Cold Frame Using Myrio in LABVIEW

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Abstract - LabVIEW programs are called virtual instruments, or VIs, because their appearance and operation imitate physical instruments, such as oscilloscopes and multimeters. Every VI uses functions that manipulate input from the user interface or other sources and display that information or move it to other files or other computers. The LabVIEW template VIs include the sub VIs, functions, structures, and front panel objects you need to get started building common measurement applications. Template VI's open as untitled VIs that you must save. Select File» New to display the New dialog box, which includes the template VI's. You also can display the New dialog box by clicking the New button on the LabVIEW dialog box. The front panel is the user interface of VI. the figure shows an example of front panel You build the front panel with controls and indicators, which are the interactive input and output terminals of the VI, respectively. Controls are knobs, push buttons, dials, and other input devices. Indicators are graphs, LEDs, and other displays. Controls simulate instrument input devices and supply data to the block diagram of the VI. Indicators simulate instrument output devices and display data the block diagram acquires or generates.

Keywords – LabVIEW, measurement, Indicators, push buttons, Controls, data.

I. INTRODUCTION

LabVIEW is a graphical programming language that uses icons instead of lines of text to create applications. In contrast to text-based programming languages, where instructions determine program execution, LabVIEW uses dataflow programming, where the flow of data determines execution. In LabVIEW, you build a user interface with a set of tools and objects. The user interface is known as the front panel. You then add code using graphical representations of functions to control the front panel objects. The block diagram contains this code. In some ways, the block diagram resembles a flow chart. You can purchase several add-on software toolsets for developing specialized applications. All the toolsets integrate seamlessly in LabVIEW.

II. VIRTUAL INSTRUMENTS

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- LabVIEW Template VI's
- The LabVIEW template VIs include the sub VIs, functions, structures, and front panel objects you need to get started building common measurement applications. Template VI's open as untitled VIs that you must save. Select File» New to display the New dialog box, which includes the template VI's. You also can display the New dialog box by clicking the New button on the LabVIEW dialog box.

- A VI contains the following three components:
- Front panel—Serves as the user interface.
- Block diagram—Contains the graphical source code that defines the functionality of the VI.
- Icon and connector pane—Identifies the VI so that you can use the VI in another VI. A VI within another VI is called a sub VI. A sub VI corresponds to a subroutine in text- based programming languages.
- Front Panel

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A. Advantages

Gardeners that utilize cold frames could gain a few different advantages. Getting an early start on the outdoor growing season is probably the most common benefit reaped by hobbyist horticulturists. With the use of a cold frame, gardeners can get their starts acclimated (hardened off) sooner which allows them to plant larger, more robust plants into the ground. Cold frames will keep the soil and plants contained within approximately 5 -10 degrees warmer than the ambient outdoor temperature. This usually allows gardeners to start the acclimation process a couple of weeks before the average last frost date in their area.

B. Disadvantages

The main disadvantages with cold frames are two-fold. First, the issue of the frames overheating pretty serious because a single sunny afternoon with closed lids can took all your efforts. Unless you can guarantee that you will be on hand to raise those lids manually when needed (and that a hard promise to keep), you may want to either get in the habit of lifting the lid at least a little to provide for some ventilation, or install temperature sensitive push rod arms which can open and close the lids has a temperature goes up or down during the day. The second major disadvantage is that most cold frames are built from glass and wood, two materials which are either prone to breakage and / or water damages. The disadvantage is the sheer weight is involved for the traditional wood and glass design. Glass is heavy. Wood is heavy. If you have a single cold frame, that probably not a big deal. But if you have twenty of them to maintain and more around and move around and lift and close, over and over, its get to be issue.

III. RESULT

Cold frames allow for greater control over the growing environment of plants. Depending upon the technical specification of a cold frame, key factors which may be controlled include temperature, levels of light and shade, irrigation, fertilizer application, and atmospheric humidity. Cold frames may be used to overcome shortcomings in the growing qualities of a piece of land, such as a short growing season or poor light levels, and they can thereby improve food production in marginal environments. Cold frames in hot, dry climates used specifically to provide shade are sometimes called "shade houses". As they may enable certain crops to be grown throughout the year, cold frames are increasingly important in the food supply of high-latitude countries. One of the largest complexes in the world is in Almería, Andalucía, Spain, where cold frames cover almost 200 km2 (49,000 acres). Cold frames are often used for growing flowers, vegetables, fruits, and transplants. Special cold frame varieties of certain crops, such as tomatoes, are generally used for commercial production. Many vegetables and flowers can be grown in cold frames in late winter and early spring, and then transplanted outside as the weather warms. Bumblebees are the pollinators of choice for most pollination, although other types of bees have been used, as well as artificial pollination. Hydroponics can be used to make the most use of the interior space. The relatively closed environment of a cold frame has its own unique management requirements, compared with outdoor production. Pests and diseases, and extremes of heat and humidity, have to be controlled, and irrigation is necessary to provide water. Most cold frames use sprinklers or drip lines. Significant inputs of heat and light may be required, particularly with winter production of warm-weather vegetables. Cold frames also have applications outside of the agriculture industry. Glass Point Solar, located in Fremont, California, encloses solar fields in cold frames to produce steam for solar-enhanced oil recovery. For example, in November 2017 Glass Point announced that it is developing a solar enhanced oil recovery facility near Bakersfield, CA that uses cold frames to enclose its parabolic troughs. An "alpine house" is a specialized cold frame used for growing alpine plants. The purpose of an alpine house is to mimic the conditions in which alpine plants grow; particularly to provide protection from wet conditions in winter. Alpine houses are often unheated, since the plants grown there are hardy, or require at most protection from hard frost in the winter. They are designed to have excellent ventilation.

IV. CONCLUSION

Extend the growing season. Allows you to grow crops that would otherwise not do well in your area due to the shorter growing season. Start Seedlings in the dirt.Satisfy that early spring itch to plant something. Easy to Use. Can serve a double function of being a raised bed. Nice project to do with the kids. Can made out of materials that many people have laying around.Very versatile/ flexible design.

V. FUTURE SCOPE

Extend the growing season. Allows you to grow crops that would otherwise not do well in your area due to the shorter growing season. Start Seedlings in the dirt. Satisfy that early spring itch to plant something. Easy to Use. Can serve a double function of being a raised bed. Nice project to do with the kids. Can be made out of materials that many people have laying around. Very versatile/ flexible design. Use of cold frame technology under the precision farming guidelines enhanced crop yield by 3-4 times in case of Tomato and 4-5 times in Capsicum in comparison to the conventional method of farming. 200sqm land used for Capsicum and Tomato, which fetched positive return, as the vegetables grown under the Cold frame got market linkages through mid-day meal scheme of the Government and the market network of Reliance fresh and Food world etc. It enhanced women empowerment by adopting cold frame technology. Women are found best suited to manage the cold frame cultivation as it is somewhat similar to their other routine domestic responsibilities. Even if the naturally ventilated cold frame structure is little costly to begin with, once there is year- round market linkages then the payback period would be shorter for different crops grown under it.

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