

# FURUTECH

## Flux Series Review

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Positive-Feedback

Issue 47 February 2010 - USA



hardware

# furutech

## "Flux" Connectivity Series of cables

as reviewed by Guido D. Corona



I have been a fan of Furutech wires for the better part of a year. My experience with the Furutech Evolution II series of wires (see my *PFO* review on issue 45) concluded that the series is an ideal rock-solid performer on which to build the connectivity foundation of a substantial audio system, in spite of their moderate unit price point. Thus, a sequence of

related 2009 Furutech announcements concerning a new line of flagship cables, under the general Flux brand name, immediately peaked my attention. LineFlux represents Furutech's highest interconnect achievement to date, while SpeakerFlux and PowerFlux respectively, crown the Japanese company's lineup of speaker wires and power cords, all at a price point that whilst not yet pushing into the stratosphere of certain other brands, is never the less more in line with many premium offerings in the industry. Hence, I was extremely curious to discover if—through the new Flux line—Furutech maintained its tradition of delivering a construction quality and a sonic performance that is more than commensurate with price point.

Jonathan Scull of Scull Communications—marketing consultant for Furutech—ever understanding of my audiophrenic obsessions—kindly facilitated the delivery of a well-packed box containing a plethora of Furutech Flux review samples: 2 meter long XLR and RCA LineFlux interconnects, 3-meter long SpeakerFlux speaker wires, and several PowerFlux power cords in 6ft and 12ft lengths.

## **The Technology**

It became immediately apparent that Furutech remains at least as committed to the sheer esthetic prestige of their premium wires, as they are of their underlying technology. The single word that can properly summarize the 'curb-side appeal' of the Flux line is. . . Stunning!

The understated appeal of the Techflex sheathing the wires is contrasted by the almost jewel-like beauty of the massive LineFlux and PowerFlux end connectors, where a wide center band of highly polished high density carbon fiber shimmers with an anthracite-hued micro-weave, while the outer end of the shells gleam in equally polished stainless steel. Electric prongs protrude in burnished Rhodium from the basic black inner bodies of the AC connectors. A series of taps in multiple points of the heavy shells reveal that the connectors are massively constructed, and suffer of no obvious mechanical resonance problems.

The underlying Furutech Flux technology is as impressive as is its exceptional esthetic value. As Furutech explains in its company literature, the FI-50® IEC and FI-50M® PiezoCeramic male connectors on the Powerflux cord are in themselves veritable technological tours de force: the connectors are constructed from a combination of non magnetic stainless steel with "six cross-layers of carbon fiber embedded in a lustrous, highly damping and insulating acetyl copolymer." Below the shells, the technological innovation continues inside nylon bodies that are doped with nano-sized polycrystalline ferroelectric ceramic particles, powdered graphite, and glass fibers to control resonances, by piezoelectric effect among ceramic particles touching under positive pressure. Thermally conductive Graphite particles drain piezo-generated heat from the cores, while glass microfibers act as further mechanical dampeners. Finally, connector sections that may produce fields are painstakingly star grounded to drain residual electro-magnetic fields.

Not to be outdone by connectors, Powerflux conductors incorporate their more than fair share of technological advances: "68-strand a (Alpha) OCC [are] twisted around  $\mu$ -conductor strands with a special-grade PE insulation or dielectric. (Alpha conductors are fine OCC wire treated with Furutech's Alpha Cryogenic and Demagnetizing process.) The dielectric is surrounded by an inner sheath of RoHS-compliant PVC incorporating carbon powder that enhances damping, and that in turn is covered by a full a (Alpha) conductor wire braid shield, [and A further] flexible PVC outer sheath." The cords are finally inserted in an external black Nylon Techflex jacket.

The Speakerflux speaker wires continue the Flux series technology story: Alpha OCC Pure Transmission conductors are typically terminated with rhodium-plated nonmagnetic pure copper spade connectors for the amplifier side, and

rhodium-plated banana connectors are mounted on the speaker side, while other terminations are available upon request.



The impressive Lineflux interconnects conclude the Flux technology story: they feature solid-core  $\alpha$  (Alpha) OCC conductors, double-layer shielding, and a high-grade polyethylene dielectric containing further electric dampeners. The pleasingly flexible black 13.0 millimeters-thick Lineflux interconnects are terminated by the largest and densest connector bodies that have ever graced my system. True to the Flux theme, the connectors are finished in layered carbon fiber and stainless steel, and sport rhodium-plated copper pins. Unbalanced interconnects feature CF-102R RCA connectors, while XLR balanced wires mount CF-601MR male and CF602FR female connectors.

Of course, the entire Furutech Flux product line is lead free, and complies with the stringent European Union's RoHS (Removal of Hazardous Substances) environmental regulations.

### Further Technical Notes

The "Field Damper" system used in many Furutech power cords [is said to drain] small eddy currents and EMI (Electromagnetic Interference) generated by the metal hardware [fastening] the connector shell (US Patent No. 6,669,491). Current flowing through a connector creates a magnetic field that—Furutech engineers have discovered—induces an unwanted current flow (and thus a magnetic field), even in the screws holding the connector together. These admittedly weak magnetic fields, so close to the connector, appear to interfere with the stability of the larger magnetic field around the current flowing through the conductor and connector, with inherent detrimental implications to downstream musical reproduction. The Furutech solution to this problem is to create a Floating Field Damper system, which connects the securing screws to a ground terminal within the plug, and according to Furutech engineers completely eliminates the related field disturbance by "dumping" residual stray fields to ground through a series of interlocking parts connected to the ground line.

Furutech's employs an advanced "W" wire-clamping system that is engineered for firm contacts and pure, stable power transmission.

The Furutech  $\alpha$  (Alpha) conductor is fashioned from fine OCC wire strands treated with Furutech's Super Cryogenic and Demagnetizing Process, while OCC stands for Ohno Continuous Cast Single-Crystal Oxygen-Free copper. Ohno

is no acronym, but is the last name of professor Ohno of the Chiba Institute of Technology in Japan, who in 1986 patented a novel metallurgical process applied to the production of single crystal copper by heated mold continuous casting. Single crystal rods of ultra-pure Oxygen Free copper can then be drawn in very fine single crystal wires up to 700 feet long, and display electrical, magnetic, and mechanical properties that are believed to make them particularly desirable for manufacturing extremely high quality audio wires.

Furutech has further refined the process and has adapted it to the  $\alpha$  (Alpha)-OCC conductor material used in its transmission products.

According to Furutech, "a high temperature heated mold produces mono- or single-crystal ultra-pure copper wire with insignificant traces of oxygen and hydrogen, reducing the ratio of stress to strain within the wire. Since Ohno Continuous Casting produces a flexible wire, a higher specific gravity and higher "Q", its mechanical isolation and resistance to electromagnetically induced vibration is excellent. Furutech OCC monocrystal wire has no crystal grain boundaries within the conductor, resulting in [vanishingly] low distortion."

Furutech's OCC variant includes a 2-Stage Cryogenic and Demagnetizing sub-Process that begins "with a deep, conditioning cryogenic freeze of all metal parts, including conductors and connectors. Using high-end refrigerants—liquid Nitrogen or Helium—Furutech achieves between -196 to -250C. At these extreme temperatures, the metal parts [are thought to] change molecular structure, removing internal stress. Molecules bond together more tightly and the overall structure [is said to become] more stable, while enhancing electrical conductivity, power and signal transfer.

Stage two in the  $\alpha$  (Alpha) Process exposes these same parts to [Furutech's] patented Ring Demagnetization Treatment, [...] [which] uses controlled attenuation to eliminate all magnetic field effects. [...] and further enhances conductivity of all treated materials."

## **The Music**

In themselves, technological achievements are of only passing interest if they do not resolve into sonic—and most of all—musical performance. I was delighted to discover that the Flux series wires are almost as easy to work with as the wonderful Evolution II series that I reviewed on the September issue of PFO. The only moderate precaution to be taken is that, the substantive PowerFlux connectors being rather hefty and featuring significant amounts of hard non-magnetic steel on their shells, they must be handled with greater care than those of many other cables, lest they scratch or nick softer Aluminum equipment components.

Lineflux, Speakerflux, and Powerflux cables were finally connected to my fully balanced system, consisting of TEAC Esoteric X-01 Limited, the fabulous GamuT CD3 guest CD player, the recently released JRDG Criterion 2-chassis battery-powered linestage, a JRDG 312 stereo amplifier, and my beloved Vienna Mahler V1.5 speakers. Power distribution duties were alternating between Furutech Daytona 303 and Furutech ETP-309, both connected to a dedicated 20 Amp AC line..

It became soon apparent that the 200 to 300 hours of break-in time customary for wire products are woefully insufficient for the Furutech Flux wires to achieve their full performance. The PowerFlux cords in particular, require a protracted time to stabilize—as much as 800 to 1,000 hours of substantive playing time. The impatient obsessive-compulsive listener may be sorely tempted to give up on Powerflux prematurely, as incompletely broken in power cords may temporarily generate a foreshortened front-to-back staging, treble overpressure, wooden bass, some ragged transients,

and perceivable disorganization in treble sostenuto. Interestingly, Lineflux and Speakerflux wires appear to stabilize somewhat faster. In the end, it is advisable to allow considerable break in time before any critical listening, and any subsequent attempts to venture serious pronouncements on this remarkable line of cables.



It was after almost 6 weeks of intense music making, while I was working on the Gamut CD3 review, when the Flux suite in my system started to emerge from what I can deem to be a somewhat *intempered* adolescence, and proceeded to blossom into a vigorous early adulthood. On the Esoteric X-01 Limited in particular, the 1981 performance of part 1 from Stravinsky's Rite of Spring under Antal Dorati and the Detroit Symphony Orchestra (DECCA London) became a new land of sonic discovery and of musical revelation. The movement alternates massive chordal and percussive sections where brass scoring predominates, with densely contrapuntal episodes scored for a bewildering variety of woodwinds, performing parts that, at least in the mind of the ever-optimistic Russian composer, must have sounded densely soloistic. Recording reality has been mostly different: The devilish counterpointal interplay typically is buried inside a glittering mass of sound, in which individual melodies rarely emerge. That is, until an audio reproduction system is subjected to the cleansing action of a sonic thoroughbred such as the Furutech Flux product series. Suddenly, the previously undifferentiated herd of woodwinds focuses into three-dimensional individuality. Unique melodies are heard in what seems a kaleidoscopic game of interrelated yet subtly discordant threads, all crisply occupying solid positions in the 3-dimensional stage. The timbre of each instrument is fully fleshed out, exhibiting a richness of overtones and a clarity that never even remotely resorts to the romantic. The contrabassoons in particular, usually barely perceived as mere deep *buzzings* in the general background, emerge with hereto-unheard crispness and character. The brass fanfares are as massive as I have heard them this far, with the individual instrumental components that still retain integrity of timbre at sound pressure levels that I do not usually submit my system to. The percussion has extraordinary speed, transient crispness, and authority. If I were to find the vaguest of fault to the presentation, perhaps the stunning resolution of the Flux family comes with a slight emphasis on the treble, which I did not detect on the Furutech Evolution II or on the Furutech High End Performance series. Furthermore, while instrument positioning is amazingly solid, the depth of the stage is comparable to that of the High Performance series, and may be exceeded by some older Shunyata Helix power cords, which however may fall just slightly shy of the timbral resolving power exhibited by the Flux ensemble.

Some further experiments confirm that any marginal misgivings that I may still be holding for the Flux series are purely limited to the PowerFlux power cords. A single change of cord feeding the ETP-309 from the dedicated wall outlet to a Furutech High Performance series custom cord is sufficient to moderate any residual excesses. I cannot help wondering if the generous application of non-magnetic steel and ferro-ceramics in the substantial power cord connectors may be responsible for the subtle heightened treble energy.

J. S. Bach's Toccata and Fugue in D minor BWV 565 performed by Hans Fagius at the reconstructed 1764 Wahlberg organ of Fredrikskyrkan, Karhkronan, Sweden (Brilliant Classics complete Bach works) is without peers. The stage is magnificent, the overall frequency sweep is excellently extended with full pitch definition down to the lowest pedal range, and the general atmosphere is grand and intensely emotional. I perceive a heightened sense of physical presence and musical reality combined with Energetic freshness, probably caused by the superb degree of treble resolution afforded by the entire Flux series. A truly rare sonic gift is the delightful 'chuffing' sound of the mechanical organ traction that the wires expose with amazing realism. Even the highest ranks of pipes have crisp presence, yet they remain textured and always in supreme control, in spite of my continuous ratcheting of the volume, up to sound pressure levels that could be experienced only several feet from a live instrument. My chronic fears of detecting tell-tales traces of those fatiguing chords that presage the beginnings of treble intermodulation are unjustified. After two full months of music making, the Flux series is now unflappable: it has finally grown into a glorious adulthood.

My standard test tracks confirm my late findings. As late as a fortnight ago, I had still observed sporadic hardness in Antonin Dvorák's the Ruins of the Old Castle, a short imagistic work spanning 7 octaves performed by talented pianist Inna Poroscina (Brilliant Classics). Finally—the Flux suite now approaching the 1000 hours mark—the composition blooms into welcome musicality within a framework of fine low-level detail. The usually barely perceivable shush of piano felts and pedal movements emerge, just as if I were standing 9 feet from the instrument. The treble is now hardly shy, yet it is completely controlled: revealing and shimmering with inner complexity, it has lost a certain metallic feel that gave me some early pause, and its graceful presence shows no sign of overpressure. The Bass is extended and pitched, with just a hint of pleasing darkness. The harmonic complexity--that starts in the bass region--continues in the mid register with only minor traces of *unspecificity*, which—in some extremely busy *fortissimo fff* passages—can yield some front-to-back foreshortening of the otherwise deep stage, as well as some marginal voicing confusion.

Transient speed and authority of the suite is flawless. I define the Flux wires as powerful while remaining simultaneously measured. Soft transients in *pianissimo ppp* expose Poroscina's delicate internalization of the work, while her *fff* chords are delivered with the weight of all her elastic energy, never degenerating into the fatiguing hypertrophic transients that mimic locked wrists and elbows.

Further explorations of my test library consistently reinforce my opinion of the Furutech Flux wires being extremely fine instruments for music making. In classical chamber music, modern female vocals, and large scale orchestral works alike, they consistently deliver a fine balance of powerful authority and graceful nuance. Diana Krall in *Temptation*—from "The Girl in the Other Room" (Redbook Verve)—remains crisp and focused throughout the song. Her well-centered voice is filled with the resonance of upper frequencies. Yet, Krall's vowels and plosives remain always musical and naturally controlled, without any of those disturbing bursts of transient pressure that characterize the flaws of certain wilding wires.

## Conclusions

In the end, the very long-drawn break-in process that--with tender loving care--coaxed these marvelously finished products into delivering the fine performance of which they are capable, revealed the Furutech Flux's true nature of sonic thoroughbreds, which comfortably outperform even the substantial resolving power of the Furutech Evolution II series. Admittedly, those audio enthusiasts who suffer of borderline anxiety disorder, and who are compulsively driven to jump to the next upgrade if their jaws is not reflexively dislocated in absolute awe shortly after inserting a new product into their system, should perhaps consider a different suite of wires, or at least limit themselves to the LineFlux interconnects and the Speakerflux speaker wires, which achieve their full performance within the more customary 200 to 300 hours of operations. Yet, those patient music lovers, immune to the cravings of instant gratification, who enjoy the experience of a long break-in process sometimes approaching the 4 digit hours territory, so frequently called for by the most demanding of system components, will be rewarded by the high sonic beauty finally delivered by the complete Furutech Flux series. **Guido D. Corona**



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