



Renewable Fuels Standard Regulation (RFS2)

Third Party Engineering Review

Prepared For:

Guilherme Chacon

RCO

Ituiutaba Bioenergia Ltda.

Ituiutaba, Minas Gerais, Brazil.

Prepared by:

Control Union

Av. Brigadeiro Faria Lima 1485

Torre Norte, 7º andar.

São Paulo, Brazil.

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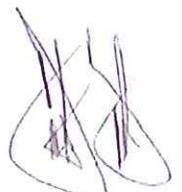
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Requirement

According to § 80.1450 (b) from 40 CFR Part 80, this report must meet all applicable items described on § 80.1450 (b)(1) and § 80.1450 (b)(2).

Executive Summary

This report outlines the results of the third party engineering conducted at Ituiutaba Bioenergia Ltda. to demonstrate compliance with requirements in the Renewable Fuels Standard Regulation (RFS2). The on-site review was conducted by D. Silva, auditor of Control Union Certifications, under São Paulo PE license n°04362514 on October 20, 2011. D. Silva, a chemical engineer that has over 15 year of experience in various fields of chemical and renewable fuel industries as process, production and project engineering.

Ituiutaba Bioenergia Ltda. facility located in Ituiutaba, Minas Gerais, commenced construction on 08/07/2007 as supported by the initial installation permit N° 088. Ituiutaba Bioenergia Ltda. is a domestic producer of sugar cane ethanol with a renewable fuel production capacity (baseline volume) of 18,464,737 gallons ethanol per year under D-Code 5.

The independent third party engineering review included, but was not limited to, a site walkover, verification of process products and co-products, process energy inputs, feedstock, supplemental plans, baseline volume, construction dates, and applicable permits and contracts. The independent third party engineering review revealed no exception between the registration form, supporting documents, and Ituiutaba Bioenergia Ltda. facility. It is Control Union Certifications recommendation that Ituiutaba Bioenergia Ltda. RFS2 registration be approved and accepted.

This report contains no confidential business information (CBI).



1. Professional Licensed Engineer Qualifications

The review was conducted by D. Silva, PE independent chemical engineer of São Paulo State license of Conselho Regional de Química Nº CRQ-4ª 04362514. A copy of the CRQ card is attached in Appendix A. D. Silva is not disbarred, or proposed for suspensions or disbarment.

D. Silva has 15 years of experience in the chemical engineering as production, process and project, 4 of which in the renewable fuel industry as process engineering, working at the sugar and ethanol facilities of Destilaria de Alcool São José S/A as a processes engineer.

2. Third Party Independence

To qualify as an independent third party, the professional engineer conducting the engineering review cannot be operated by the renewable fuel producer or any subsidiary or employee of the renewable producer. The professional engineer must also be free of any interest in the fuel producer's business, and equally, the renewable fuel producer must be free of any interest in the professional engineer's business.

Control Union reviewed 40 CFR 80.1450(b)(2)(ii) and has determined that D. Silva satisfies the established third party requirements. Control Union is not operated by Ituiutaba Bioenergia Ltda. or any subsidiary or employee of Ituiutaba Bioenergia Ltda. and is free of any interest in Ituiutaba Bioenergia Ltda. business. Additionally Ituiutaba Bioenergia Ltda. is free of all interest in Control Union business.

3. Verification, Exceptions or Discrepancies

As required by RFS2, the independent PE should review and evaluate the accuracy of all the registration information the renewable fuel producer is required to submit to EPA for registration. The site visit that accompanies the document review was conducted on 10/20/2011. Each registration requirement has been addressed in the engineering report for Ituiutaba Bioenergia Ltda.

3.1 Fuel Types

Ituiutaba Bioenergia Ltda. registered under D-Code 5 Renewable Fuel are capable of producing 18,464,737 gallons ethanol per year. The facility is capable of producing anhydrous and hydrous ethanol. Ituiutaba Bioenergia Ltda. did not indicate that they intend to produce or are capable of producing any additional fuels without significant modifications to the existing facility. During the site visit D. Silva, PE verified this information against construction permits and as a result agrees with this component of RFS2 registration.

3.2 Feedstock, Co-products and Process Heat Fuel

Ituiutaba Bioenergia Ltda. registered under Feedstock Code 120, Sugarcane. Ituiutaba Bioenergia Ltda. is not capable of using others feedstock without significant modification to the existing facility. This information was verified by reviewing the process flow diagrams and inspection of processing equipment.

Ituiutaba Bioenergia Ltda. is not registered under Codes 20, Dry Distillers Grains and 10 Wet Distillers Grains as all of the available co-products codes are only available for grains distillers. During the site visit D. Silva, verified Ituiutaba Bioenergia Ltda. produces as co-products sugar, bagasse, fusel oil, CO₂, vinegar water and sludge coming from the washing of sugarcane and from the juice decanter. Sugar is stored and sold to local and international trading companies. Bagasse is used as a heat process supply and both vinegar water and sludge are used as soil fertilizers in the sugarcane fields. It is Control Union understanding that there are no co-products codes for all the listed co-products. This information was verified by reviewing the process flow diagrams and inspection of processing equipment.

Ituiutaba Bioenergia Ltda. provided for review a Process Heat Fuel Supply Plan as required by 40 CFR 80.1450 as part of the registration requirements. The plan indicated the bagasse is the only process heat fuel. The total throughput as used for process heat for obtaining ethanol is [REDACTED] BTU/h whereas the steam boiler can produce [REDACTED] BTU/h. The total energy used for obtaining ethanol is [REDACTED] % of the total energy produced. While in site D. Silva verified that bagasse is indeed the only significant source of process heat used at Ituiutaba Bioenergia Ltda. by observation of the process equipment, fuel supply lines, and Piping and Flow Diagram (P&FD). Bagasse is burned and water is heated for steam generation. The generators are moved with steam for electricity production and turbines are moved by the steam generated in the process. The steam is then used to run the distillery.

3.3 Production Process

Under Ituiutaba Bioenergia Ltda. State Environmental Agency SEMAD (Environmental Department of Minas Gerais State) license operating N° 194, process N° 10201/2006/004/2008 of 08/14/2009 is allowed to operate a fuel grade ethanol production facility based on sugar cane.

Ituiutaba Bioenergia Ltda., Ituiutaba, Minas Gerais, Brazil, operates a fuel grade ethanol production facility based on sugarcane milling. Sugarcane fields are located on a [REDACTED] radius from the renewable fuel production facility.

The basis for the production of ethanol is to convert the sugarcane juice into ethanol. Ituiutaba Bioenergia Ltda. receives sugarcane by truck. The trucks are weighted and sampled for the sugar content analysis, after the sugarcane is then unloaded. The unloaded sugarcane is conveyed for extraction in diffuser in counter flow with the juice. The juice is drained and separated from the bagasse. The juices are heated and pH corrected and transferred into a tank for gravity sedimentation. The facility produces [REDACTED] gal/h of purified juice. The purified juice is pumped to the sugar production plant ([REDACTED]%) and to the ethanol production plant ([REDACTED]%). At the ethanol plant enzymes are added to the fermenters. After fermentation, the resulting crude wine is first separated in a series of centrifuges. The wet yeast will be used in new fermentation, after suffering a suitable chemical treatment. The separated wine is then sent to two distinct distillation stills trains. One distillation train will produce hydrated ethanol at 93.0% weight basis and the other train will produce anhydrous ethanol at 99.3% using monoethylene glycol (MEG) in order to break the azeotrope mixture. The distillation bottom is acidic water named vinegar water. This vinegar water is then cool at room temperature and pumped to a centralized system for soil fertilization proposes. Bagasse is the fuel for process heating. High pressure steam is used to generate electricity and in the steam driven motors. Low pressure steam is used for process heating. The excess bagasse is stored in piles outside of the plant. The sludge from the juice decanter and from the sugarcane primary washing are concentrated and used as composite soil fertilizer.

3.4 Baseline, Actual Production Volumes

The last operating air permit was issued by the State Environmental Agency SEMAD (Environmental Department of Minas Gerais State) on 08/14/2009, valid until 08/14/2013. As the operation air permit does not indicate the production capacity, the records of industrial output where used to verify the capacity of this Renewable Fuel Production unit.



Based on the industrial output reports named as "Boletim Gerencial" from of the years 2008, 2009, 2010 and 2011 that were submitted to EPA, the maximum annual volume output occurred in 2010 at 69,896,415 l. Using a conversion unit of 3.7854 (l/gal), the maximum annual/volume is of 18,464,737 gallons.

3.5 Items Verified Not To Occur

In addition to the above we would like to point out that the following items were no required as part of the registration materials:

1. The use of separated yard waste, separated food waste or separated municipal solid waste (MSW) was verified no to occur.

During our visit was verified that the above do not occur and agrees with the registration information provided by Ituiutaba Bioenergia Ltda. to the EPA.

4. Confidential Business Information

This third party engineering review was prepared such that it does not contain confidential business information (CBI).

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Conclusion

In conclusion the independent third party review process as conducted by Control Union auditor, D. Silva, revealed no exceptions between the registration form, supporting, and the Ituiutaba Bioenergia Ltda. facility.

It is Control Union recommendation that Ituiutaba Bioenergia Ltda. RFS2 registration be approved and accepted.

D. Silva

CRQ-4ª Região Nº. 04362514

Professional Chemical Engineer's Name

Registration Number

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November 7, 2011

Professional Chemical Engineer's Signature

Date