**Fertigation Controllers** are the driving force behind modern commercial greenhouse fertigation systems.

Fertigation is when refined soluble fertilizers are mixed with water and fed to a crop.

Fertigation Controllers are predominantly used to operate drip fertigation systems where plants are grown in media filled slabs or bags and the nutrient solution is delivered to the root zone of the crop via pressure compensated drippers.

A standard irrigation controller can only activate an irrigation pump and solenoid valves but is unable to dose nutrient stock solutions. The nutrient dosing must be done by a separate dosing controller.

**An**[**automated irrigation**](http://www.sswm.info/glossary/2/lettera#term1615)**system refers to the operation of the system with no or just a minimum of manual intervention beside the surveillance. Almost every system (drip, sprinkler, surface) can be automated with help of timers, sensors or computers or mechanical appliances.**

An **irrigation controller** is a device to operate automatic [irrigation](https://en.wikipedia.org/wiki/Irrigation). Most controllers provide means of setting the frequency of irrigation, the start time, and the duration of watering. Some controllers have additional features such as multiple programs to allow different watering frequencies for different types of plants, rain delay settings, input terminals for sensors such as rain and freeze [sensors](https://en.wikipedia.org/wiki/Rain_sensor), [soil moisture sensors](https://en.wikipedia.org/wiki/Soil_moisture_sensors), weather data, remote operation, etc.

There are two basic types of controllers, [electric](https://en.wikipedia.org/wiki/Electric) and [hydraulic](https://en.wikipedia.org/wiki/Hydraulic). Most automatic irrigation valves are [diaphragm valves](https://en.wikipedia.org/wiki/Diaphragm_valve) in which the water above the diaphragm must be discharged for the valve to open. In a hydraulic system, the controller and valves are connected via small plastic tubes approximately 4 mm (¼ in) in diameter. The controller opens the tube connected to the valve, allowing that valve to open.

Most newer systems employ electromechanical or electronic controllers. In this scenario, the controller is connected to an electrical circuit that operates a [solenoid](https://en.wikipedia.org/wiki/Solenoid) attached to each valve ([solenoid valve](https://en.wikipedia.org/wiki/Solenoid_valve)). When the solenoid is actuated, the water above the diaphragm is relieved and the valve opens.

Although sophisticated controllers that allow irrigation schedules to be automatically adjusted according to the weather have been available for many years, until recently these controllers were out of reach of the average consumer. One type is [evapotranspiration](https://en.wikipedia.org/wiki/Evapotranspiration) controllers or "ET controllers". Several [manufacturers](https://en.wikipedia.org/wiki/Manufacturer) are now producing controllers that can be automatically updated by either a simple [weather](https://en.wikipedia.org/wiki/Weather) sensor, via a [pager](https://en.wikipedia.org/wiki/Pager) that receives a daily update from a network of local weather stations, or through soil moisture sensors.[[1]](https://en.wikipedia.org/wiki/Controller_(irrigation)#cite_note-1) Several companies have also introduced products that gathers information from the internet to update the watering schedule.[[2]](https://en.wikipedia.org/wiki/Controller_(irrigation)#cite_note-2)

There are broadly two categories of irrigation controllers: domestic ones for gardening applications, and professional controllers for more demanding agricultural applications. While most domestic (gardening) controllers can only open/close zones based on a time duration, without any feedback from the irrigation process, professional irrigation controllers can irrigate based on volume (quantities defined in cubic meters / Gallons), receive feedback from the process, and react to actual events happening during the process.

For example, the typical professional controller will calculate the actual flow rate running in the system when a specific zone is operated, compare this to a pre-configured required amount, and adjust the irrigation process if deviation from the zone's flow rate is detected; This mechanism is called "Flow monitoring", and can prevent irrigation when a burst is occurring in the main line or in the zone's hydraulic components. The controller can also alert the operator locally via its interface, or remotely by sending an [SMS](https://en.wikipedia.org/wiki/SMS) or a message to a central control.