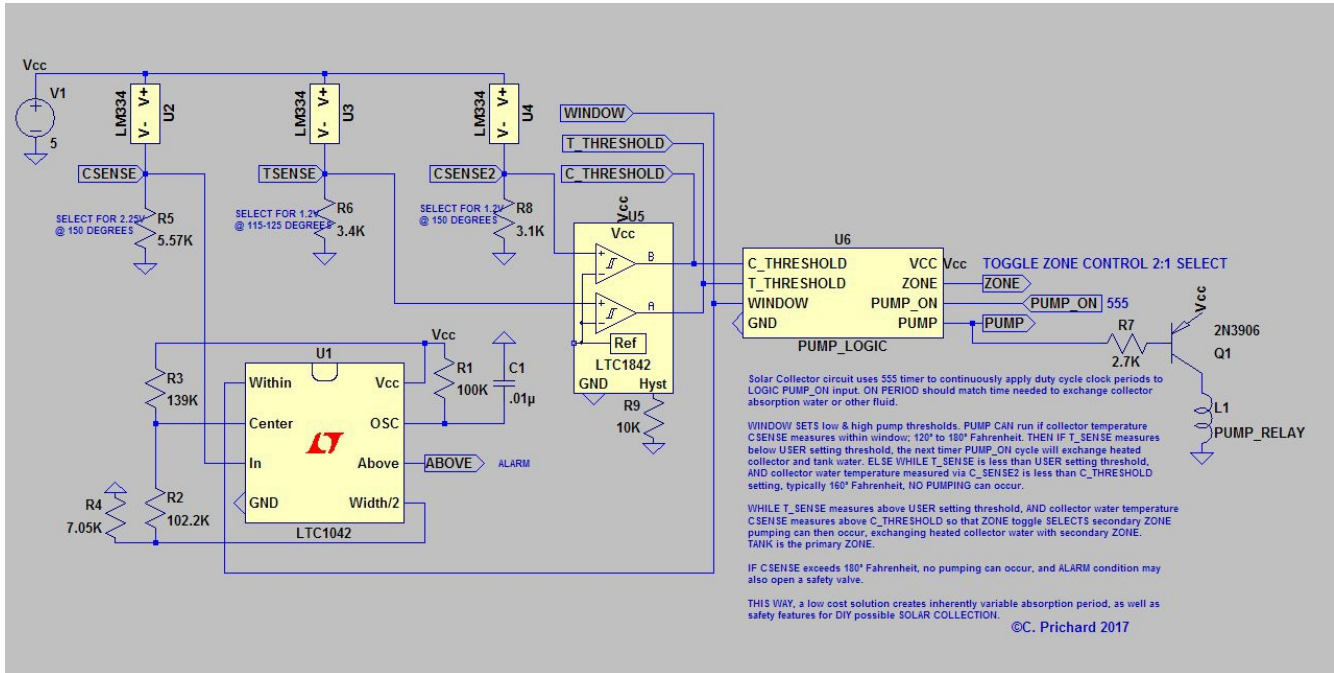


SOLAR COLLECTION CONTROL©

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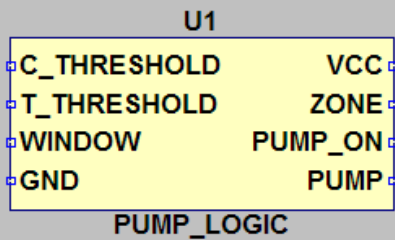
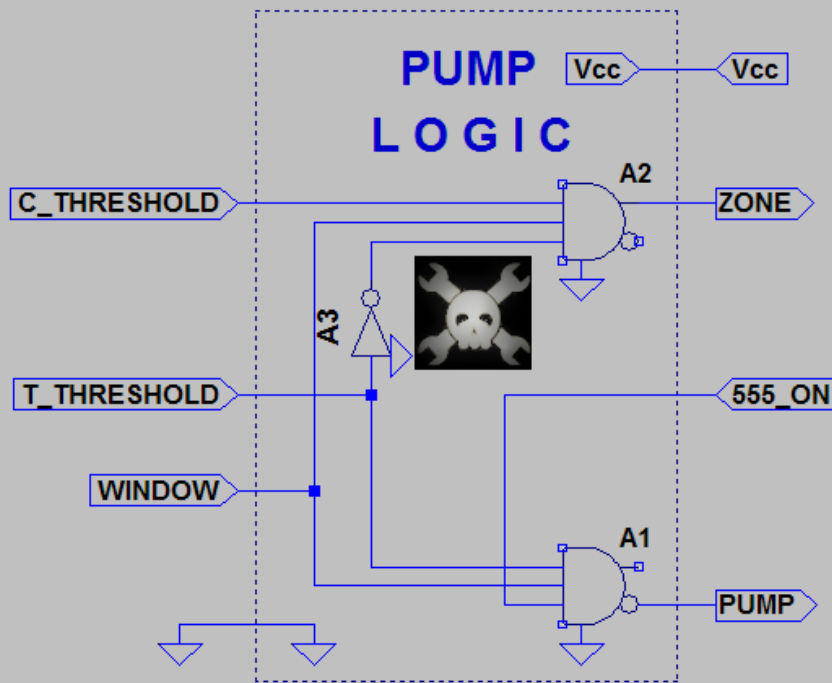
Solar Collector circuit uses 555 timer to continuously apply duty cycle clock periods to LOGIC PUMP_ON input. ON PERIOD should match time needed to exchange collector absorption water or other fluid.

WINDOW SETS low & high pump thresholds. PUMP CAN run if collector temperature CSENSE measures within window; 120° to 180° Fahrenheit. THEN IF T_SENSE measures below USER setting threshold, the next timer PUMP_ON cycle will exchange heated collector and tank water. ELSE WHILE T_SENSE is less than USER setting threshold, AND collector water temperature measured via C_SENSE2 is less than C_THRESHOLD setting, typically 160° Fahrenheit, NO PUMPING can occur.

WHILE T_SENSE measures above USER setting threshold, AND collector water temperature CSENSE measures above C_THRESHOLD so that ZONE toggle SELECTS secondary ZONE pumping can then occur, exchanging heated collector water with secondary ZONE. TANK is the primary ZONE.

IF CSENSE exceeds 180° Fahrenheit, no pumping can occur, and ALARM condition may also open a safety valve.

THIS WAY, a low cost solution creates inherently variable absorption period, as well as safety features for DIY possible SOLAR COLLECTION.



```

* C:\Program Files\LTC\LTspiceIV\CP design\SC\model.asc
.subckt PUMP_LOGIC C_THRESHOLD T_THRESHOLD WINDOW GND VCC ZONE PUMP_ON PUMP
A1 0 T_THRESHOLD WINDOW 555_ON 0 PUMP 0 0 AND VHIGH=4.95
A2 0 C_THRESHOLD WINDOW N001 0 0 ZONE 0 AND VHIGH=4.95
A3 T_THRESHOLD 0 0 0 N001 0 0 BUF vhigh=4.95
* L O G I C
* P U M P
.backanno
.end

```

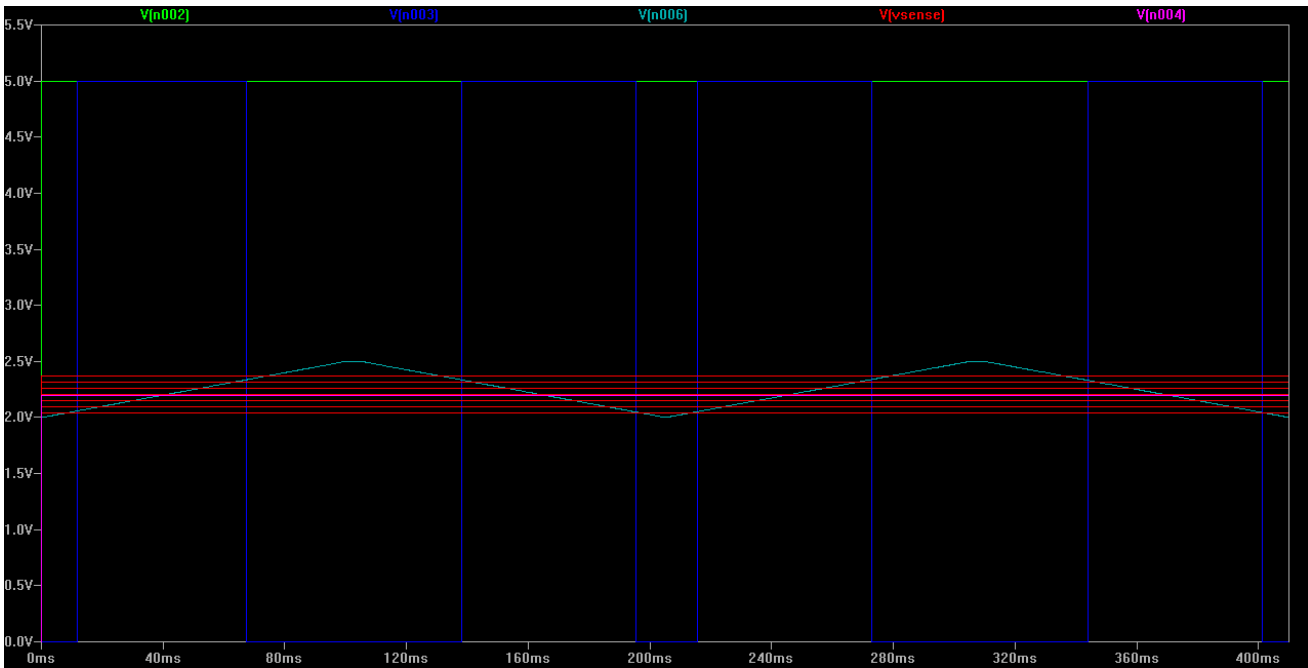
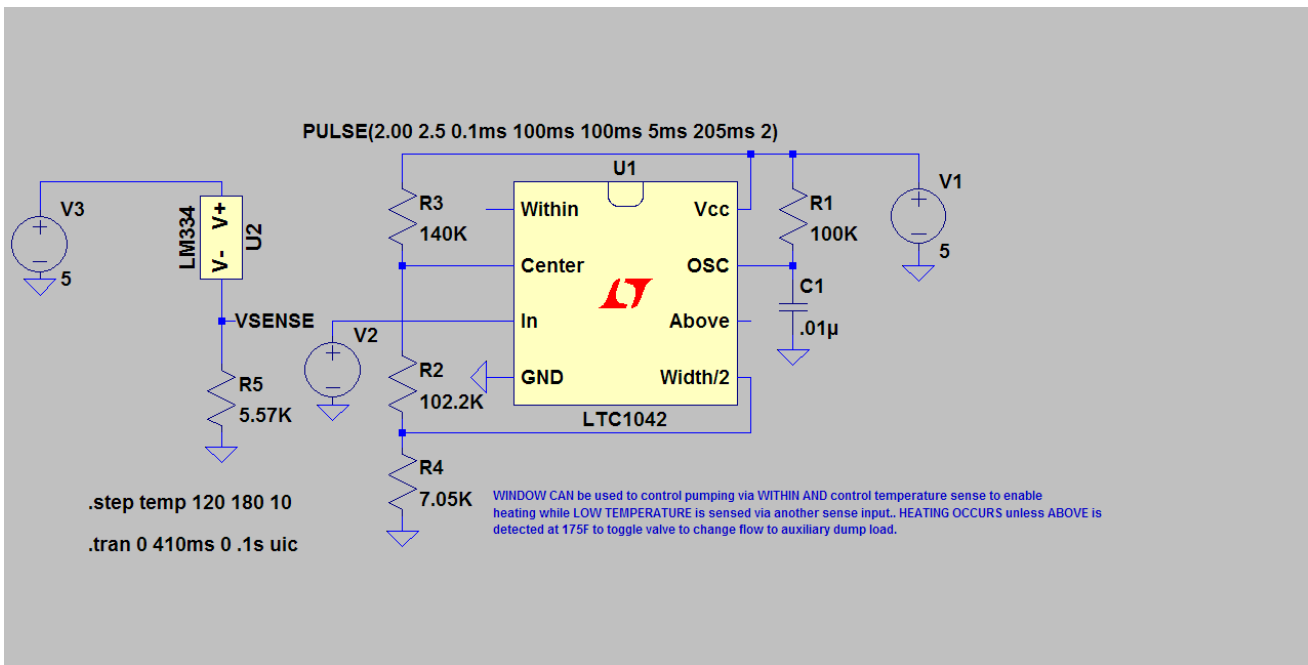
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