June 2008

GREENHOUSE TIPS

Alberta News

Combat the high cost of heating.

ENERGY CONSERVATION SERIES

Understanding roof vents control systems. Article Three.

Vent and Vent Motor Control.

The microprocessor based controls available for the grower can provide total and flexible control over all phases of maintaining the plant growth environment. As an indirect side benefit they provide huge operational savings as related of energy conservation and reduced operational energy costs. Yes folks, these new control devices do in fact provide a payback for you. Gone are the days of single stage or interstage control simply based on temperature and mercury switch interstaging.

There are three basic components required to make a roof vent, gutter vent or sidewall vent system to work. These are; the vent motor, the vent motor control box and the environmental controller.

The vent motor, comprised or a reversible electric motor, gear box, shaft couplers and suitable hanger is what actually opens and closes the vent system by turning the vent drive shaft in the appropriate direction for pen and close. New generation vent motors like that illustrated above include built in adjustable limits within the gear motor unit itself. These are extremely reliable when adjusted and set accordingly. Gone are the days of remote plunger switches and mercury switches that always seemed to fail when most needed.

Modern gear motors are extremely powerful and generally reduce the engine RPM of 1775 RPM down to 3.1 to 1.7 RPM on the

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Energy Conservation

A lot ... we mean a lot of wasted energy improper vent operation and control.

output shaft. They are selected to suit the size, the length and the weight of vent. When sizing the vent motors don't forget the fact that they also need to be strong enough to close the vent when wind pressure is acting to hold the vent open !.

The device that makes the vent motor work is call the vent control box. A typical vent control box (as illustrated above on the right) contains the motor contactors, which direct which way the motor is to operate to open or close the vent; thermal overloads and a panel mounted hand-off-auto selector switch system. This particular controller is a Microgrow Series 100 controller. If one lifts the grey lid you will find the hand-off-auto selector switch. If the switch is set in the off position, the vent motor simply will not work. If the switch is set in the automatic setting the vent motor will operate as per the requirements of the control demands. In hand mode, one can open or close the vent manually. The microgrow series 100 controller also includes a microprocessor card with LED lights which are handy for servicing and wiring. They tell the operator if the limits are made or not made and if a control event is active or initiated. A great time saver when working up high.

The last item needed to operate a vent system is the controller. This is one area which most growers fail to realize the importance. The controller range from a simple three wire cooling/heat t'stat and interstage t'stats, to a single zone single function microprocessor, to a single zone multifunction microprocessor, to a multi-zone multifunction microprocessor.

The simple three wire t'stats and interstage t'stat systems ! Well folks, enter 1950 technology, in view of todays cost of energy and the wide range of outdoor conditions that we face in Alberta, they are nothing but a nose bleed. Cheap to purchase, yes. Cheap to operate, no. They are an operational cost money pit. They simply lack any intelligence.

Enter the world of smart microprocessor based controls. And I mean smart. Not only will they save a ton of coin from the operational cost point of view, they will also drastically improve the growing environment.

Work In Progress ... Vent Motor Installation

VENT CONTROL

There is more than Open and Close.

That's right .. how about multistage opening and closing, dehumidification, structure/vent/rain protection.

Incorrect/Improper vent control and operation will cost you a ton of your hard earned dollars if not considered wisely.

Todays microprocessor based controllers vary from single function/single zone, to multifunction/single zone to multifunction / multi zone controllers.

In terms of vent control, gone are the days of mercury switch limits and inter staging control. Need up to eight stages of opening ?? No problem just tell the unit you need eight stages of opening. Only need four stages of opening ? Well tell it to do and it will. On stage one opening, you only want the vent to open 5% of opening, tell it and it will do so. Tell it to be interlocked to stage two vent opening on a dehumidification purge cycle and it will. Tell it on stage two to only open to 8% of opening and it will. Folks, that's were a ton of savings occur on heating energy. If you don't believe us. Get a copy of our infiltration articles, grab a cup of coffee or two and read and study then.

The new microprocessor based controls provide a powerful tool at your finger tips.

Need to control the temperature and or humidity at various levels during the course of the day. They will. Need to control via DIF, they will. Need to see historical information, they will provide.

Gone are the days of heating fighting cooling, humidification fighting cooling and heating and the hasel of adjusting all those darn t'stats.

The little controller below is a Microgrow Ventmate Plus. This little box will provide up to eight stages of vent opening/closing for two vent sets and two sets/stages of

heating for a single zone. Don't let the size fool you. There is a lot of power at your finger tips. It will provide cooling and dehumidification control, heating control, control of your HAF fans, provide DIF control if desired and allow you to program in four temperatures and humidity set points for various times of the day, which are programable.

These controllers actually pay for themselves in a very short period of time and provide excellent control of the environmental growing conditions.

For growers having larger sophistication in terms of equipment control and or zones there is a wide range of programable single and multi-zone controllers are available. See above.

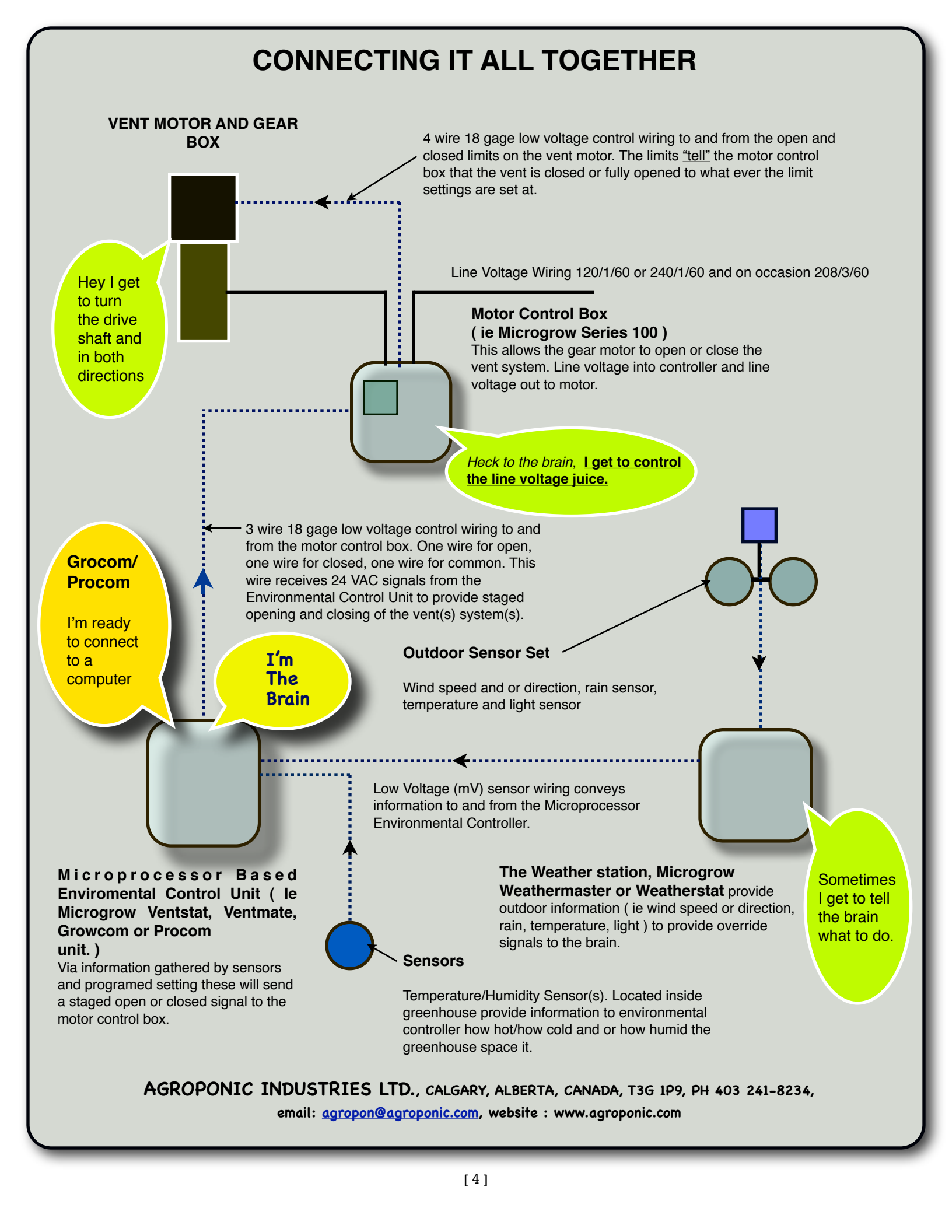
Vent Protection

Protection of the vent, structure and crop can be offered via exterior weather station sets. These range from simple wind speed / rain (ie: Microgrow Weatherstat), to wind speed and direction, rain, light and or temperature. The illustration below is a Microgrow Weather

Master, folks it just about does everything for you. Depending on your needs, exposure and operational requirements a weather station should be considered.

Folks its only money in your pocket via increased crop quality and reduced operating costs. It's really a no brainer. Proper controls and control strategy are the secrete to success in this current growing environment.

CONNECTING IT ALL TOGETHER



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