Project # 7, BUSINESS BRIEF

FLEX-FUEL FURNACE/FIREPLACE

ABSTRACT:

Proposed high efficiency (condensing) flex-fuel furnace/fireplace (FFF) will be capable of burning different kinds of fuels, viz., wood (logs, chunks, chips, pellets, etc), coke/coal/charcoal, natural gas, and even electricity. However the standard and also the cheapest fuel, especially developed for these flux-fuel furnaces/fireplaces, would be composite fire-logs, made up of carbonaceous wastes of high calorific value---waste wood of every kind, waste recycled paper, cardboard, rags, woody crop residues, used engine/cooking oils, all kinds of combustible industrial wastes, etc. etc. Being unsuitable for recycling, they are usually destined for the landfill areas or for incinerators. Similarly these are mostly the kind of wastes that don't make a good feed stock for anaerobic digestion. This cheapest fuel for heating any kind of building would also have the flexibility to include coke/coal to deal with any severe shortage of natural gas or fire wood.

INTRODUCTION:

The availability of other resources of renewable energy especially solar and wind is 25% of the time at the most, at twice the cost. That is 6 hours or less per day, on the average, and half the cost is met through different kinds of government subsidies, to make them barely cost effective.. These flex-fuel fireplaces and furnaces, on the other hand, would have the greatest flexibility and availability, 24 hours of the day, and can also fill the wind and solar energy availability gaps. Moreover FFFs would be economically viable with no or little government support. FFFs are an important component of a Comprehensive Renewable Energy Management System and would be a good starting point of the system. Different models of flex-fuel furnace/fireplace will be produced, along with the option of retrofitting the old furnaces/fireplaces. Advanced Models would be equipped with advanced chemical scrubbers to treat the flue gases for the cleanest possible emission and advanced air filters, and humidity controllers, for the best in-door air quality. Standard Models would be convertible to advanced models. Natural gas savings, because of these flex-fuel fireplaces/ furnaces, can be made available as compressed natural gas (CNG) cylinders, for use in cars and buses, which, is a cleaner alternative fuel.

Project Phases:

Logical sequence of the three phases of the project would be as following:

PHASE 1:

a) Carbonaceous Waste Composite fire logs testing and evaluation, with different wastes and additives, for efficient combustion; and designing of a waste composite fire log Production Plant
b) Retrofitting of at least one existing natural wood fireplace to convert it to Flex-fuel fireplace
c) Refinement of the Retrofitting Kit design, for dependable, efficient and trouble-free functioning
d) Commercial production and distribution of composite fire logs and Flex-fuel retrofitting system for natural wood fire places, through pre-screened HVAC contractors

PHASE 2:

a) Complete construction of at least one standard Flex-fuel fire place

b) Complete construction of at least one standard Flex-fuel furnace; refinement of the standard flex fuel furnace, for dependable and trouble free functioning
c) Commercial production and distribution system for standard FFF models through pre-screened HVAC contractors
d) Construction of a co-generation system for electricity production. Expansion of the co-generation system, to a multiple-effect generation system, (using a binary medium in a completely closed end loop and absorption technique). Designing and testing of a sterling engine. Both will use heat energy of the flex-fuel furnace. Exhaust heat will be used for space heating

PHASE 3:
a) Construction of an advanced model of Flex-fuel fire place with advanced chemical scrubber and advanced air cleaning system including humidity controller
b) Construction of 3 models of advanced Flex-fuel furnace with advanced air cleaning systems along with a humidity controller and advanced chemical scrubbers
c) Refining of multiple-effect generation system and sterling engine design.
d) Commercial production of standard and advanced models of Flex-fuel fire places, furnaces and multiple-effect generation system.

Customer Definition

Proposed environmentally friendly furnaces/fireplaces, with highest safety standards, will provide real relief in the ever-increasing energy costs. People with respiratory problems will appreciate the benefits of perfect climate control, along with savings in heating costs. This would be a strong incentive for all households, schools, colleges, hotels, rental property owners, etc.

Market Description, Size and Sales Strategy:

All homes, schools colleges, universities, hotels and commercial properties are potential customers. Demonstration in trade shows/expos and TV commercials can educate and convince people about energy cost savings and quality of indoor climate along with the better protection of outdoor environment.

Competition:

It is a new concept and can be protected by patents to secure the competitive position.

ADVANTAGES:

The main advantages can be summarized as following:

1. Environmentally friendly with no harmful emission and reduced carbon dioxide, emission.
2. Perfect indoor climate control a great relief from respiratory disorders.
3. Real relief in the ever-increasing energy costs, with highest safety standards.
4. Natural gas savings, because of these flex-fuel fireplaces and furnaces, can be made available as compressed natural gas (CNG) cylinders, for use in cars and buses, which, is a cleaner fuel than gasoline and diesel
5. Even if there is a big discovery of natural gas and natural gas becomes very cheap, flex-fuel furnace/fireplace owners would have nothing to lose. As flex-fuel furnace/fireplace is also a high-efficiency gas furnace.
6. Very advanced models would be co-generating models producing almost free electricity with almost the same amount of exhaust heat for space heat and water heating. {By using a sterling heat engine or a mini steam turbine with a closed end loop.

Discussion:

Phase I is the crucial part of this big project. Federal Government grant (SBIR or STTR) can make it possible. As a matter of fact this project is the most deserving and legitimate case for government grant. We must focus our attention and do everything possible to present the case eloquently, in the most convincing way and appropriate format. Success of the first phase can establish the usefulness, credibility and confidence of angel investors/venture capitalists and convince them to invest for the following phases, making the whole project successful. This would consequently lead to the success of the ***Comprehensive Renewable Energy Management System.*** *The eventual success of the comprehensive system would be a big break through in the field of energy, greatly reducing the stress and intensity of the present energy crisis and its results or effects would be tangible.*