

The solution to pollution: Quantum Tech

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Executive summary

Waste disposal on a massive scale has become a huge concern for the global community, providing enormous opportunities for environmental companies. Quantum Tech™ (QT), a Texas corporation, has developed a revolutionary new recycling process that completely converts 100% of *any* non-radioactive liquid or solid organic material into a variety of profitable commercial end-products such as methanol, acetic acid, carbon black, hydrogen and electricity.

What makes the QT Recycling system truly unique is that it accomplishes 100% destruction while recovering 100% of the chemical components of the waste stream with absolutely *no* resulting emissions or harmful residuals. No other technology in the world can make this claim.

Hazardous waste materials that the QT Recycling system can use as feedstock for conversion include benzene, carbon tetra-chloride, PCB's, paint thinners, industrial and household solvents, all organic metals and non-metal residues, medical and chemical waste and all biological warfare materials.

The QT Recycling system can also use as feedstock all *non-hazardous* materials, including used motor oil, municipal sewage, oil refinery residues, plastics, tires, wood, tar, rubber, diapers, styrofoam, household garbage, agricultural waste and industrial sludge.

QT is committed to advancing its patented technology for treatment of a broad spectrum of non-radioactive organic wastes and production of valuable, non-polluting end-products. QT's mission is to impact the global waste problem by providing a viable solution to waste disposal and a valuable source of energy to create a healthier environment for earth and its inhabitants.

QT is currently seeking an initial investment of US\$ 62.6 million to build the first of several recycling plants in Texas, the largest producer of hazardous waste in the United States. After the initial hazardous waste plant in Houston is fully operational and returning a profit, investment of US\$ 250 to 500 million will be sought for construction of additional plants.

Patenting, testing and EPA approval

The QT Recycling technology is fully patented (See Appendix I, Patent Numbers: 5,138,959, 4,896,614 and 5,010,829). QT has completed a three-year test period in Houston for hazardous waste and in Taiwan for non-hazardous waste.

During the approval process, the Environmental Protection Agency (EPA) suggested that QT use benzene as the sample waste product when testing its technology for destruction of hazardous wastes. This is because benzene is particularly difficult to process with no remaining trace residues. Test results confirmed that:

"The destruction removal efficiency (D.R.E.) was calculated at 99.9999% or greater," with no emissions or harmful residuals.

The QT Recycling system has exceeded all EPA requirements for pollution control and has been classified by the EPA as the first full recycler of hazardous waste in the world. (EPA Permit # TXD 982556664-1, TWC Permit # HW50259-001 (See Appendix II.)

The Texas Natural Resource Conservation Commission (TNRCC) has monitored QT's nascent industry as part of its environmental protection responsibility. The findings were unequivocal:

In the monitoring and analysis by two different independent laboratories on several occasions, they were able to detect no emissions during operation of the system, and no contaminants of any kind in the carbon residues or the system's water. Not even contaminants that may have existed in the entering water supply could be detected in end products.

QT has been issued the first and only permit of its kind by the EPA/TNRCC and may operate for a period of eight years with exemption status from Texas Hazardous Waste Destruction rules and regulations. (See Appendix II.)

The QT recycling technology

QT has developed its process based on three patents held by Mr. Raja Kulkarni for disposal of waste containing simple and complex hydrocarbons. The QT Recycling System utilises a plasma arc operated in a vacuum. Two electrodes are precisely shaped and distanced, a highly ionisable gas is passed between them, and a high voltage discharge occurs between the electrodes causing a high-temperature plasma field to be created. Waste materials are shredded and heated to a gaseous state. Metals are sterilised and cracked out to be sold commercially. All remaining gases are then passed through the precisely controlled thermal plasma field inside the reaction chamber where they are heated to temperatures as high as 30,000° Fahrenheit. At these high temperatures, in the absence of oxygen, the constituent molecules dissociate, resulting in the complete dissolution of the original organic waste material.

The key component of the Quantum Tech unit is the plasma arc operated in a vacuum environment. A plasma arc is a field of electronically ionised (nitrogen) molecules. The temperature of the plasma field is between 5,000 degrees F. and 30,000 degrees F. throughout the reaction chamber. At these temperatures, in the absence of oxygen, chemical bonds dissolve and feed materials are reduced to elemental forms. Waste materials would typically produce carbon, hydrogen, chlorine, nitrogen, sulphur and oxygen. Quantum Tech has developed a method of injecting water at a critical point downstream of the reaction chamber, causing a "water gas" reaction to occur. This results in the formation of carbon monoxide (CO) and hydrogen (H). The undesirable elements, chlorine and sulphur, are scrubbed out of the gas stream. The nitrogen gas is then separated out by molecular sieves and returned to plasma generation. This application eliminates the need for further treatment of the gas stream to remove hazardous characteristics. The resulting synthesis gases may then be used for commercial production of electricity, methanol, or any number of other market driven end products.