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Fruit Ripening Chambers and control system

Fruit ripening chambers

India is one of the largest producers of fruits in the world with an annual production estimated at 50 (approx.) million MT. Among them a large no of fruits like mango, banana, papaya, guava, apple, pears, plum etc. come under the climacteric fruits, which needs proper ripening chambers to make them ripen in a controlled way.

These fruits continue to ripen even after harvesting and emit ethylene and also respire which involves intake of Oxygen and emission of CO2. For the ripened fruit to have the right colour, taste, flavour etc. the ripening should occur in a controlled atmosphere in which the temperature, humidity, ethylene, oxygen and CO2 concentration has to be maintained at the optimum level, which are different for different fruits. This can only be done by carrying out the ripening operation in fruit ripening chambers.

Though there are several types of ripening and storage chambers which are used globally, in India mostly cold room or Cold Stores are used for the purpose. In addition there are several manufactures of fruit storage and ripening chambers.

Controlling the relevant parameters in the ripening chambers

During fruit ripening, initially ethylene is introduced using ethylene cylinders to initiate ripening but as the ripening proceeds the fruits start emitting ethylene which further accelerates the ripening process. But, if not controlled, ethylene concentration builds up beyond acceptable limits spoiling the quality of fruits. The ripening also involves respiration of the fruits which consume oxygen and emit CO2. CO2 concentration also has to be controlled as its concentration beyond 1% will retard ripening, delay the effect of ethylene and cause quality problems.

In Short various parameters like ethylene, CO2 and Oxygen concentration, temperature and humidity have to be monitored and controlled for getting the best results. This can only be done in an air tight cold room or ripening chamber equipped with an **Advanced Ripening Chamber Control System**.

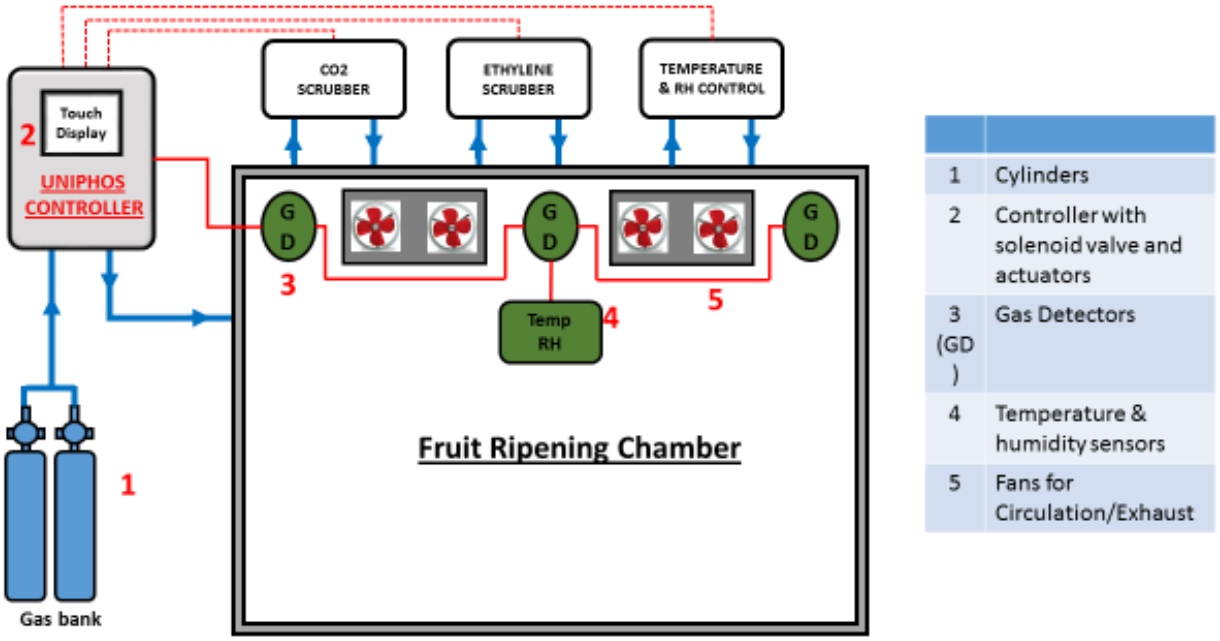
Fruit Storage Chambers

Depending upon the type of fruits the climatic conditions like temperature humidity and constituent gas concentration have to be controlled and maintained in the **Fruit Storage Chamber.**
This also needs a micro controller based control system incorporating the relevant sensors.

Control System for Fruit storage and ripening chambers

To control the ethylene gas concentration, CO2 concentration, temperature and humidity, a microcontroller based Advanced Ripening Chamber Control System is a must. UEPL (Uniphos Envirotronic Pvt. Ltd.) has started working with fruit ripening chamber manufacturers to provide them with a fully automated control system to control ethylene concentration, CO2 concentration, humidity and temperature.

The system is equipped with appropriate sensors which monitor the above mentioned parameters and signals their control electronically. The Figure below shows the block diagram of system.



1	Cylinders
2	Controller with solenoid valve and actuators
3 (GD)	Gas Detectors
4	Temperature & humidity sensors
5	Fans for Circulation/Exhaust

Advanced Ripening Chamber Control System.