



Generating energy from movement of sewage

Student Award

Consolation

Master Moxad Pinakin Thaker

Ahmedabad, Gujarat

Background

Millions of tonnes of sewage flows in urban areas and is generally considered useless. Moxad has a conceptual model to generate multiple utilities including electricity from this sewage.

Moxad Thaker (15 years), studies in tenth standard at Sheth C. N. Vidyalaya, a renowned school of Ahmedabad. He lives with his parents and a younger sister. His father Pinakin Thaker is a scientist with ISRO and his mother Falguniben is a homemaker. A single incident can change a person's life and this was true for Moxad too.

When Moxad was four years old, he fell off the balcony of their house, which was at first floor and sustained a head injury. This worried his parents and they started buying books for him so that he would stay indoors and not go out to play. Over time, he became devoted to books and the passion of reading on varied subjects helped him to think differently and make new things; reading became a compulsion for the little boy.

His interest in science made him think of various options that can be useful at time of war where time is a critical factor. He had an idea of combining depth charge, torpedo and canon balls in a single weapon for our Army that would create greater impact and save time during war. He managed to meet the president, Dr. APJ Abdul Kalam at Ahmedabad airport to discuss this idea in February 2002.

Being well read and a brilliant student, he has won prizes in quizzes at city, district and state levels. His parents feel that he should concentrate on his studies as much as on the new ideas so that he can achieve his dream of becoming a scientist. He is interested in robotics and nano technology and plans to pursue studies in one of these areas and serve the nation by facilitating reduction of poverty and bringing peace to the country

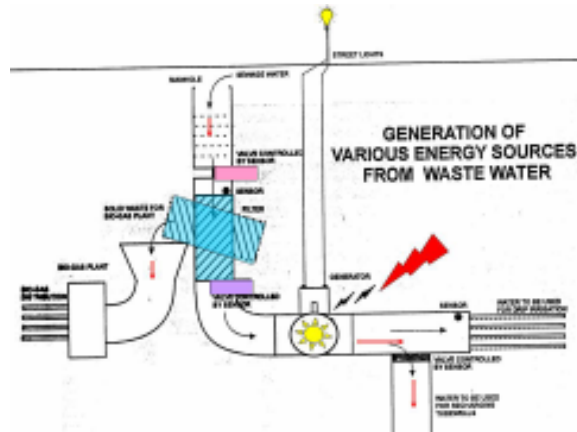
Genesis

In 2004, when Moxad was in eighth standard, his teacher asked class to participate in an upcoming Science fair with a novel idea. It rained heavily that day as Moxad was returning home. The roads were

filled with water and it became very difficult for him to pedal his bicycle. This made him wonder if the energy of drainage water could be converted into electrical energy and felt that if this could be done, it could help solve the electricity problem of India. He worked on a comprehensive idea of using sewage to do many things including generation of electricity and designed a scaled down working model, which he presented in a science fair and won a prize. Eventually the idea got noticed at national level.

Innovation details

In his design, valves and sensors are located at each junction node for control and calibration. The sewage water is first filtered at source so that solid waste is separated and is used for biogas while the filtered water is used to run a turbine coupled with a generator to produce electrical energy and the water flowing out is partly issued for drip irrigation and partly for recharging the ground water. The novelty of this idea lies in using the sewage water for multiple critical needs, all integrated in a multi-stage flow.



The electricity thus generated can be used directly for supplying to and can be stored as well.

The filtered water can also be purified by a solar-based system and used as portable water.

Conventionally, sewage waste is used for direct charging of biogas plants. Filtration removes solid and concentrates the degradable material, which in turn increases gas production as well as methane content.

The innovative idea can be installed in municipal drainage networks, urban canals, and sewage networks in huge factories.

