Automation of the distilling process:

The following project will be done on an Arduino.

Operation of the Automation: The Arduino will have to control an element from 2kw up to 6 kw, the Arduino will have 3 temperature sensors. Sensor no1 will measure the boiler of the still no.2 will measure the head of the still and no.3 will measure the condenser of the still.

the Arduino touchscreen will prompt the user what temp. they want for the boiler and the head, the key to the project will be that if the temp. is higher than the set amount, power should not be cut off at the element, rather be reduced until the set temp. is met

Boiler: should stay at the temp set by the user through the touch screen, NB: power should not be cut off at the element, rather be reduced or increased until the set temp. is met.

Head: If the Temp. is higher than the temp. set by the user through the touchscreen then the power to the element should be reduced until the set temp is met, if it is lower than the power to the element should be increased until the set temp is met. NB: during the distillation process if you change the temp. at the boiler there is a lag of 30seconds before the head temp. sensor start to change due to the alcohol vapor that needs to rise through the column of the still. So please keep that in mind

Condenser: if the Condenser temp. reach 30 degrees Celsius it needs to show a warning on the screen that the user should bring the temp. down (also include buzzer to alarm the user). If the temp reach 40 degrees Celsius the distillation process needs to pause until the temp is reduced and the user click continue the screen. Then the distillation process will continue.

At the end of the condenser there should be a diverter valve or 2 solenoid valves with a flow meter.

During the distillation the first part of the distillate is methanol and would like to separate that from the ethanol. The Arduino needs to ask the user how many liters of “Mash” they would like to distill, and the user will input the amount in Liters. Reason for this is to calculate how much methanol is in the “Mash”, use the formula provided to calculate the result:

Mash amount in milliliters \* 0.078 = amount of methanol in the mash in Milliliters.

This amount should be diverted through one of the 2 solenoid valves and the amount measured with the flow meter. If the amount of methanol has been captured the solenoid valve should close and the other solenoid valve should open to capture the ethanol produced.(also put a flow meter at the ethanol valve to measure the amount of ethanol produced)

All this information should be displayed on the screen