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**Audiolics Anonymous Chapter 89**

**Torus Power Isolation Units**

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Welcome fellow audiophile tweekers. March is almost here and spring won't be far behind, at least for you in the southern areas. Up here in New Hampshire, winter officially ends on Memorial Day and we can be susceptible to frost events until then. We also experience mud season, our fifth season her in New England. This usually lasts until mid June, so we still have plenty of time to enjoy our systems before the necessity for yard work. *(Editor's note: Bill also forgot to mention black fly season, which at first I laughed at them my first year in New England due to their diminutive size. That laughter lasted two days as once being bitten by a black fly you quickly realize the reality of how nasty they truly can be!)*

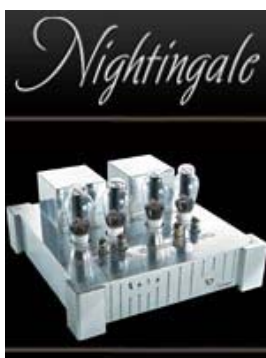
My early winter project, described in [last month's column](#), was to transfer

DAT tapes made years ago of second generation masters to DVD-Audio discs has finally been completed. While it did take up significant time, it was well worth it. Although the DAT tapes do not sound as good as the original masters when they were first done many years ago, the dubs to DVD-Audio using the Tascam DV-RA1000HD recorder and Diskwelder Bronze program have come out sounding somewhat better when played through my Parts Connexion modified Denon 5900 universal player than the DAT's do through the Panasonic 3500 pro DAT player. Whether this is due to how the digital information is read or how the two different DAC's translate the information from digital to analog, or the analog preamps in the players or some combination, I have no idea. What I will guarantee you is that they do, and by a significant margin.



Many of them sound far superior to the majority of CD's available even from the high-end companies, with the best at least equal to or better than the best DVD-Audio and SACDs available. Most were recorded using minimalist mic'ing techniques and have significant ambient information, which can be recovered using Dolby or DTS decoding. Thus, for best sound the two channels of analog from the Denon are being run through my Vacuumstate preamps to both the main speaker amplifiers and out to my EAD Theatermaster 8000 for the decoding for the surround speakers. With over four hours of the best of the golden age recordings per disc, my nights are once more filled with great music. So much so that even my video time is being impinged upon!

While the quality was somewhat surprising, it has taught me several valuable lessons. First, it doesn't matter whether something is recorded in digital or analog. What matters is the care given by the recording engineer in production from the original recording session to the final master. Just as everything counts in audio reproduction, so does it also in the recording chain, from mike type, setup and placement, to the recording device used, to the judicious use of signal processing, and the transcription of the information to the final master. As analog had a problem with loss of information and decrease in signal to noise ratio with every generation, digital, even if kept digital, needs to be very carefully handled to decrease signal loss and artifacts. Finally, the pressing plant's handling of the disc production process, be it digital or analog, can mess up the best job of the finest recording engineer. While some people feel the "bits is bits," they aren't. A recording engineer friend of mine has sent digital master tapes to several plants and each glass master from the different production facilities has sounded different. Who knows why? Even though the debate still rages over which is better, digital or analog, my feeling is both can and do sound superb or horrible depending on the skill and quality of the recording engineers and their equipment. As with everything else in life, quality comes down to the human interface.





Finally, at least with classical music, they aren't making them like they used to. I am referring to the human element. While there are some great soloists, conductors and orchestras out there today, at least in my opinion, few compare to what was available 40 or more years ago. Unhappily, the same goes with the composers. Classical music is a dying art, even in Europe and Russia. It's the Japanese carrying on the Western classical tradition today. Next, I'll be transposing my best vinyl to DVD-Audio using the same equipment with my Walker Proscenium Gold turntable with Kondo IO-J cartridge and Vacuum State preamp, and will let you know the outcome. If other guys can make CD's from his vinyl that people ooh and ah about at the various shows, imagine what vinyl at 24-bit/96kHz should sound like, again if care is afforded in the process.

By the way, last month there was a problem with the Tascam player that drove me crazy. The 60 gig hard drive on the unit filled up. As the Tascam instruction book had no information on how to move the files to an external hard disc, I used my computer to transfer the files using the MOVE command. Happily this did a perfect job of transferring them. Unhappily it only erased the file index on the Tascam without cleaning the drive. The Tascam still felt the drive was full even though the computer said it was empty. Also, there was no information in the operation manual on how to clean the drive. As with most computer companies, the first individual I talked to had no idea what to do. After asking his manager he gave me instructions that were incorrect, which left the unit hanging for several hours as he had stated that it would take some time to clean the drive and reformat it. Luckily, through some company grapevine, the original developer of the unit heard about the problem and called me out of the blue before I even knew there was something wrong with the process to give personal advice on how to correct it. Interestingly, in a complete turnabout compared to other problems had with service personnel, the incompetent was American and the savior was Chinese. So Thank You Mr. C. (can't use his full name as he expressly asked me not to) for your kind help. Obviously even the higher ups at Tascam are willing to go the extra step.



## Torus Power Power Isolation Units (PIU's)

Now on to the main topic today. Seems the word is out that I'm the "junky AC" maven, as editor Steven R. Rochlin got a request from Bryston Audio to review their new line of AC line conditioners.

**Bryston** is a Canadian company that for decades has been building high-end and professional audio equipment to brick house specifications with unheard of 20-year warranties. While I have never owned one of their products, their



demo's at various shows have been excellent. I have yet to see a review on a product of theirs that has not received accolades and the company takes special pride in their power supplies and their ability to control AC line perturbations. Therefore I was a little surprised when our editor asked if I'd do a review on a new power conditioner made by Plitron Manufacturing and distributed exclusively by Bryston. Actually it appears to be a joint effort from them and **Plitron** of Canada, probably the best manufacturer of toroidal transformers. Together they have come up with a design that primarily uses the electrical characteristics of the transformer to prevent pass-through of AC line noise. Some units add the use of balanced AC power by using both sides of the AC coming into the house to improve on the noise reduction, similar to using balanced interconnects while also increasing the available current. The balanced types then use the transformer to step down the 240 volts to 120, with a doubling of the available amperage. Thus, they use the characteristics of the transformer rather than caps and inductors and other additional parts, to accomplish their goals.

Using their smarts from developing amplifier power supplies, Bryston has over designed the units by using much larger than necessary toroidal transformers for their rated output. This is possible because toroidal transformers are significantly smaller and lighter in weight than standard EI isolation transformers for the available wattage with lower power loss secondary to resistance and heat loss. For instance, the entire unit with case is lighter than 2 KVA standard isolation transformers used here in the past with much less effect. This has the effects of:

1. Decreases the power starvation that can occur with other transformer based isolation units, which usually shows up as either weak bass or less than dramatic fortissimos. The larger the transformer and the lower the resistance to flow, the more energy or flux that can be stored in it which allows for very fast release of this energy to high wattage amplifiers.



2. Reduces electrical and mechanical noises that can occur with transformers.
3. Uses the leakage inductance and capacitance natural to the toroids to reduce AC line noise, acting as a low-pass filter.
4. Less leakage of RFI fields.
5. Greater efficiency with less loss of electricity as heat.

In addition, Torus has added series-mode surge filters rather than MOV's to reduce damaging electrical surges, which they claim decreases MOV induced failures. Interestingly, they don't claim (falsely) that the MOV's degrade the audio system unlike some other less than honest manufacturers. Like with other products, they have acronyms for their circuits and what they do:

Narrow Bandwidth Technology (NBT): Using the transformer to act like an inductor as a low pass filter, with both differential and common mode noise attenuation beginning at 1000 Hz. A great discussion of this and its effects on both equipment damage and distortion of the audio signal can be found at [here](#).

Ultra Screen Technology (UST): Use of three Faraday Screens to again decrease AC noise while also decreasing leakage of RFI from the transformers to the air and thus surrounding equipment.

Zero Surge Filters: Use of series-mode surge removal filters using capacitors to absorb and slowly release the high but quick voltage surges that can occur. Discussion can be found [here](#).

Imin Technology: for reduction of inrush current to 1/4 of what a normal toroid allows when the unit is turned on or the electricity comes on after a power failure. Discussion can be found at [here](#).

LONO Technology: minimizes the hum that can occur in transformers when the voltage and current waves are out of phase.

LoStray Technology - Reduces magnetic emissions from the transformers that may cause hum in other equipment, especially phono cartridges.

While the above may be considered marketing gimmicks as the papers are being written by their employees, they do confirm and add to other papers I've read on the subject. My only worry would be whether the use of the above, while decreasing noise and rapid current shifts, would affect the rapid current needs of large amplifiers, especially subwoofers. But then prevention of this is Bryston's specialty with their amplifier power supplies.

Luckily, both the Environmental Potentials and APC isolation systems discussed previously in [Chapter 75](#), [Chapter 76](#), and [Chapter 82](#) are still at my house and being used in various systems, which made it easy to make comparisons and to use them in tandem. Why in tandem? First, because isolation units act as low pass filters of varying orders and as with crossovers, running them in series or parallel may increase the total effectiveness. Second, it was much easier to compare their strengths and weaknesses. On the other hand, it is also possible to see if they interact to do some damage to the signal. Having a major combination of high-end and pro audio companies producing isolation units may also be beneficial in silencing those "Nabobs of Negativism" (remember Spiro Agnew) audiophiles who claim that AC is pure. If it is not, then any self-respecting equipment manufacturer certainly builds sufficient noise reduction into their power supplies to prevent spill over into the audio side. Obviously if Bryston, one of the best power supply manufacturers feels that these units are beneficial to their massively built equipment, then there really must be a problem with our electricity. Of course these are the same boobs who claim that all amplifiers sound the same so maybe this wouldn't change their thinking on the subject anyway.

For power isolation units, the cabinets are beautiful to behold with their black and silver fronts. They vary in size from 4x6x3 inch 2.5 Ampere 120 Volt units for \$1600 list price to rack-mountable 19x9x20 inch 240 Volt balanced 100 Ampere behemoth for \$8550 plus shipping. The larger units have split banks of 15 or 20 Ampere AC plugs with switches on the front for turning on individual banks. The banks are not isolated from

each other electrically to maximize power sharing. They sent me two of their middle of the road A018-ACB -A1AA units for 120 Volts 15 Ampere maximum continuous and 300 Ampere for half cycle output, as my system is set up using a 60 Ampere single ended 120 Volt feed and all equipment except the sources are separated into left and right channels. As they were 15-Ampere units, they had sufficient capacity to use the left one also for my video and the right one for my rear channel audio equipment without tripping any circuit breakers. Each of them weighs about 80 pounds, so I can imagine what the really big units tip the scales at and what the shipping cost would be!

After setting them up on the Vibraplane stand beside the APC-15 AC units discussed at AA Chapt 82 & 86, and after subsequently getting my back readjusted by my chiropractor, the experimentation began. As the units were side by side, it was relatively easy to switch power cords for the audio equipment between the two units and to use them in tandem. The units were at first used with their supplied power cords and then with the 50 amp Silent Source AC cable normally used. Like with the APC15, there was no discernable difference in sound quality between the stock and high end cord. Good sign. After allowing it to warm up for a couple of days, testing was begun. All power isolators have several positive and negative effects on the AC and therefor on how your system will sound and each will have a different effect on your system depending on what type of problems your AC has. As any of you who regularly read my columns are probably fed up to the ears with the repetition, I won't go into a long-winded discussion of the differences this unit makes on audio that are the same as most power isolators. The rest of you can go and read the previous ones URL'd above.

First up was one of the DVD-Audios made from a master DAT tape a recording engineer friend of mine made during a concert in a major NY hall of a 2nd rang orchestra (sorry can't use names as I don't want to spend a fortune on copyright lawyers) a few years ago which is about the most natural sounding stereo presentation I've ever heard. It's amazing to me how inferior even high-end company's CDs and even DVD-Audio and SACDs are to original master tapes, both analog and digital. Would love to know what goes on between the recording and the mastering to screw up the sound, even though there are those that say "Digital is Digital." Anyway, not only does the orchestra and hall reverb fill the front of the room, but the image extends out to beyond my listening chair. Audience noises actually sound almost like I'm in the hall itself when the AC is great, which before the APC was only at midnight during a blizzard. Another good sign. Compared to the APC, the bass is a tad cleaner and better defined with somewhat more chest compression. Otherwise, both units produced the same amazing improvement in low level information, freedom of high frequency digital noise and other AC artifacts. In a blinded comparison it would probably be impossible for me to tell the difference.

On the other hand, the APC also has the ability to power down and power up your equipment in appropriate order if the power disappears which may prevent damage to the electronics and speakers. The Torus cannot do either, but can power more equipment than the APC, 1800 vs. 900 watts, but does cost more. The new APC S-20 will do 1250 watts continuous and 1800 peaks for about the same price. On the other hand, the APC units can only be bought from home theater installers, while the Torus can be bought from 50 specialty dealers and any other dealers that carry Bryston products on special order. So many variables and choices! Now for the hooker, as together they acted in complete synergy in bringing out the best attributes in both. With the APC with its separate circuits for analog digital and video connected to the equipment and being fed by the Torus with its massive transformer probably acting in addition as a power sink for quick energy, the system had a further reduction in resting noise from the speakers. This was especially prominent when plugging the subwoofer amps directly into the Torus unit.

Unhappily, the synergy was great enough that I've decided to buy the two units for my system. There goes my pension plan funding again. If you can find a dealer in the area that will let you borrow a unit or two, go for it. You may also find that the cost will be far outweighed by the units ability for audio and video improvement and protection.

So there you have it. There's been a massive increase in power improving equipment over the last couple of years both from high end amateur (meaning for hobbyist users) and professional companies signifying to me that our AC is getting worse (probable secondary to all of the junk being transmitted with the AC) and that both audio and video suffers from the noise. Unhappily, there are many different problems with the electricity and no one unit will solve all of them without causing other problems. Thus, no one reviewer can experiment with all of the possible combinations of products and therefore cannot say whether any piece or combination of this equipment will work in any particular system. Thus, its up to each audiophile to do their own experimentation. Sorry Guys, that's the nature of the beast. I would say that if you have a system with low powered Class A amplifiers then the APC would be the place to start. For those with high wattage Class AB or digital amplifiers then the Torus would be the better bet. For those with unlimited funds or a desire to be looked at as some sort of freak, get both for optimum removal of AC grunge.

Till next time!

And now a few words from Brad Jolly of Torus:

Thanks for the review Bill. Torus PIUs were designed to provide maximum power for audio and video equipment loads, that's why the units are so heavy. We also wanted to keep them as simple as possible. So, we do not provide battery backup or power sequencing. We do provide non-sacrificial series-mode surge suppression, which works at 2V above peak voltage and is certified to take 6000V at 3000A for 1000 repeats. We also provide great noise attenuation without current limiting.

But the biggest boost is providing the lowest impedance to the load so amplifiers and other equipment can get at the power they want when they want it - peak power that they can't typically get from the wall. This provides the most immediate and dramatic effect of Torus - the additional chest compression and better bass you describe. And generally the bigger the amps the greater the improvement. Most people that have experienced Torus PIUs are startled by the improvements. Improvements they have not been able to get from other conditioners on the market: Filters, UPS systems, AC Regenerators or Balanced power.

We really appreciate this forum and your kind words,

Brad Jolly  
Torus Power

Finally, a few words from James Tanner of Bryston:

Hi Bill,

Thank you very much for your time and efforts in reviewing the Torus 20 amp Power Isolation Unit. It wasn't so long ago that Bryston stated in our manuals NOT to use powerline conditioners with our amplifiers. The problem was they robbed the power amplifier of much needed current under short-term transient conditions. As an amplifier company we started thinking about what would be the "ideal" condition for a power amplifier to "see" at it's input. Answer very high current at very low impedances.

So we started doing some tests. We hooked up one of our 4B (300 watt per channel) amplifiers -- plugged it into a standard wall plug --- connected it to an 8-ohm speaker and drove the speaker at 200 watts. We found that the amplifier, over very short periods, would attempt to draw up to 48 Ampere peak. The wall plug has way too much resistance (typically 1 to 1.5 Ohms of impedance) so the amplifier was starved for current under these short-term transient conditions. With the 20 Ampere Torus inserted (designed to have very low impedance and very high current) we were able to draw up to 400 Ampere peak under these very same conditions.

I really see 4 major benefits with the Torus:

1. A very high current/low impedance source for all your gear.
2. Excellent noise filtering
3. Total ISOLATION of the outside power grid from the inside power grid.
4. Non-Sacrificial (no MOV's) Surge protection

Music is a transient condition and the ability of the amplifier to control those transients results in an audio system that provides much better definition and control.

James Tanner,  
V/P Bryston

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