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TECHSOFT ANALYSIS

White Paper

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Becoming *Green Fuel* Biodiesel Production Testing Software VAR or Developer

The Green VAR or Developer

Becoming a VAR or developer in the Green Technology Industry may now be possible with the positioning of your software operations - VAR or development - in one aspect of that industry: The Biodiesel Production Testing Software provides that opportunity. Biodiesel production, whether on limited or commercial scale, entails determination of several real-time values of stream components substances for the purposes of feeds controls.

Renewable Energy, fostering going green, is the new thrust of economic growth, and as green fuel option takes prominence in the adoption of energy source considerations, biodiesel production has moved to center-stage and with it the needs for automating the several tests that must be performed in course of its production as to support feed control. The rationale is that automating anything of course entails the development of software and the development of software requires documentation of specifications of functionality, which in turn requires an understanding of the essential process. Knowledge-based assessment of the functional needs therefore is the basis for the development of software targeted to this green technology market.

VARs considering entering the Green market therefore need to work with software development teams that have the requisite knowledge of the biodiesel production technology as well as of software development as to evolve efficacious software.

Software Developers considering entering the Green market therefore need to work with software specification development team that has the requisite knowledge of the biodiesel production technology as to evolve a set of efficacious specifications.

Green Biodiesel Fuel Industry

At different times, there has come to the forefront the issue of alternative energy source to the fossil fuel energy sources that the world uses primarily. Interestingly, the factors that bring the consideration to the forefront were always slightly different. Yet, two primary categories of considerations have always impacted the issue. Often though, the driving force is the high cost of crude oil and the preference, as a matter of National Security, of the western world to be independent of foreign countries with regards to such critical resource. Recently, though another issue has become a driving force: [Global warming](#).

In consideration, primarily, of mitigating the ecologically unbalanced generation of carbon dioxide - a major culprit of global warming, and secondarily of the need to enjoy lower fuel cost and consequentially national security, an alternative energy source has been proffered in the advocating the adoption of a bio-fuel as an alternative fuel source to fossil fuels. The rationale underpinning this consideration is that a bio-fuel is a net-neutral in greenhouse gas, GHG emission: In the very least, biofuel will lead to a dynamic equilibrium between the generation and consumption of the carbon dioxide: The volume of production of carbon dioxide as a result of the usage of the bio-fuel by humanity will equal the rate of absorption of the carbon dioxide by bio-systems from which the bio-fuel is produced; and thereby establishing a plateauing of the heating effect of the carbon dioxide.

With respect to the use of bio-fuel instead of fossil fuels, one of the choices that has been gaining wide support is the use of [Algal bio-Diesel \(ab-diesel\) fuel](#) - which is biodiesel fuel that is produced from oil extracted from algae.

Production Methods and Specification

Several technologies are being developed to accomplish this form of production and the preference for algal oil is because unlike regular vegetable oil - which consists of carboxylic acids or oils of varying carbon lengths - from which the biodiesel can also be produced, the algal oil consists of carboxylic acids that are virtually of uniform carbon chain lengths.

The biodiesel production processes are of two types: without, and with esterification reaction. In general the [process chemistry](#) of biodiesel production has been known for a long time and is sufficiently documented although the reversibility of the reaction is not always made obvious. A [chemical process](#) also based on that chemistry with slight modification of the reaction sequence has also been published on the Internet; and another process use most commonly by hobbyists is the [Laming process](#), which of course is based on very limited process engineering principles.

Developing Software Specifications

Rationally, an informed set of criteria must necessary guide the selection of software aimed at the Green Biodiesel Fuel markets, which should be the same criteria that guides the development of the software specification for producing the software. Accordingly such criteria, from a socio-economic perspective should be constructed from a position that supports efficacious and minimal value-added re-engineered deployment of the software.

First and foremost, efficacious software specification developed to support any and all of the above biodiesel production processes testing program must derive from a biodiesel production process so generic as to be adaptable for the value-added repackaging by VARs for sale to just about any biodiesel production client.

Second, a critical adoption-factor is the implicit overriding requirement of ensuring the corporate existence of the currently operating energy companies or power generation companies. In effect, this factor requires that the biodiesel production process on which the software specifications set derives must also be such that it support adoption within corporate operations as to support the existing operations of the power generation companies. This requirement is indeed important because of the need to have the citizen employees stay employed during and after the adoption of the alternative energy-source.

Evidently, most of the production processes are based on one of two main sets of chemistry, and the testing methods and their sequences as well as the defined objects of testing are very much the same though the chemical process tasks are performed differently with each process. In fact the entire testing programs have been

documented in the [Handbook of Biodiesel published by the AOCS](#) and in every case the object has been the incorporation of these techniques into the testing program. However, these techniques have been developed under conditions of chemical science laboratory practices. Adoption of the techniques under process conditions raises other series of considerations.

At [GB-Analysts Reports](#), the knowledge-based website, the basic sciences to understanding the upcoming technologies and some prospective software products are the issues of analysis with two end-results:

- The analyses aimed at empowering the VARs, non-engineering technology industry specialist, with the knowledge of the products so as to understand the IT products needs of their clients seeking to enter such industries as to support their mutual growth and survival. VARs who sell to customers are usually confronted with the need to be informed on new technologies and the industries they serve, and such growth industries impact their clients.
- The analyses have also brought about a documented commercial biodiesel production process based strictly on transesterification reaction - esterification within this process can also be effected with the substitution of the transesterification reactor with the combined esterification-transesterification reactor - that offers a good and generic foundation from which has been [derived a set of software specifications](#) for developing software for the production testing.