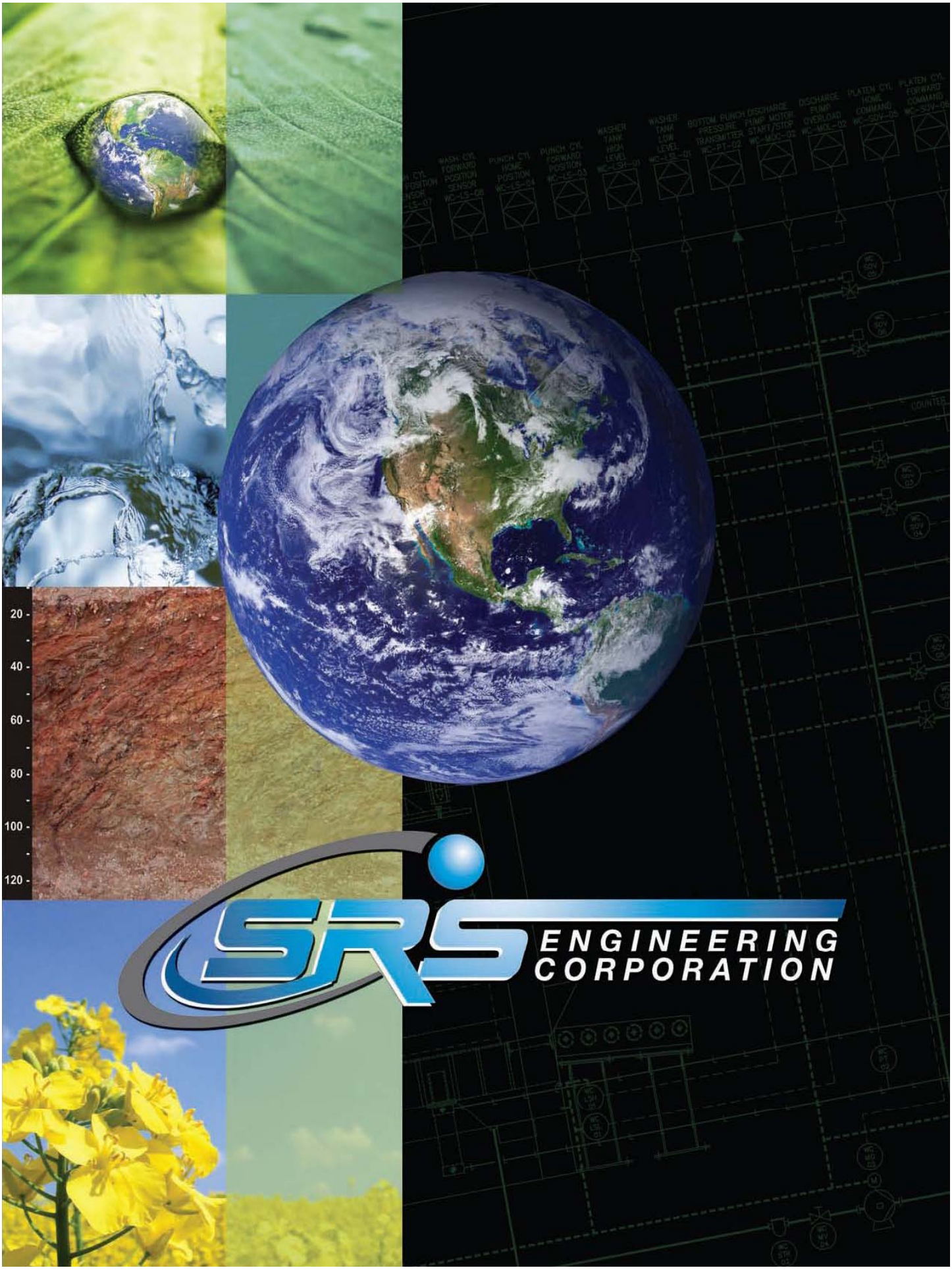
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SRS
ENGINEERING
CORPORATION

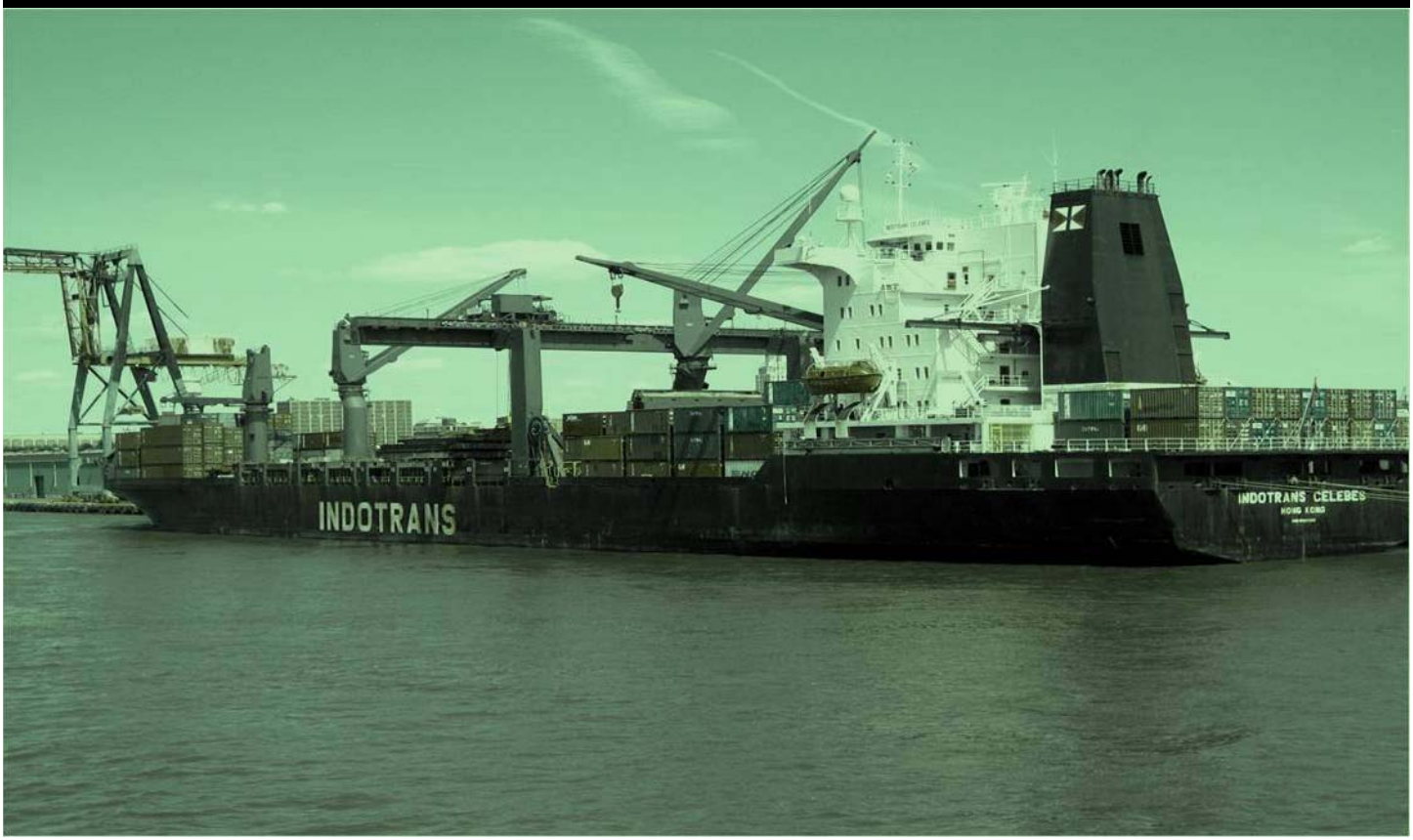

# About SRS Engineering

- Over 25 years process technology experience with 50+ engineers on staff to include Electrical, Process, Application, Project, Mechanical, Chemical, Civil, Structural, and Controls.
- Recognized domestically by Fortune 500 companies and by multi-national corporations worldwide.
- Received the U.S. Department of Commerce “Exporter of the Year” award
- SRS made the Inc. Magazine’s Fastest Growing Private Company in 2009 List

# SRS' Export Sales

*From 2005-2008, approximately 20% of SRS' total sales came from Exporting to the following countries:*

Canada
Mexico
Columbia
Dubai (UAE)
Australia
New Zealand
China
Saudi Arabia
Scotland
Singapore
Nairobi
Turkey

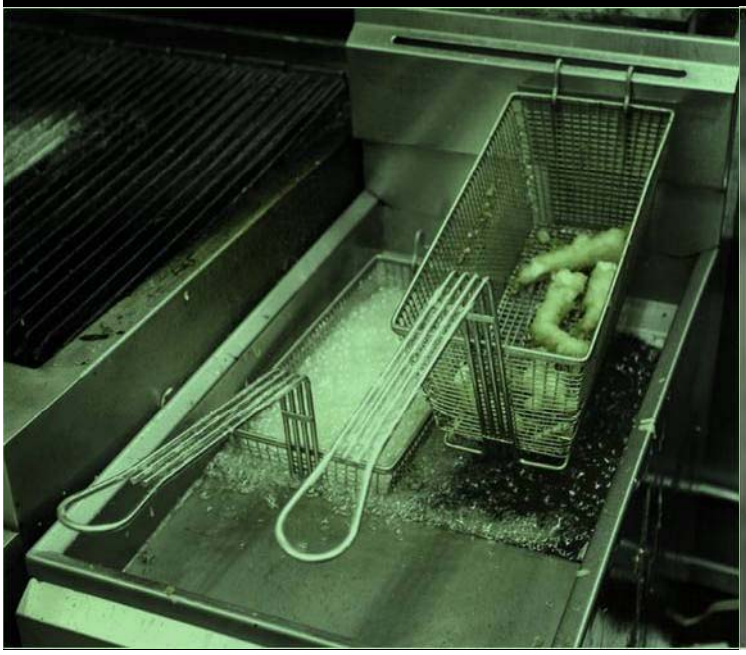


# *How did SRS get involved in the Biofuels Industry?*

- Decades of experience in the process technology
- Built and engineered several integral systems for multiple biodiesel plants
- Received numerous appeals from customers to get involved in the industry
- The biofuels industry was a natural progression for SRS based on the company's background and capabilities.

# *What is Gen3D?*

Gen3D renewable diesel is a lot like conventional petroleum diesel other than the fact that it is made with 100% renewable domestic resources – in this case any lipid feedstock to create fuel that completely replaces petroleum diesel thus reducing foreign dependency of crude petroleum and reducing the adverse environmental impacts associated with conventional diesel.



# *Why Gen3D?*

- Reduces foreign oil dependency
- Gen3D has the same characteristics as petroleum diesel so it can be a drop in replacement
- High Cetane rating – 85-100
- Greater lubricity than gasoline, making engines last longer
- Entirely pipeline fungible as it is indistinguishable from petroleum diesel
- No glycerin byproduct
- No storage stability problems. No special handling required.
- Longer shelf life
- Excellent performance in cold climates
- Not an either/or choice. Can be used with Biodiesel
- RIN (Renewable Identification number) – 1.7 credits per gallon
- Gen3D plant costs approximately the same as a biodiesel plant

# *Gen3D Renewable Diesel vs. Biodiesel*

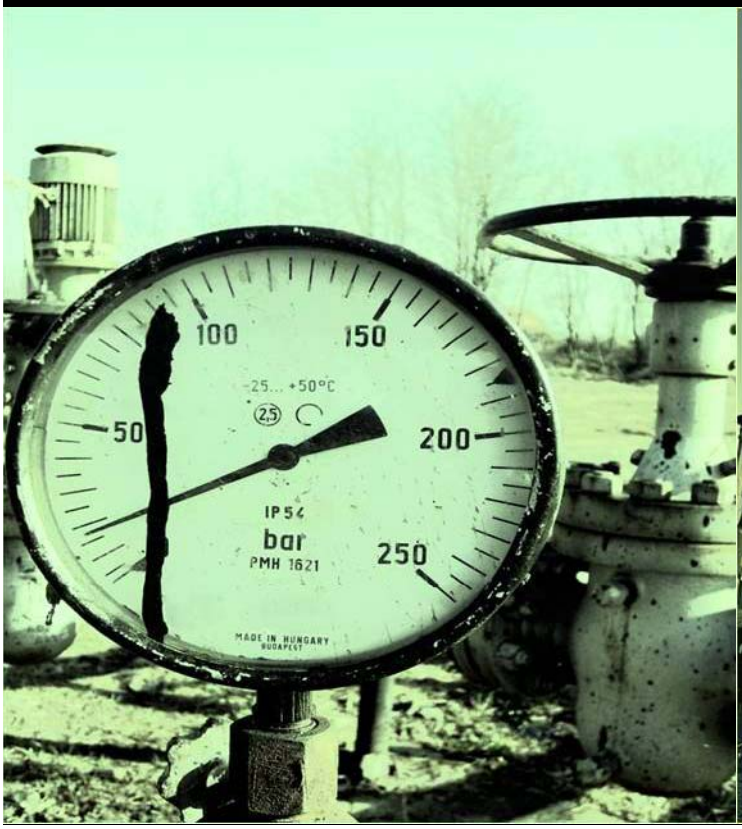
| Gen3D | Biodiesel |
|---|---|
| Cetane Rating 85-100 | Cetane Rating 60-65 |
| RFS – 1.7 credits/gal | RFS – 1.5 credits/gal |
| Each could increase to 2.5 credits/gal if respective production facility is powered on 90% or more of a non-hydrocarbon-based fuel | |
| Environmental Benefits - Both Biodiesel and Renewable Diesel share nearly the same environmental benefits as both are produced using the same feedstock. These renewable fuels reduce $CO_2$ emissions by 80%, Carbon Monoxide by 50%, SOX by 100%, Hydrocarbon Emissions by more than 50%, and Particulate Matter by more than 50% compared to petroleum diesel | |
| BTU Value - Both Biodiesel and Renewable diesel posses similar energy value and both fuels exceed the BTU value of competing alternative fuels. | |
| Pipeline Fungibility – Entirely pipeline fungible as it is indistinguishable from petroleum diesel | Pipline Fungibility – the U.S. perception is that biodiesel is not pipeline fungible; that it could contaminate aviation gasoline/jet fuel. However B-2 and B-5 blends are pipelined safely in Europe without fear of contamination by Europe's airline industry |
| No glycerin byproduct | Does produce glycerin as a byproduct |
| No storage stability problems. Longer shelf life | Practically non-flammable (>300$^0$F flashpoint) |

# *Gen3D Renewable Diesel vs. Biodiesel…cont…*

| Gen3D | Biodiesel |
| --- | --- |
| Free of sulfur and aromatics | Completed Tier I and Tier II health effects testing requirements as authorized by the U.S. Clean Air Act Amendments (CCA) of 1990 |
| Temperature Range:<br>Lower “Cloud Point” than biodiesel allowing for broader range of temperatures than biodiesel. Thus excellent performance in cold climate | Temperature Range:<br>Slightly higher “cloud point” than Gen3D Renewable Diesel. Overall good performance in cold climates |
| Not an either/or choice.<br>Can be used with Biodiesel | Not an either/or choice.<br>Can be used with Gen3D Renewable Diesel |

# *What is Hydrocracking?*

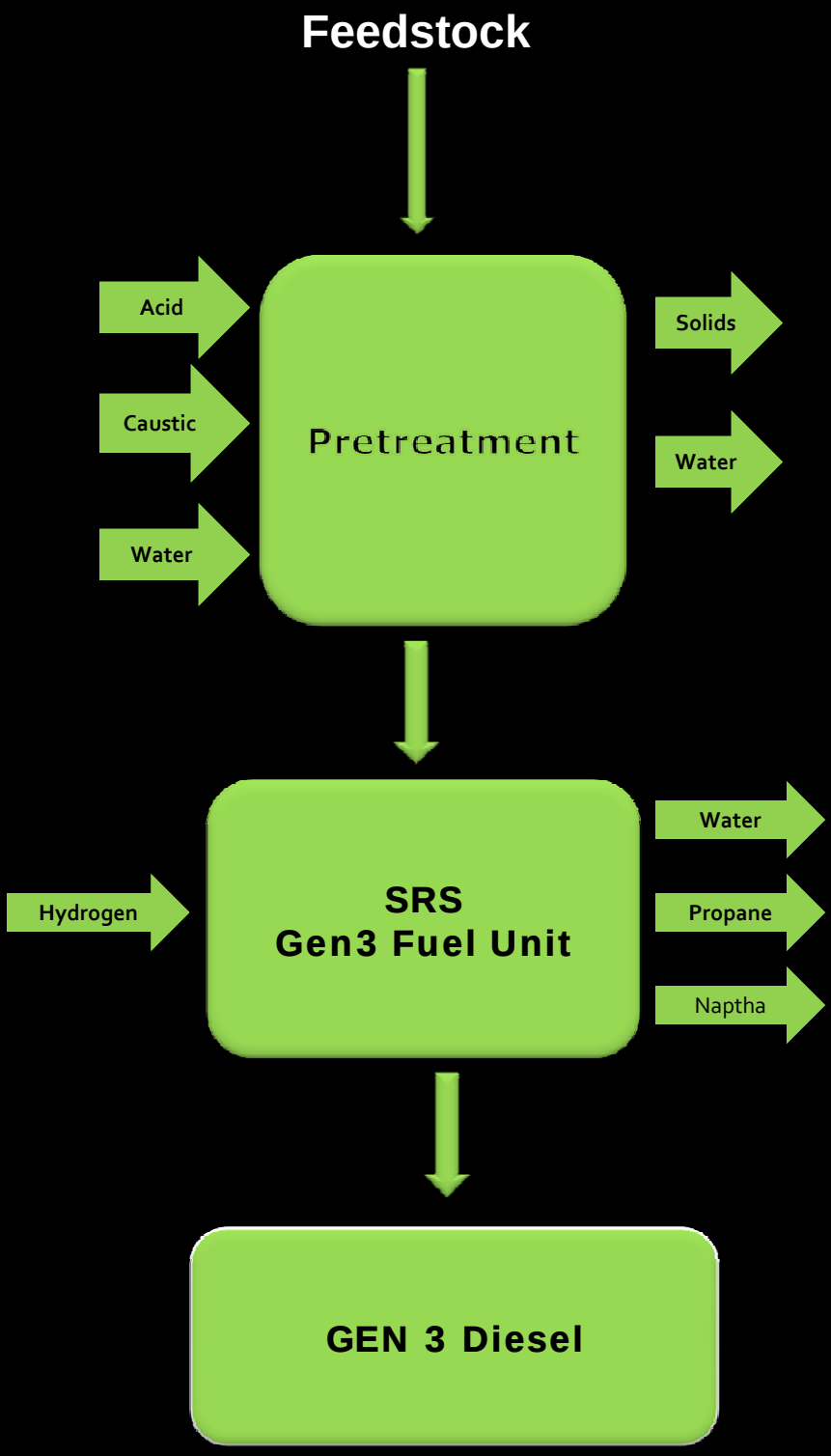
- Hydrocracking is a process that produces renewable diesel fuel that has the same chemical properties of petroleum diesel
- Just like Biodiesel, Gen3D starts off with the same feedstock however it's the process that produces two completely different fuels with different properties making the Gen3D a fuel indistinguishable from petroleum diesel.
- No glycerin byproduct




# Gen3D is BETTER!!

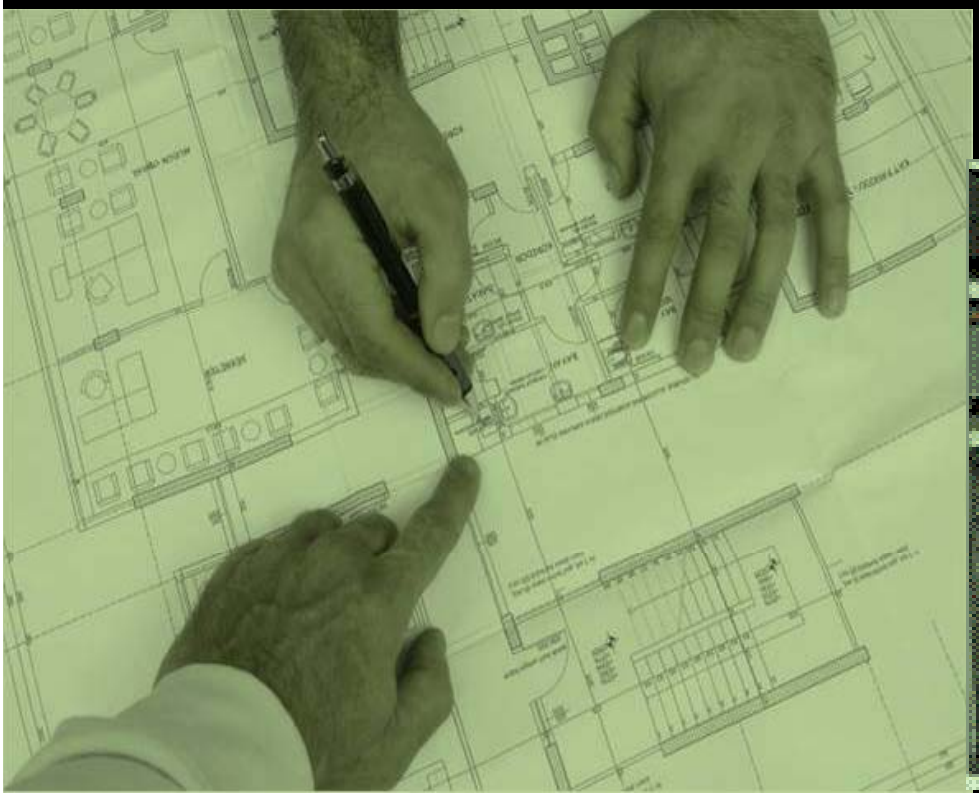
| | Biodiesel | Petroleum Diesel | Gen3D |
|---|---|---|---|
| Specific Gravity | 0.88 | 0.84 | 0.78 |
| Cloud Point, ºC | -5 to +15 | -5 | -20 to +10 |
| Cetane | 50-65 | 40-52 | 70-90 |
| Sulfur (ppm) | ‹ 2 | ‹ 10 | ‹ 2 |
| Energy Density, MJ/kg | 38 | 43 | 44 |
| Polyaromatics, vol % | 0 | 4-12 | 0 |
| Color | Light to Dark Yellow | Clear | Clear |
| Oxidative Stability | Poor | Baseline | Baseline |
| Oxygen Content (%) | 11 | 0 | 0 |

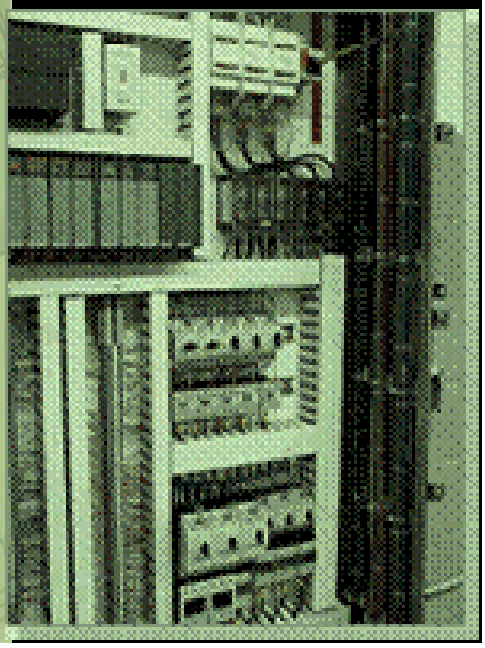
# Process Flow Chart



# *Why SRS' Gen3D Renewable Diesel?*

- Small footprint
- Fully automated, continuous flow
- Lowest energy utilizing plants in the industry
- State-of-the art control systems





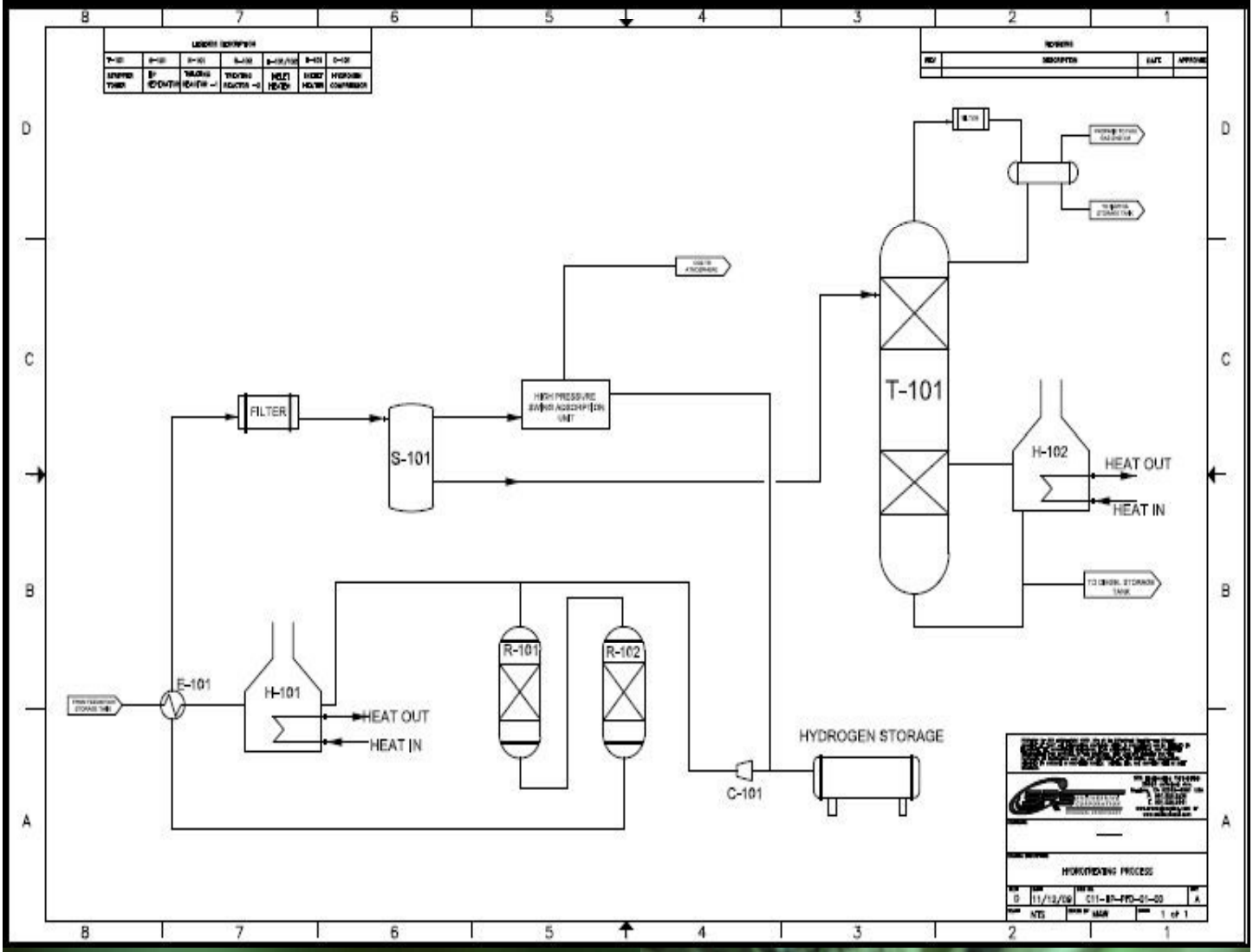
# *The Future of Feedstock*

It is important to consider and utilize feedstock that do not impact the world food source.

Gen3D is capable of utilizing the most inferior feedstock such as

- Waste Vegetable Oil (WVO)
- Chicken Fat and Chicken Renderings
- Beef Tallow
- Jatropha
- Palm
- Algae

# Process Design




# *Renewable Diesel FAQ's*

## 1. What qualifies as a renewable fuel?

Generally, renewable fuels must be produced from plant or animal products or wastes, as opposed to fossil fuel sources. Valid renewable fuels include:

- ethanol made from starch seeds, sugar, or cellulosic materials;
- biodiesel (mono-alkyl esters); and
- Non-ester renewable diesel.

## 2. How does the Energy Policy Act define renewable fuel?

The Energy Policy Act of 2005 (AKA "2005 Energy Act") defined "Renewable Diesel" as diesel fuel derived from biomass using a thermal depolymerization process that meets:

1. The registration requirements for fuel and fuel additives established by the EPA under Section 211 of the Clean Air Act
2. The requirements of the American Society of Testing ("ASTM") D-975 (for petroleum diesel fuel) or D-396 (for home heating oil).

## 3. How will renewable fuel affect air quality?

EPA estimates that the RFS program will cut petroleum use by up to 3.9 billion gallons and greenhouse-gas emissions by up to 13.1 million metric tons annually by 2012 - the equivalent of eliminating the greenhouse-gas emissions of 2.3 million cars.

## 4. Will renewable fuel differ in smell or appearance?

The addition of renewable fuel to gasoline or diesel fuel might affect the appearance or odor of the fuel, but it should not affect its quality or performance.

# *Renewable Diesel FAQ's…Cont…*

### 5. Are all refiners required to produce renewable fuel blends?

Most refiners, blenders, and importers are required to use a minimum volume of renewable fuel each year beginning Sept. 1, 2007, and each year thereafter. Alternatively, they must buy credits from other companies that choose to use more than their required minimum volume. That minimum volume is determined as a percentage of the total volume of motor-vehicle fuel a company produces or imports, and will increase every year.

### 6. Will renewable fuel be more expensive than conventional fuel?

No one can predict with certainty the price of fuel at the pump. Many factors affect the sales price including production costs, crude oil's prices, taxes, inventory levels, and supply and demand. Geopolitical factors, weather, transportation, and economic events can also affect the sales price. Visit the Energy Information Administration for more information on fuel prices.

### 7. What is RFS?

RFS stands for Renewable Fuel Standard; a program implemented by the Environmental Protection Agency (EPA) to increase our nation's use of renewable fuels.

# *Renewable Diesel FAQ's…Cont…*

## 8. What is RINs?

RINs stands for Renewable Identification Number System. RIN in central to the RFS program and it is the currency for the RFS program for credits, trading, and use by obligated parties and renewable fuel exporters to demonstrate compliance as well as track the volumes of renewable fuels. A RIN is a 38-character numeric code that is generated by the producer or importer of renewable fuel representing gallons of renewable fuel produced/imported and assigned to batches of renewable fuel that are transferred (change of ownership) to others. RINs are valid for the calendar-generated or the following year.

A RIN code represents several pieces of information including:

(K) = whether or not a RIN is assigned to a batch of fuel (1=assigned / 2=unassigned)
(YYYY) = Year the batch is produced/imported
(CCCC) = Producing/importing company's registration information
(FFFFF) = Production facility registration information
(BBBBB) = Producer assigned batch number
(RR) = Equivalence Value for the renewable fuel (eg. biodiesel is 1.5 = "15")
(D) = Renewable type code (1=cellulosic ethanol / 2=non cellulosic ethanol fuel)
(SSSSSSSS) = RIN block starting number
(EEEEEEEE) = RIN block ending number

*To get more information on RINs and RFS, go to*
*http://www.epa.gov/otaq/fuels/renewablefuels/index.htm*

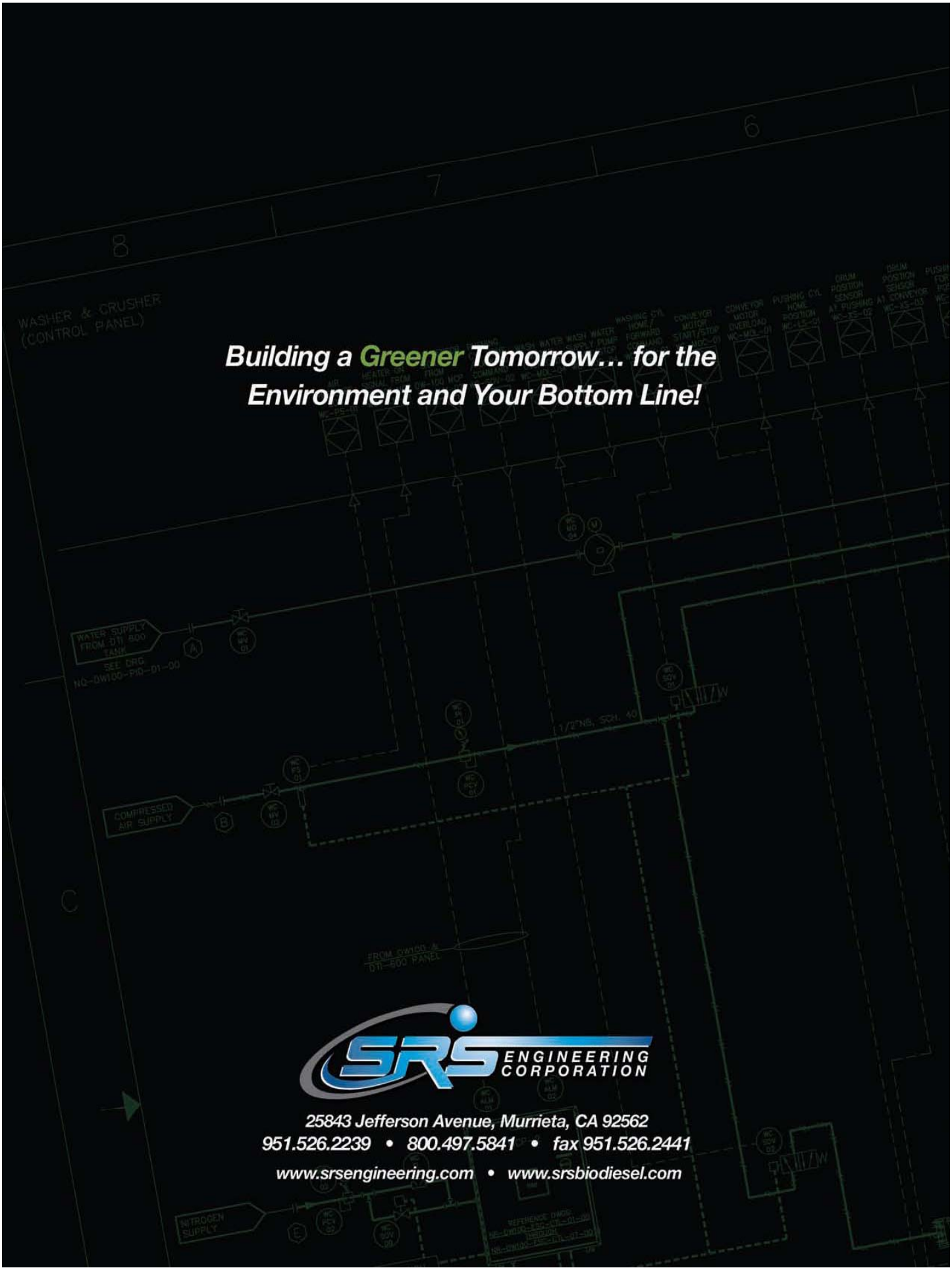
# *Renewable Diesel FAQ's…Cont…*

9. How do I establish the RFS value for my fuel?

| Fuel | RINs |
|---|---|
| 1 gallon corn ethanol | 1 gallon – RINs |
| 1 gallon biobutanol | 1.3 gallon – RINs |
| 1 gallon biodiesel (mono-alkylester) | 1.5 gallon – RINs |
| 1 gallon non-ester renewable diesel | 1.7 gallon – RINs |
| 1 gallon cellulosic ethanol | 2.5 gallon – RINs |
| 1 gallon waste-derived ethanol | 2.5 gallon - RINs |

10. What is the Executive Order for the use and production of biofuels?
The order states that California shall produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050

11. What is the Executive Order for Low Carbon Fuel Standard (LCFS)?
The Order is to reduce at least 10 percent of the carbon intensity of California's transportation fuels by 2020. Early action item with a regulation to be adopted and implemented by 2010.



***Building a Greener Tomorrow… for the Environment and Your Bottom Line!***

SRS ENGINEERING CORPORATION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