GIANT KING™ GRASS

Energy Crop to Replace Coal in Electric Power Plants, Produce Bio-methane & Cellulosic Biofuels

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VIASPACE

- Headquarters in Irvine, California USA
- A public company listed on the US OTC Bulletin Board with stock symbol VSPC

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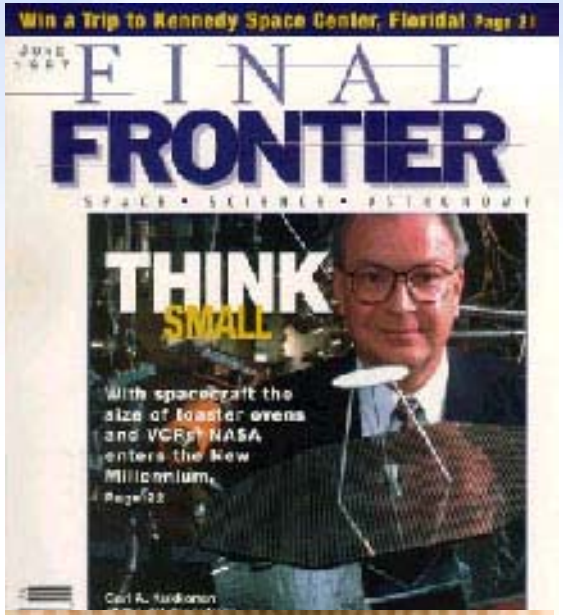
CEO Background



Kukkonen with Al Gore

Dr. Carl Kukkonen

2005 – present **VIASPACE Inc. CEO**
-Publicly traded on the OTC BB symbol VSPC

1998-2005 **ViaSpace Technologies (incubator)**
- Founded and led 7 startup companies

1984-1998 **NASA/Caltech Jet Propulsion Laboratory**
Director, Center for Space Microelectronics & Manager of Supercomputing
- Led staff of 250 with annual budget of $70M
- On review boards of 14 leading universities

1977-1984 **Ford Motor Company,**
Principal Research Scientist and Engineer
- Ford's expert on hydrogen as an alternative motor fuel
- Developed new direct injection diesel engine

1975-1977 **Purdue University**
Postdoctoral Research Fellow

1975 **Cornell University**
PhD, Physics

VIASPACE is a Biomass Provider

- Growing Giant King Grass in southern China and seeking other opportunities

GIANT KING GRASS 3.5 m (12 ft) tall five months after first planting

Biomass Fuels- Feedstock Is Key

- Need very high-yield, large scale crops for efficient use of land and low cost
- Competition with food will not be allowed
- Agriculture and forestry waste are important sources, but not enough available
  - Price of waste will rise with increasing demand
- Dedicated energy crops required
  - Reliable, consistent quality supply at a known price
  - Not being tied to a food crop can have major logistical advantages such as just-in-time harvesting
- Biomass is bulky & difficult to ship long distances
  - Electric power plant, biogas facility, pellet mill or biofuel plant should be located near the plantation
  - Ship the electricity or processed product to the market

Compare Energy Crops

ENERGY CROP	YIELD (mt/ha)	ENERGY (MJ/kg)	PRICE ($US/mt)	ENERGY YIELD (GJ/ha)	CASH YIELD ($US/ha)
Switchgrass	25	17.9	50	448	1250
Miscanthus	39	17.9	50	698	1950
Jatropha	1.6-2.0	42	700	67-84	1120-1400
Palm Oil	3.5-5.0	42	700	147-210	2450-3500
Giant King Grass	100-135	18.4	50	1840-2484	5000-6750

Giant King Grass has highest mass, energy & financial yields

Grass yields are dry metric tons per hectare. Switchgrass and Miscanthus are grown in temperate regions. Giant King Grass is grown in tropical and subtropical regions with two or more harvests per year. Jatropha and Palm Oil are grown in tropical and subtropical regions. The grasses are suitable for direct combustion, bio-methane production and cellulosic biofuels such as ethanol. Jatropha and Palm Oil are used for bio-diesel. Comparison is illustrative only. All of these biomass crops are needed. **1 hectare=2.47 acres; 1 mt/ha=0.445 ton/acre**

Is There Enough Land on Earth?

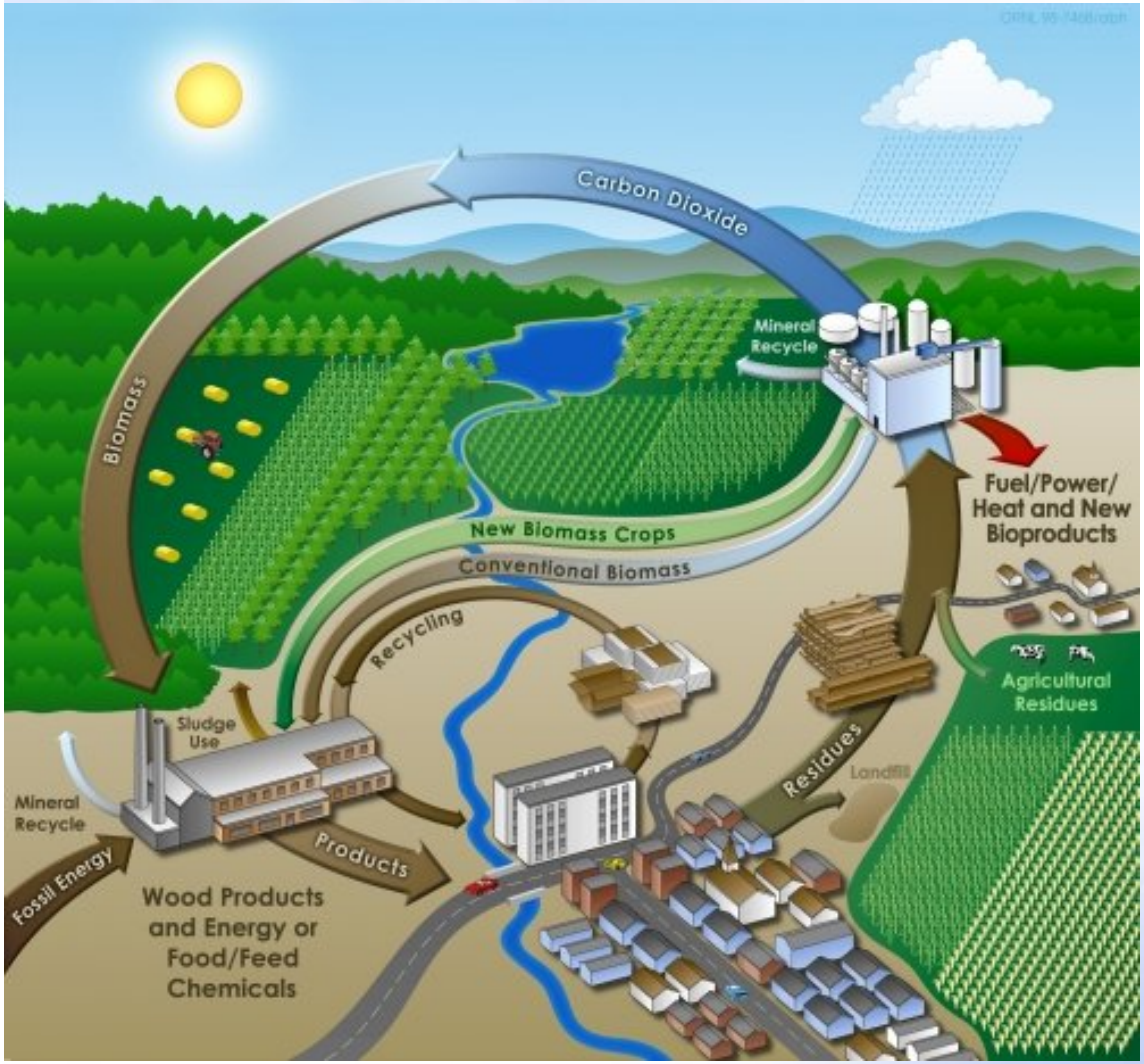
- What increase in cropland is needed to replace all coal which is used to generate 41% of electricity worldwide?

% Increase = 4.4/Yield x 100%

Yield is in metric tons per hectare per year at 20% moisture

- With Giant King Grass increase is 2.5-3.4%
  - This land should be available and also additional land for transportation fuels
- High yield is the key

Biomass is Low Carbon Fuel



- Carbon dioxide is emitted when burned in a power plant
- However the next crop of biomass absorbs the carbon dioxide during photosynthesis
  - Fertilizer, harvesting, & delivery contribute some carbon dioxide

Multiple Energy Markets for Giant King Grass

- Direct combustion in 100% biomass power plants (12-30 MW)
  - 30 MW power plant requires 600 tons of grass per day

- Dry and press into pellets to be co-fired with coal in existing coal power plants
  - Up to 20% co-firing

Multiple Energy Markets for Giant King Grass

- Feedstock for making bio-methane through anaerobic digestion
  - Carbon credits
  - Small-scale (1-4MW) local electricity

- Feedstock for liquid cellulosic biofuels
  - Ethanol, methanol, green gasoline, diesel

Additional Markets for Giant King Grass

- Clean process steam for industry including ethanol production
- Pressed “wood” products, paper
- Biomass derived chemicals and bio plastics

Why Giant King Grass?

- Highest yield of any energy crop
  - Extremely fast-growing, produces in the first year
  - Other crops may take 2-3 years before harvest
- Independently analyzed
  - Energy content is excellent
  - Suitable to be burned in biomass power plants
  - Bio-methane production is excellent

Planting in Southern China

Giant King Grass planted late April 2009

Giant King Grass in early August 2009

10 days after planting

First Year Harvest
November 10, 2009

Harvesting
November 10, 2009

Mechanical Harvesting-Corn

Video at http://www.youtube.com/watch?v=MqDQjpdm98I

Giant King Grass

- Perennial grass with very high yield
  - 375 metric ton/hectare (167 t/acre) (wet) suitable for biogas production
  - 125-180 mt/ha (56-80 t/acre) at 25% moisture suitable for power plant
  - 100–135 mt/ha (45-60 t/acre) dry suitable for pellet production
  - Much higher than other energy crops
- Best in tropical and subtropical areas
  - Does not survive long freeze
- Excellent energy of 18.4 MJ per dry kilogram (4402 kcal/kg=7900 Btu/lb)

Switchgrass, Giant King & Giant Reed

Giant King Grass

- Natural hybrid of 2 grasses
  - Not genetically modified
  - Not an invasive species
- Productive even in first year of planting
- Needs >100 days sunshine and >800mm rain or irrigation
- Can be grown in acidic or mildly saline soil
- No pesticide required in China

VIASPACE

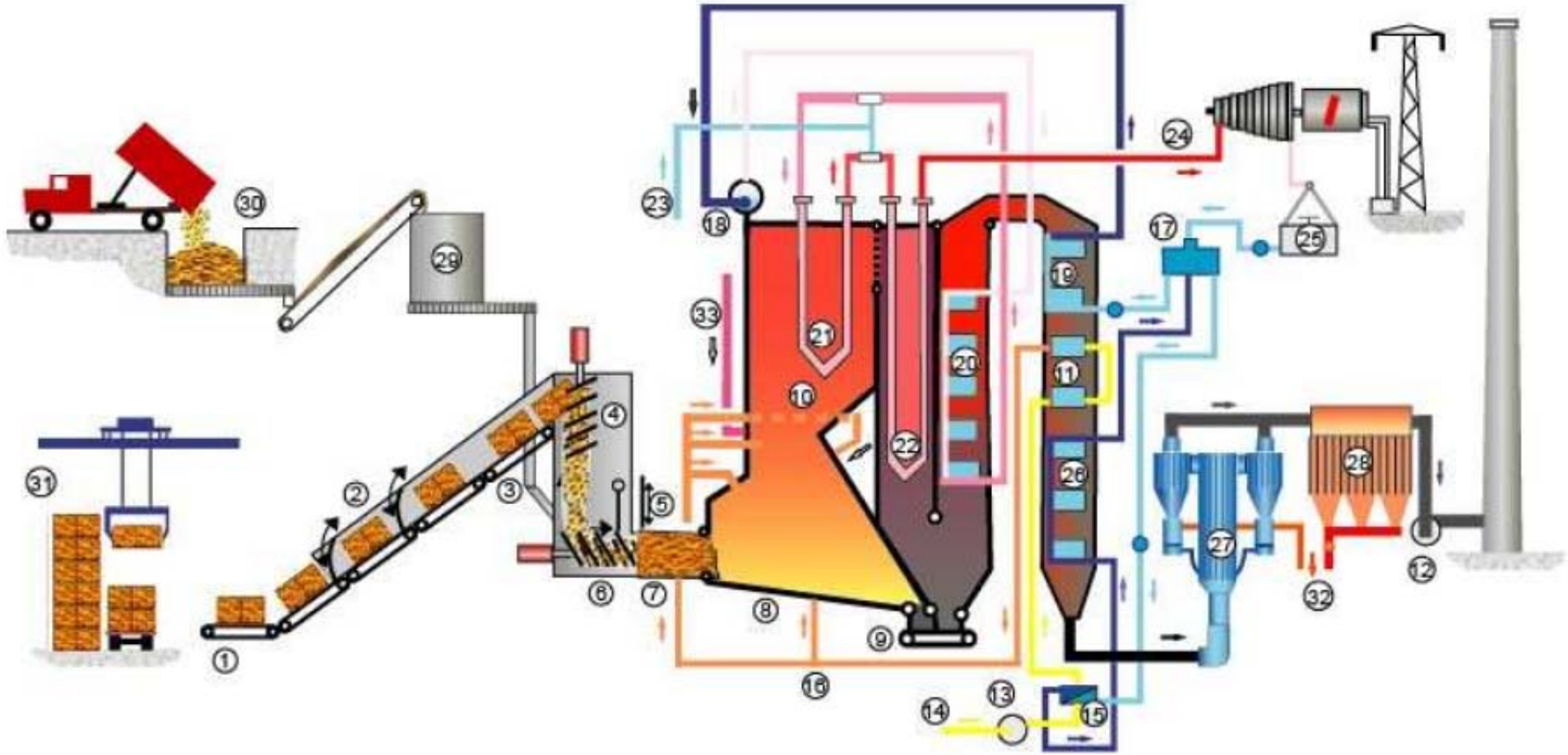
Seedlings planted less than three months ago

Biomass Power Plant Co-located with Grass

- Sell Giant King Grass to co-located 30 MW biomass power plant
  - 600 tonnes/per day grass
  - 80% utilization factor
  - 175,200 tonnes per year
- 1400 hectares needed
- $36 US/tonne in China for agricultural waste
  - Price has gone up as demand increased
- Stable fuel costs desired

DP Cleantech has 19 Biomass Power Plants Operating in China

Power Plant Optimized for Agricultural Waste/Corn Straw



Giant King Grass Has Properties Almost Identical to Corn Straw

Power plant collects corn waste from 50 km radius and transport requires baling. Baling may not be needed with co-located Giant King Grass plantation

Biomass Power Plant Partner

- DP Cleantech has built and operates19 power plants in China --all running on 100% biomass
  - One of the most experienced in the world
  - High efficiency technology from Denmark designed and optimized for biomass
  - Now fueled by agricultural waste such as corn straw, wheat straw, woodchips or rice husks
  - Giant King Grass is suitable for fuel
- Cost effective solution for turnkey biomass power plant
  - Available 18 months after all approvals
- DPCleanTech will build a power plant anywhere in the world– contact VIASPACE

Grass Pellets-Coal Replacement Opportunity

- Sell Giant King Grass pellets to be co-fired with coal
  - Dry & press into pellets
  - Requires investment in pellet making plant
  - Requires shipping to port
- $100 US/metric ton FOB port suitable for bulk shipment
- Many pellet customers including Europe

Fresh Sample for Bio-methane Analysis

Fresh 1 m grass sample vacuum packed and sent to Europe for bio-methane analysis

Bio-Methane by Anaerobic Digestion

- Giant King Grass has high methane yield
  - 91 L per kilogram of fresh grass
  - 0.36 m^3/kg VS
  - Compared to 0.22 for municipal solid waste and 0.21 for rice straw
- Revenue from methane electricity generation, carbon credits and fertilizer production

Giant King Grass Environmental

- High yield allows minimal land impact
  - Grows on marginal land
  - World Wildlife Foundation estimates that “250-800 M Ha of additional agricultural land could be brought into production without encroaching upon areas of high ecological or social value”
- Minimal need for pesticides and modest fertilizer use are good for the environment
- Can be intercropped with Jatropha or oil palm for biodiversity
- Low-carbon fuel with less sulfur, mercury and arsenic emissions than coal

Giant King Grass Economic Benefits

- Fuel and feedstock costs are crucial for power or biofuel plant profitability
- Giant King Grass can meet cost targets for direct combustion, pellets, bio-methane and cellulosic biofuel production
- Giant King Grass provides consistent quality and a reliable source
  - Can be used in combination with agricultural waste for fuel security
- Energy projects generate carbon credits

Giant King Grass -Scalable & Sustainable Development

- Giant King Grass plantation co-located with a power plant, pellet mill, bio-methane or biofuel facility is a scalable business module that can be reproduced widely
  - Asia, India, Americas, Africa
- Provides local employment for farmers and power/processing plant operators
- Provides clean electricity for development
- Energy independence and security
- Hard cash from pellet exports

Messages from This Presentation

- There are many applications for biomass in addition to ethanol and biodiesel
  - Electricity generation, bio-methane, bio-chemicals, bioplastics, process steam
- If the biomass yield is high enough, there is enough land on earth to grow energy crops without impacting food and ecology
- Giant King Grass has the highest biomass and dollar yield of any energy crop

VIASPACE Summary

- VIASPACE is growing Giant King Grass in southern China
- Seeking to expand Giant King Grass cultivation under a joint venture or other arrangement in other areas of the world
- Grass plantation co-located with
  - Biomass power plant
  - Bio-methane facility
  - Biofuel plant
  - Pellet mill