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August 29, 2012

VIA EDGAR

Russell Mancuso
Branch Chief
Securities and Exchange Commission
Division of Corporation Finance
100 F Street N.E.
Washington, DC 20549

Re: Flux Power Holdings, Inc.
Amendment No. 1 to Form 8-K
Filed August 6, 2012
File No. 000-25909

Dear Mr. Mancuso:

On behalf of Flux Power Holdings, Inc. (the "Company"), we hereby respond to the Staff's comment letter of August 17, 2012, issued in connection with the Company's Amendment No. 1 to Form 8-K, filed on August 6, 2012.

The following responses are numbered to correspond to the questions set forth in the Staff's comment letter. For the Staff's convenience, the Staff's comments are indicated in italics followed by the Company's response.

Marketing and Sales, page 16

- We note your response to prior comment 5. With a view toward disclosure of any material disproportionate reliance on the identified customers, please tell us the percentage of your revenues attributable to each individual customer for each period provided.*

Response: During the nine month period ended March 31, 2012, the Company had four major customers that represented more than 10% of its revenues on an individual basis, and combined represented 87% or \$2,616,000 of its total revenues. The four major customers were Artisan Vehicle Systems, which represented 35% of its total revenues, Epic Boats, which represented 11% of its total revenues, Greentech Automotive, which represented 30% of its total revenues, and Wheego Electric Cars, which represented 11% of its total revenues.

During the nine month period ended March 31, 2011 the Company had two major customers that accounted for 37% or \$216,000 of its total revenues. The two major customers were Boulder Electric Vehicles, Inc., which represented 11% of its total revenues, and Epic Boats, which represented 26% of its total revenues.

For the year ended June 30, 2011, Wheego Electric Cars, Inc., which represented 32% of its total revenues, and Epic Boats, which represented 15% of its total revenues, collectively accounted for 47% of total revenues, or \$463,000.

For the eight month period ended June 30, 2010, the Company had four customers that combined accounted for 79% of total revenues, or \$164,000. The four major customers were APT Propulsion Systems, Inc., which represented 17% of total revenues, Dukes Garage, which represented 15% of total revenues, Epic Boats, which represented 19% of total revenues, and Wheego Electric Cars, Inc., which represented 28% of total revenues.

Production Process, page 16

2. *We note your response to prior comment 4 and your revised disclosure on page 15 indicating that 84% of your revenues for the nine months ended March 31, 2012 derived from battery sales. Please revise your disclosure describing your production process to discuss the production of your batteries, including, as applicable, whether you rely on one or more manufacturers, such as LHV Power, for production. Please also explain in greater detail the "flexibility in cell sourcing," which you reference on page 19.*

Response: Pursuant to Staff's comment, the Company has revised its disclosure to describe the Company's production process of its batteries, including any reliance on its manufacturers, in further detail on pages 17 and 18, and has explained in its statement relating to "flexibility in cell sourcing" on page 20.

3. *We note your revisions in response to prior comment 6 with respect to the term sheet agreement with LHV Power. Reconcile your disclosure that the agreement remains in effect with the provision under the caption "Term & Effective Date" in exhibit 10.7, which indicates that the term of the agreement could have been extended only for a single one-year period following the initial expiration date of April 1, 2010. Also, please revise to clarify what you mean by the statement that "the products defined in the term sheet were assigned to Current Ways" and what this means for the parties' obligations under the agreement. Finally, please revise the appropriate sections of your document to include the information regarding the amounts paid under the agreement that had been included in your initial 8-K filing but was deleted from page 51 in the amendment.*

Response: Pursuant to Staff's comment, the Company has revised its disclosure on pages 17 and 50 to reflect that the agreement expired on April 1, 2011 and to clarify that the agreement was assigned to Current Ways, Inc. on September 1, 2010. As the assignee, Current Ways, Inc. has assumed the rights and obligations of LHV Power Corporation under the agreement. The revised disclosure clarifying the terms of the agreement and rights obligations of Current Ways, Inc. and the Company has been provided on pages 17 and 50.

Strategic Relationship with LHV Power, page 18

4. *We note your response to prior comment 6 regarding disclosure of the portion of your sales attributable to products manufactured by LHV Power; however, it does not appear that you have included this disclosure in your amended filing. Please advise or revise.*

Response: Pursuant to Staff's comment, the Company has revised its disclosure to include the portion of sales attributable to products manufactured by LHV Power on page 18.

Suppliers, page 18

5. *We refer to your response to prior comment 7. Although your response indicates that the supply agreement with Global Fluid Power Solutions is non-exclusive and lacks minimum purchase requirements, you have not described the terms that are included in the agreement or explained how the agreement governs the commercial relationship. Given your disclosure that the supplier accounted for 53% and 79% of your supply purchases during the nine months ended March 31, 2012 and March 31, 2011, respectively, it therefore remains unclear how you concluded that the agreement is not a material agreement. Accordingly, please expand your disclosure of the material terms of the agreement and file it as an exhibit or provide us with additional analysis to support a conclusion that the agreement is not material.*

Response: Pursuant to Staff's comment, the Company has revised its disclosure to explain the material terms of the commercial relationship between Global and the Company on page 19. In addition, the Company has filed the vendor agreement with Global as Exhibit 10.13.

Business Experience, page 44

6. *We note your revisions in response to prior comment 12. Please expand your disclosure to describe the nature of the businesses named in this section, such as Epic Boats, LLC, Esenjay Petroleum Corporation, Current Ways, Inc., and LHV Power Corporation, so investors have adequate information to evaluate the prior business experience of your directors and executive officers.*

Response: Pursuant to Staff's comment, the Company has revised its disclosure to describe the nature of business referenced on page 43 in greater detail.

Closing Comment

We believe the foregoing addresses all of the Staff's comments set forth in its comment letter dated August 17, 2012.

Russell Mancuso
August 29, 2012
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If you have any questions or for further discussions relating to this matter please feel free to contact me 916-930-2524 or Deborah Seo at 415-318-8814.

Very truly yours,
/s/John P. Yung

JPY:dh

ACKNOWLEDGEMENT

Flux Power Holdings, Inc., a Nevada corporation (the "Company"), hereby acknowledges the following:

1. The Company is responsible for the adequacy and accuracy of the disclosure in the filing;
2. Staff's comments or changes to disclosure in response to the Staff's comments do not foreclose the United States Securities and Exchange Commission (the "Commission") from taking any action with respect to the filing; and
3. The Company may not assert the Staff's comments as a defense in any proceeding initiated by the Commission or any other person under the federal securities laws of the United States.

Dated: August 29, 2012

Flux Power Holdings, Inc.

By: /s/ Craig Miller
Craig Miller, Chief Intellectual Property Officer and
Corporate Secretary
