



## FRU 1000 Fatty acid Reduction Unit

### Oil Pre-treatment Machine

#### FEEDSTOCKS FOR BIODIESEL PRODUCTION

The selection of appropriate feedstock plays an important role in the planning of profitable biodiesel production.

Many existing biodiesel facilities require high-quality, expensive raw materials, such as virgin vegetable oils. Some virgin oils can contain up to 5% FFAs.

Other feedstocks such as oils, not suitable for human consumption, or used edible oils and animal tallow can be employed for profitable biodiesel production, due to their lower cost and abundance. Used Edible Oils typically have between 3-4% FFAs.

Animal fats present disposal problems in many parts of the world. Current regulations preventing animal by-products for animal consumption came about due to the risks of cross contamination of potential health hazards. The use of inexpensive animal fats for the production of biodiesel, presents a safe & profitable solution to this dilemma.

**Alternative feedstocks** possess varying chemical and physical compositions which **require FRU treatment** before they are acceptable for conversion to biodiesel fuel.

#### CONSIDERATIONS FOR LOW QUALITY OILS

- Untreated **high FFAs** can lead to the formation of soaps and higher consumption of catalyst.
- **Soap formation** makes biodiesel washing more difficult and will require more frequent maintenance.
- **Increased catalyst usage** increases salts and increases water usage.
- **Increased salts** require **increased acid** used to neutralize the pH.
- The **increase in costs associated with FRU processing** of lower quality feedstocks **is less than the costs of expensive virgin oils.**

FRU treatment is necessary to reduce the percentage of FFA and water content, which can cause the creation of unwanted semi-solid soap-based substances during biodiesel production.

BDT developed the FRU technology for the pretreatment of cheaper raw materials, especially those with higher FFA and water content, which are to be subsequently processed to high-quality biodiesel in the CPU 1000.

#### TECHNOLOGY FOR LOW COST FEEDSTOCK

##### FATTY ACID REDUCTION UNIT

- Designed for **24 hour operation**
- Production capacity of **1000 liters per hour** (8 million liters / year)
- Installed in a **20ft. ISO container** (6,1m x 2,4 m x 2,6 m)
- **Quality assurance testing** prior to delivery

##### FRU INPUT MATERIALS

The following information represents the **requirements of the feedstock oil and materials used in the FRU:**

- **Oils and fats** of vegetable or animal origin
- **FFA content up to 5%**
- **Water content up to 0.5%**
- **Clean, and free from solids**
- **Methanol** of Technical grade
- **KOH** (Potassium Hydroxide) Pure, non-carbonated
- **G – Phase 1 & 2** as from CPU

### FRU 1000 BENEFITS

- Acquisition of **less expensive feedstock**
- **Flexibility in using feedstocks of various compositions**
- **FFA and water content lowered to CPU input** parameter
- **Usage of the CPU by- product G-Phase 1 & 2**
- **Saving transport costs** in case if delivered oil has not agreed FFA of 1,5%
- **13 months guarantee**
- Ongoing **service contracts** available

#### Important:

Prior to processing in the FRU, oil must be analyzed for FFA and water content in facility laboratory.

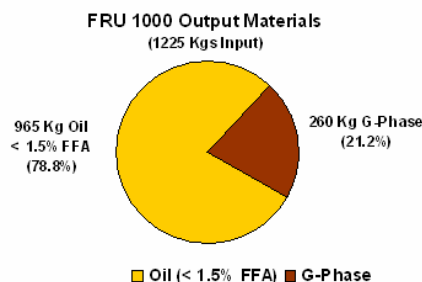
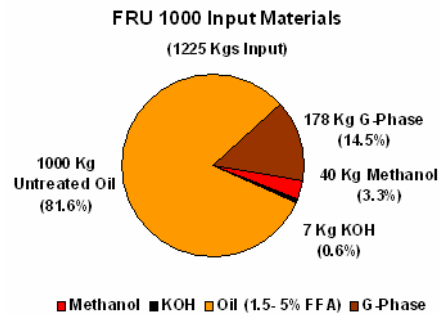
### PERSONNEL INVESTMENT IN SUCCESS

- **One operator** is required per shift (Can run CPU & FRU at same time) Operator must have good technical skills, knowledge about handling of chemicals and common sense.
- Special training for operation of FRU is included in the price.
- Employment requirements can vary with location. It is advised that local regulations are checked in advance.

### INFRASTRUCTURE REQUIRED

- A small production hall with constant working temperature
- Stand-Alone Option available
- Supply of electricity, water and compressed air
- Storage Tanks according to facility specifications
- 13 months guarantee
- Work Shop

### FRU INPUT AND OUTPUT DATA



#### FOR FURTHER INFORMATION ON BIODIESEL PRODUCTS CONTACT:

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**The FRU 1000 permits use of the cheapest feedstock oils, facilitating the most profitable biodiesel production available!**