



*Precise power -
precisely when you need it*

Frequently Asked Questions

1. What is the difference between the Power Genius™ and an AC Solid State reduced voltage starter?

Answer: Both soft-start equally well. However, the Power Genius™ saves energy as well.

2. Can the Power Genius™ be used on Star-Delta Motors? If so, is it as effective and if not, why?

Answer: Yes, and it is more effective because the soft-start sequence is controllable and the Star-Delta system is not.

3. Can the Power Genius™ be used on Wound-Rotor Motors? If so, is it as effective and if not, why?

Answer: Yes, similar to Star-Delta, the soft-start sequence is controllable and the Wound-Rotor is not.

4. How does the Power Genius™ handle overvoltage transients?

Answer: Transient suppressors from each incoming phase to our internal neutral and transient suppressors from each motor line to our own neutral eliminate transient voltages, hence, voltage transients which create voltage harmonics are virtually eliminated. There are six transient suppressors in each unit.

5. Does the Power Genius™ have any effect on motor winding insulation values?

Answer: No, insulation values are not affected other than the benefit of reduced heat.

6. Are there any adverse resonance problems that occur under certain conditions?

Answer: No, as we are working with 60Hz only.

7. Are there any adverse effects with respect to back-spinning (windmilling) motors?

Answer: Windmilling is not a problem unless the frequency of the motor exceeds 60Hz during windmilling. This would be an extremely rare occurrence.

8. Why are the harmonics low on the Power Genius™?

Answer: Transient suppression devices, high-low by-pass filters, output isolation transformers and the fact that we are not changing the 60Hz frequency.

9. Does the Power Genius™ have the effect of utilizing even order harmonics generated by the motor itself against the odd order harmonics generated by the SCR's of Power Genius™, therefore causing natural cancellation?

Answer: Not to our knowledge. The following table shows what harmonic frequencies do to motor rotation. Harmonics produce a resultant flux distribution in the air gap, which can cause or enhance a phenomena called "cogging" (refusal to start smoothly) or "crawling" (very high slip) in induction motors. As you can see at 60Hz, the motor has a forward harmonic rotation. The Power Genius™ does not actively change to higher frequencies.



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The table below is in reference to question #9. The table shows what harmonic frequencies do to motor rotation:

Harmonic Order	Frequency Hz	Sequence Network	Stator Harmonic	Harmonic Rotation	Rotor Harmonic
1	60	+	1	Forward	-
5	300	-	5	Backward	6
7	420	+	7	Forward	6
11	660	-	11	Backward	12
13	780	+	13	Forward	12
17	1020	-	17	Backward	18
19	1140	+	19	Forward	18
23	1380	-	23	Backward	24
25	1500	+	25	Forward	24

10. Are there any adverse conditions when operating multiple Power Genius™ units on the same distribution sub-system?

Answer: No, we have approximately 140 units operating in one hospital with no adverse effects.

11. How can the Power Genius™ units be timed for multiple motor start-up delay sequences to avoid overloading the power system?

Answer: We are working on a time-delay start module. At this time you will need to use other methods such as timing relays or pneumatics.

12. How does the Power Genius™ handle phase-voltage imbalance? Will it correct imbalance problems?

Answer: Imbalance is improved to a degree up to 7%.

13. How does the unit handle single-phasing and very low voltage sags?

Answer: Sags as low as 30% will not affect the Power Genius™. Single-phasing will pass through the controller and rely on starter protection.

14. Are there any compatibility issues with deceleration methods such as plugging, electro-mechanical braking, dynamic/regenerative, electric or electronic braking?

Answer: All such methods will function properly if they are attached to the input of the Power Genius™. We are not compatible with them on the output side.



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15. What is the correct answer to those who say that motor starting does not affect Demand-Billing as it is usually the maximum power used over a fifteen minute period?

Answer: Demand meters are heater elements that achieve their highest reading when the element is hottest. In actual tests, sequential starting of motors from 8-100hp for supply and return fans were started over 8-15 minute periods. Demand was reduced substantially, especially over the summer months.

16. Some call this technology a Power Factor Controller, is this accurate?

Answer: We sense Power Factor and reduce voltage, hence we are a voltage controller.

17. Is starting torque affected or can it be affected with soft start adjustments?

Answer: Initial starting torque changes with soft-start settings. Final starting torque, 30% below across the line torque, is always achieved.

18. What does the Power Genius™ do to the frequency as more energy-savings are "dialed" in to the application?

Answer: Frequency never changes, 60Hz is always maintained.

19. Does the Power Genius™ affect speed of the motor at any time during the start or operation at tuned energy-savings?

Answer: Speed is controlled during start up and not controlled after start function releases control.

20. Is the Power Genius™ a Variable Frequency Drive (VFD)?

Answer: No. A VFD controls the speed of a motor by changing voltage and frequency. The Power Genius™ does not alter the speed of the motor or frequency. It controls the amount of power delivered to the motor based on load requirements while maintaining constant motor speed.