MedX RFA Cover Letter

Ignis: Medical Waste Incineration

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Abstract

Hospitals around the world struggle to safely, effectively, and efficiently dispose of their medical waste. Concerns regarding medical waste disposal include the sterility of the waste after treatment, the safety risks involved in operation of the treatment apparatus, its environmental impact, availability of the treatment mechanism, and its cost of use. While some systems meet many of these requirements, it is often difficult to meet all of them. As is the case at Hospital San Rafaél Arcángel in Liberia, Guanacaste, Costa Rica, it is all too frequent the none of these requirements are achieved. The result is poorly treated medical waste, disposed of in a costly manner and left to endanger hospital staff, the surrounding community, and the environment as a whole.

The *Ignis* Medical Waste Incineration team is in the process of addressing the issues of medical waste incineration, especially in the developing world. Under the guidance of Dr. Emmanual Gonzalez of Hospital San Rafaél Arcángel, the team has identified the necessities of a medical waste treatment apparatus and determined an appropriate budgetary scale for the system.

Starting in August of 2018, the *Ignis* team analyzed competitive options for medical waste disposal and explored intellectual property relating to the process. Through research and interviews with hospital staff such as Dr. Gonzalez, the team strove to perform a market analysis, detail the needs of medical waste disposal systems, and translate these into a concrete set of requirements and constraints.

Based on this information, the design process will begin in October of 2018. This process will include functional decomposition and system level design, concept generation and selection, and a number of quality control and decision making processes, such as the use of Pugh matrices and House of Quality Functional Specification matrices. Finally, during this time, an effective testing methodology will be designed.

Physical prototyping will begin in January of 2019 until a mid- to high-fidelity prototype has been generated and is ready for testing starting in March of 2019. As the testing process draws to a close in April of 2019, a final design will be selected for further development and all necessary documentation of the process will be completed. A working, tested, and thoroughly document prototype should available by early May of 2019.