ConsoliDator+

MasterClass

Week 5 – Combining Applications

Today's Key Topics

- Level AND Flow
- Flow AND pH
- Pressure AND Temperature
- Leak Detection (level AND flow… Kind of)
- AND MORE!!

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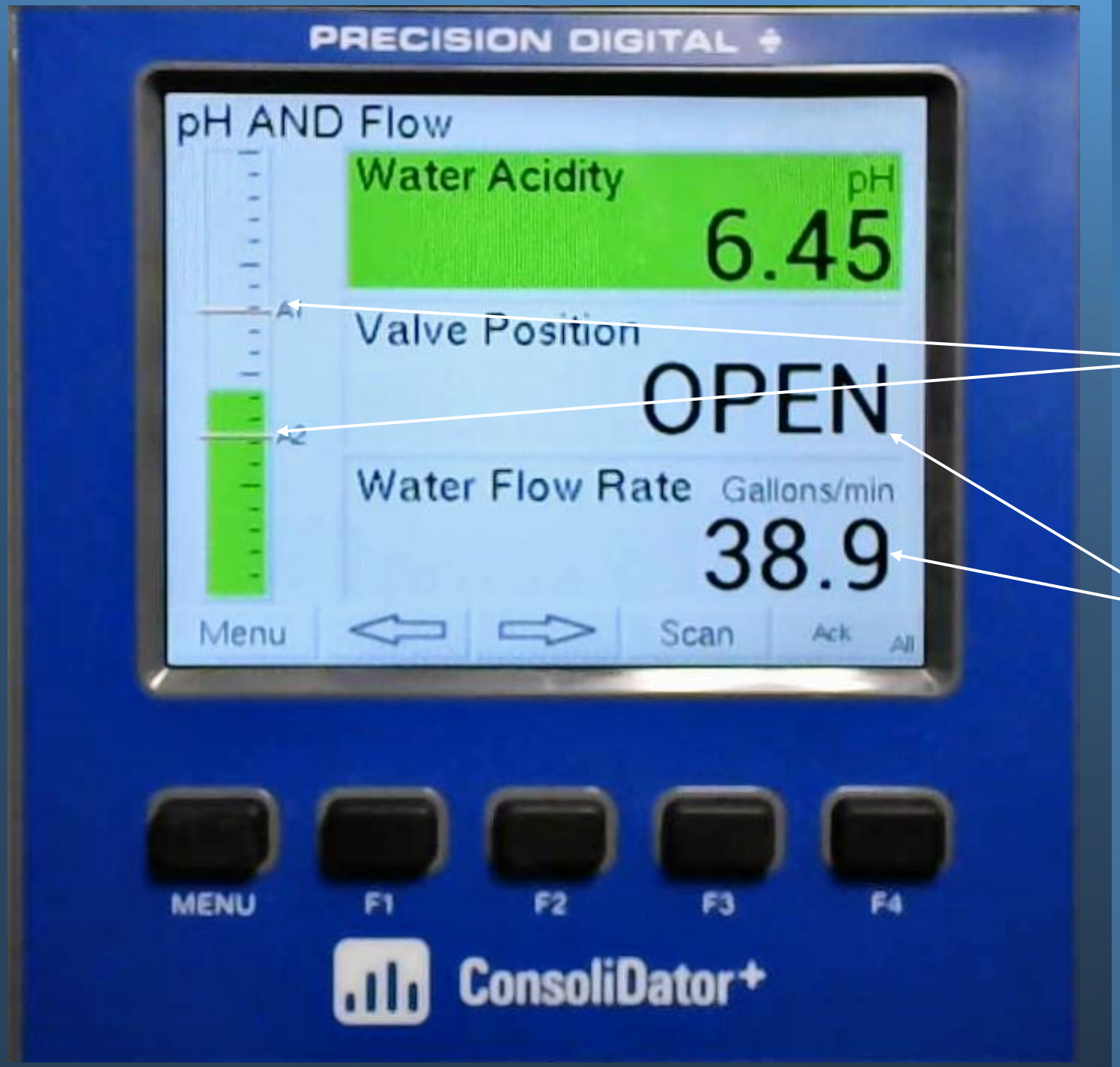
Here we are measuring the level of two tanks.

One tank contains “Used Oil” that the plant receives in, and the other tank has “Recycled Oil” which the plant outputs as their product

However, we are also monitoring the flow rate of the oil BETWEEN these two tanks at the same time, on the same screen!

That means the ConsoliDator+ can also control a valve based on level AND/OR flow readings to make sure there is no overfilling!

Now we are monitoring the pH readings, the flow rate of the water, and the position of the valve that is allowing the flow of water.



We want to maintain a pH as close to 7 as possible.

When the pH is in our acceptable zone, the valve is open, and that allows the water to flow freely.

UH OH!!

Our water has become far too acidic to allow it back into the public water supply!

Since our water is becoming more acidic, the valve will close so that the water cannot flow out into the public water supply.

When that happens, you see that our flow rate goes down to nothing.

WHAT NOW?!?

Well, our pH has gone the other way now, and is too basic for it to flow out into the public water supply.

So, regardless of in which direction our pH falls, if it is not as close to 7 (neutral) as possible, then the ConsoliDator+ will force the valve closed, and therefore cutting off the flow rate!

In this scenario, we are taking measurements from your average pressure cooker!

SORRY…

“Insta-Pot”…

As you may have sorted out for yourself, as the pressure increases, the temperature will follow.

But, it’s not a linear relationship.

In fact, when the pressure cooker is off, the temperature reading is just regular room temperature!

Now, as our pressure begins to rise, you'll notice that our temperature JUMPS UP rapidly rather than a slow gradual increase to match the rise in pressure.

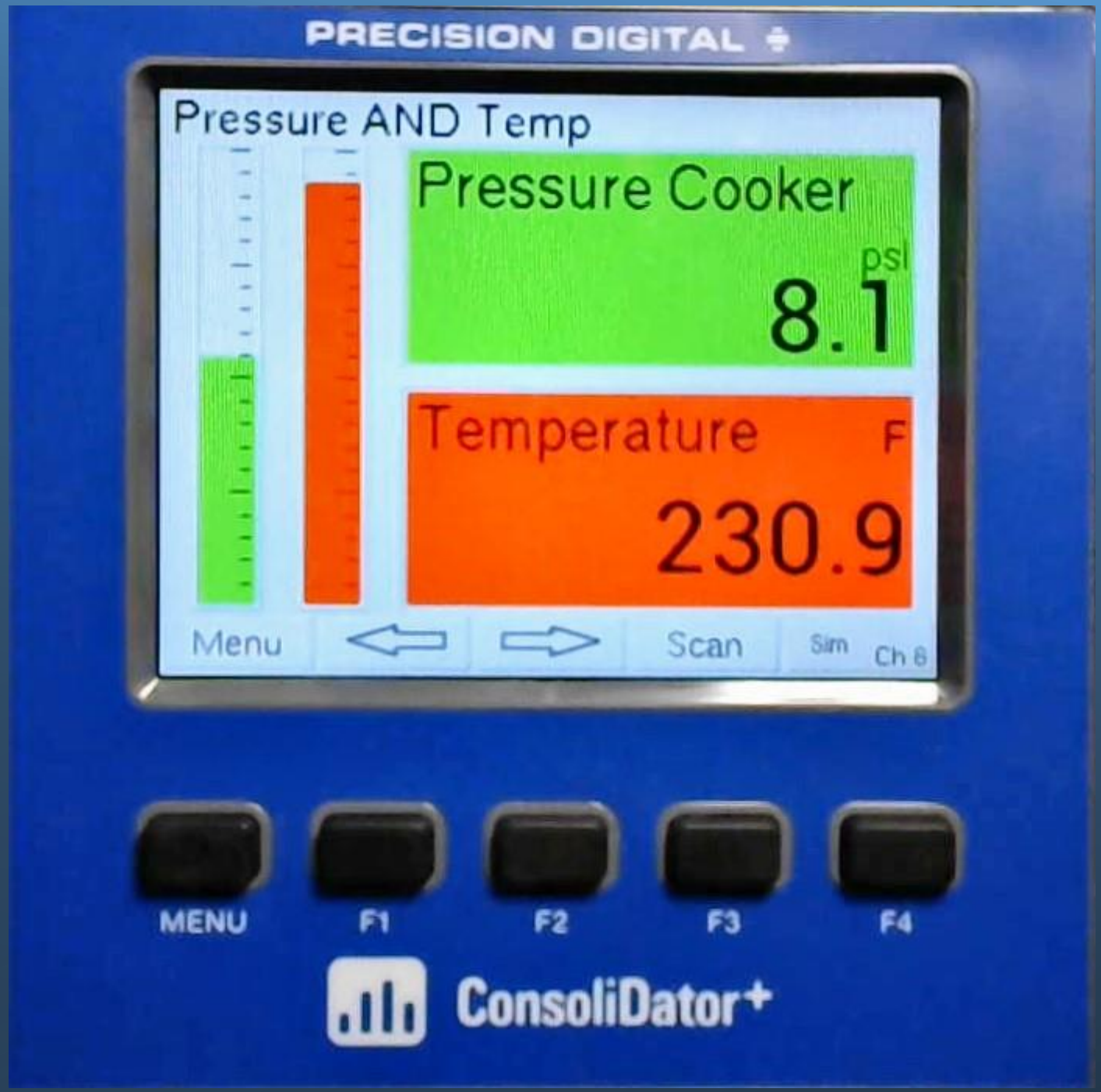
The reason this happens is because there isn't a linear relationship between increase in pressure and an increase in temperature.

Also, the "input" for the "Temperature" channel isn't a 4-20 mA input.

It's actually the PSI reading of our "Pressure Cooker" that is scaling the Temperature reading!

Now that our pressure is building up more rapidly, the increase in temperature is much more gradual.

You'll notice that the temperature has increased, but the rate of change decreased significantly.



Since the pressure in the cooker is at 100% of full scale, now we are REALLY COOKING…. Get it?!

The temperature will remain at 250 degrees until the pressure begins to decrease over time!

On this screen we are monitoring the level of a VERY “Important Tank” and making sure that this critical tank doesn’t spill its guts all over the floor – metaphorically speaking

The “Rate of Change” channel is quite literally monitoring the rate of change in level in this tank.

The “Leak Detected” alarm is going to let us know if a potential leak is detected

When the tank is emptying, the reading will be a negative number. It will be positive if the tank is being filled

Since the “Rate of Change” isn’t too great, our alarm isn’t triggered just yet

When the “Rate of Change” exceeds a specified threshold, the channel goes into alarm

Because the tank is losing more volume than it should under the circumstances, we interpret THAT as a tank leak!