

# Green Power

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*Over 25 Novel Technologies and Systems  
for Electrical Power, Water, and  
Environmental Protection*



Universal Technologies Corporation

# Power Generation Technologies & Cycles

UTC has developed over 25 Electrical Power Generation Cycles to achieve the maximum Thermal, Mechanical, and Electrical Efficiencies to minimize the Capital, Operational, and Maintenance costs to deliver higher margins.

## Power Generation Models & Cycles

### ***Mega Spiral Steam Cycles – MS<sup>2</sup>C Mega Star Cycles (999)***

#### ***Mega Star Cycle I – UTP 999 -100***

- Generates 50 - 75% more Electrical Power

#### ***Mega Star Cycle II – UTP 999 -200***

- Generates 75 – 100 % more Electrical Power

#### ***Mega Star Cycle III – UTP 999 -300***

- Generates 100 - 150% more Electrical Power

### ***Steam & Helical Cycles (888) – With Spiralflexx***

- Applications in IGCC & Related Power Plants
- Application in Gas to Liquid Fuel Plants

### ***Helical & Spiral Cycles (777) – With Spiralflexx***

- A combination of Low Level and Medium Level Heat Recovery for Enhanced Power Generation
- Application in Autos & Locomotives
- Application in Aviation & Aerospace

### ***Ultimate Spiral Cycles (666) – With Spiralflexx***

- Generate Electrical Power, Refrigeration, and Cooling

### ***Hybrid Spiral Cycles (555) – With Spiralflexx***

- Installed in conjunction with existing Gas Turbine/ Steam Turbine systems to capture waste heat and steam condensing heat
- Generates up to 25 – 50 % more Electrical Power without consuming additional fuel

### ***Cascading Power Cycles (444) – With Spiralflexx***

- Similar To Single and Double Cycles and can convert any low , medium, and high level heat into Electrical Power
- Generates about 10 – 20 % more Electrical Power without using additional fuel

# Fossil Fuels Plants - New or Existing

## Pollution Free & Fuel Free Additional 25 – 50 % Power Generation

(NO IMPACT ON THE CURRENT OPERATION ---- 100 % CLEAN & GREEN ELECTRICAL POWER GENERATION)

- Single Cycle Power Plants
- Co – Generation
- IGCC Power Plants
- Coal Fired Power Plants
- Combined Cycles Power Plants
- PetCoke Power Plants
- Liquid Fuel Power Plants

# Nuclear Plants - New or Existing

## Pollution Free & Fuel Free Additional 10 – 20 % Power Generation

(NO IMPACT ON THE CURRENT OPERATION ---- 100 % CLEAN & GREEN ELECTRICAL POWER GENERATION)

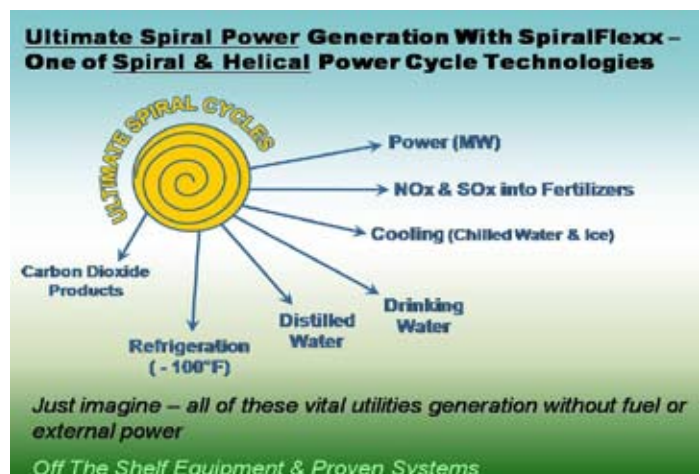
# Paramount Advantages - Fossil Fuels and Nuclear Power Plants

## POLLUTION FREE POWER GENERATION (The Steam Power Cycle runs in fully closed loop – Positive Plus)

- Elimination of Vacuum System and associated auxiliaries
- Elimination/Reduction of Deaeration system
- Elimination of Vacuum Condensate pumps
- Elimination of Boiler Feed Water Preheater
- Elimination/Reduction of Normal Water Make Up
- Elimination/Reduction of Water Treatment Chemicals
- Elimination of Normal Blow – Down
- Higher Thermal Efficiencies – Transforms into Additional Power Generation
- Zero Discharge ( NO Liquid Waste)
- Enhance Reliability
- The steam is condensed at a positive pressure. This corresponds to a higher temperature. The condensate is returned at the bubble temperature to the boiler. The dissolved salts (chemical hardness) do not precipitate out. As a result, this eliminates the formation of scale in the steam turbine and the steam condenser. These salts have inverted solubility curves: As the temperature is lowered to the ambient temperature, their solubility decreases. Precipitation begins. Thus, a hard scale is formed.
- Steam Turbine & Associated System do not require Maintenance.
- Plant Maintenance Savings by 70 – 80 %
- Savings in Capital Investment of 25 -35 % in New Plants

# Environmental Protection Technologies

With the application of UTC Scrubbing Technology, all the Heavy metals (Mercury, Lead, Cadmium, and Vanadium) are precipitated out and filtered. The SO<sub>x</sub> and NO<sub>x</sub> are converted into Specialty Products or Fertilizer. The flue gases or the off gases that leave the UTC Scrubber System are in a pristine state. As a result, they are rapidly dispersed to the surrounding environments.



# Water Production - New Water Source

In the United States, the power industry is the second largest consumer of water. UTC is the first to identify this water source and develop the Technology to produce large quantities of water.

- Large quantity of Water is produced during the combustion of Fossil Fuels and released to the Atmosphere along with Flue Gases. As the flue gases are cleaned by application of UTC's Technologies, the majority of water can be recovered by the application of UTC's AMB-Water Technology. The water produced is ultra pure demineralized water and can be used for industrial, irrigation, drinking water, and general purposes.

## Mega Spiral Steam Cycles (MS<sup>2</sup>C)

With the application of UTC's Mega Spiral Steam Cycles, the Electrical Power Generation is increased by 100 – 150% without the need for any additional fuel. The technologies can be implemented in all kinds of Power Plants. The Electrical Power is 100 % Clean and Green. Also, it has no impact on the current plant operation.

The Mega Spiral Steam Cycles are based on creativity and innovation.

These Power Generation Cycles and their features are based on the Spiral Vapors Collapsing Technology (SVCT).

***Again, UTC is the first to create and develop this novel technology for enhancing the Electrical Power Generation.***

- Spiral Vapors Collapsing Technology (SVCT)

SVCT converts low pressure/low temperature steam exhaust (Low BTU Contents) into high pressure/ high temperature (High BTU Contents) condensate in a closed loop. Latent heat of low pressure steam vapors converts into high pressure/ high temperature sensible heat in the liquid state.

## Mega Spiral Steam Cycles (MS<sup>2</sup>C) Features and Paramount Advantages

More than double the power of any Electrical Power Generation Facility – Operating at the highest Thermal, Mechanical, and Electrical Systems Efficiencies

- Natural gas combined cycle power plant
- Coal fired power plant
- Petcoke fired power plant
- Diesel / fuel oil power plant
- IGCC power plant
- Nuclear power plant

Elimination/Reduction most of the auxiliary systems such as:

- ◆ Cooling system
- ◆ Deaerator / vacuum system
- ◆ Boiler feed water heater
- ◆ Water treatment
- ◆ Waste water

Additional Advantages:

- About 75 – 80% of the auxiliary power load can be redirected to transmission power lines
- Zero thermal pollution
- Zero liquid waste
- Steam Turbine & Associated System do not require Maintenance.
- Plant Maintenance Savings by 70 – 80 %
- Savings in Capital Investment of 30 - 45 % in New Plants

***Imagination is the Limit***



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