

SciDome7 Uninterruptable Power Supply Acquisition

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Besser Museum for Northeast Michigan
July 18, 2017

Executive Summary

- An uninterruptible power supply (UPS) system will allow the digital dome to be safely shut down in case of power interruption (blackout, surges, etc.).
- A UPS protects the digital dome hardware and software from damage
- No UPS is installed in the digital dome at the Besser Museum for Northeast Michigan.
- **If the digital dome is damaged, the system cannot be used.**
 - Exact hardware and software damage can not be predicted.
 - Repair time and cost cannot be predicted.
 - Revenue from digital dome ticket sales, facility rentals and special events that include the digital dome would be lost until the system could be repaired.
- The total cost of installing this UPS system is\$1,608.13.

Introduction

On the morning of Friday July 16, 2017, the Besser Museum for Northeast Michigan was affected by a power surge. At this same time the digital dome computers already powered on (as part of the regular start up routine) but the projectors had not yet been powered on. The power surge caused the computers to reboot themselves, after they restarted up completely they were restarted normally through system controls.

Spitz customer support was immediately contacted through phone and email to procure a recommendation on what equipment would be needed to prevent an incident like this from happening again. A quote for suitable equipment was provided by Spitz, along with software support regarding system backups (which were performed as soon as possible). The quote from Spitz included in Appendix A, Figure 1 included UPS models that would be sufficient to power the two digital projectors, computer and sound consoles in case of power surge or outage.

Because of the threat that power surges represent to both hardware and software, Thaddeus LaCoursiere is concerned that without an adequate UPS system in place, the digital dome will be rendered nonfunctional. Given the uncertainty surrounding when an electrical event may occur, an immediate installation is desired.

Background

An uninterpretable power supply sits in between sensitive electronics and the main electrical power supply. UPS's activate in case of a power surge or outage and provide a battery backup that allows an electronic system to be safely shut down without damage. Power surges are the more dangerous occurrence as they fluctuation in power can lead to electronics being stressed beyond their normal operating limits in a short period of time, leading to corruption or breakdown. Damage to digital dome equipment can include shortening of projector lamp life, blown projector lamps, damaged computer components, hard drive disc corruption, and more. This damage may be immediately obviously or may only reveal itself a length of time. UPS's are built to handle surges and prevent surges from reaching the electronics attached to the UPS.

Potential Loss of Revenue Due to Power Surge Damage

Exact damage to equipment from a power outage cannot be predicated, which means that potential cost of repair may only be hundreds of dollars or may only be thousands. Additionally, recovery time may take only a day, only a month, or longer.

As of July 1, 2017 the digital dome started a full show schedule, with two shows each day, Tuesday through Friday, and three shows every Saturday. This schedule is planned to continue indefinitely, with additions and modifications as conditions allow and warrant. Because of this recent change and because recent historic attendance is not available, future attendance is difficult to calculate. However, based on attendance through the first two and a half weeks of July, 2017, there were an average of 13 visitors and \$65 in revenue each day.

Loss of show revenue is supplemented by loss of additional revenue where the dome would be utilized or rented, for example, as part of an event being hosted at or by the Besser Museum or as part of a museum rental package. Closing the digital dome for one week would cost the Besser Museum \$455, having to close for one month would bring the projected total loss to \$2020 (Table 1). This loss in revenue would only be repeated (and loss increased) in the event of another closure. Furthermore, aside from a loss of revenue, the Besser Museum stand to lose positive relationships with visitors, event guests, educators, schools, and funders alike due to an extended sudden closure of the digital dome because of electronics damage.

Table 1

	Week 1	Week 2	Week 3	Week 4
Projected digital dome ticket revenue	\$455	\$455	\$455	\$455
Projected facility revenue	\$0	\$0	\$200	\$0
Total potential revenue	\$455	\$910	\$1565	\$2020

Cost of UPS Installation

Upon review and consultation with Paul Diamond (InnovaTech Solutions Corp), the same equipment recommended by Spitz will be sourced from NeweggBusiness for approximately half of the cost of the original quote (as can be seen in Appendix A, Figure 2). Installation materials and time will be donated by Cory Lancaster (AWC). Installation time is projected to be completed in one day and can be scheduled on a Monday so as not to disrupt the existing digital dome show schedule. The total cost for this UPS system is

\$1,608.13, which includes the three UPS's needed for the digital dome equipment

Benefit of UPS Installation

The first and largest benefit of installing this UPS system is that this system will prevent a total system shutdown with the resulting damage and cost. This installation also removes the cost and time uncertainty in damage repair. Installing this UPS system now directs the resources of the Besser Museum in a straightforward and efficient manner and planning out the installation on the Besser Museum's time line will maintain a continuous schedule for visitors and events.

Conclusion

Given the complete lack of an existing UPS system and the concern of losing the ability to provide programs, shows, and events to Besser Museum visitors, it is the recommendation of Thaddeus LaCoursiere that this UPS system be installed. By making the decision to install this UPS system and taking the steps to have it happen soon and at the discretion of the Besser Museum, we can take a proactive approach to ensuring the best experience for Besser Museum visitors, without causing a negative impact to revenue

Appendix A UPS Quotes

Figure 1



QUOTATION

**Thaddeus LaCoursiere
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June 16, 2017

Uninterruptable Power Supplies (UPS)

1	SMT1000 UPS (One for each projector)	\$599.00 per unit	\$1,198.00
2	SMT 2200 UPS for console rack		\$2,648.00

Notes:

1. Price does not include shipping or installation.
2. Spitz strongly recommends contacting a local electrician for installation and installing a surge suppressor at the load center.
3. Projector UPS must be mounted close to each projector so as to not require extension cords.
4. Console UPS will be external and should be placed next to the console rack.
5. No Federal, State, or local taxes are included in the price.

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