CATEGORY

TALKING TO: DAS AJEE KAMATH CMD, GYATK

INTERVIEWS / JANUARY

Gyatk, a Kochi-based company engaged in innovations and prototypes of automotive engines, has now developed a fuel hybrid engine. The product was one of just eight innovations amongst 1,000 competitors to win the India Innovation Growth Program (IIGP) Gold Medal from a panel of experts in technology commercialisation appointed by the IC2 Institute of The University of Texas at Austin. Gyatk is one of the IIGPs sponsored by the Department of Science & Technology - Government of India and Lockheed Martin Corporation. In this interview with ***Huned Contractor****, its founder Das Ajee Kamath speaks about the product and the company's future strategy*

What is RVCR technology-based engine that you have developed?

The RVCR technology provides for a commercially viable green solution to 21st century global fossil fuel concerns and energy paradox by making superior engineering products such as automotive engines, compressors and pumps compared to conventional equivalents in terms of cost, utility and carbon footprint. RVCR technology marks a quantum leap in combustion efficiency using roto dynamic analogous variation of combustion chamber volume/pressure; hence, introducing the first-ever complete three element controls in combustion mechanism. This includes quantitative and qualitative fuel control; heat and temperature control; and air/charge pressure/density control. RVCR is applicable in almost every aspect of surface and road transport including automobiles, tractors, forklifts, and off-highway equipment.

How much time did it take to developing this technology?

In 2005, we took a major step in development of the technology by initiating a RVCR-based prototype IC engine development project. In 2006, Gyatk secured funds through an angel funding scheme by KSIDC and grants from DSIR for its business processes and product development projects.
Further, by 2007, we achieved a major milestone in the commercialisation of the technology by way of successfully gaining the first customer in licensing the IP rights and partnering with an automotive major in the country for developing an IC engine based on RVCR technology.

By 2010, Gyatk successfully carried out a technology grounding sense check exercise at the highest platform, namely the Engine Expo at Stuttgart in Germany, which led to a major engagement in the product development project for commercial use. We, however, cannot reveal the name of the client due to a confidentiality agreement. Gyatk is currently on course to standardize its technical and business operations for preparedness towards undertaking multiple parallel product development projects for further expansion of its market base in various applications of RVCR technology.

How does this technology work in terms of being a fuel hybrid engine?

It provides a quantum leap in combustion control by achieving analogous variation in compression ratio through a fuel range from light fuels like LPG (6:1) to heavy fuel (22:1). The compression ratio (CR) range is unlimited and CR can be dynamically varied throughout the entire load range. It opens up the rigid constraints in IC engine and opens up entirely new dimensions in combustion control, which makes the whole fuel burning process completely flexible. The compression pressure manipulation during operation opens the field for a number of possibilities.

Further, the compression ratio can be varied all through the desired combustion ranges of different fuels since the compression ratio is also fuel-specific, as for example for petrol to burn inside an engine requires a compression ratio different from that required by diesel. The variation in the compression enables choice between various combustion patterns, thus enabling enhanced emissions control. It also provides for enhanced fuel efficiency. the RVCR mechanism provides for constant volume heat addition through a finite angular range during the in gas cycle. Additionally, when the engine is switched over to diesel/compression ignition cycle, the heat addition process is switched over to constant pressure. Also, the ability to achieve higher peak pressures at low loads and reduction in peak loads helps optimize peak pressures throughout the load range.

And finally, it helps in downsizing an engine because the rotary mechanism eliminates of number of components with respect to its conventional equivalents, hence resulting in smaller and more compact engines.

What is your business strategy for this invention?

Currently we are in our second phase of capacity building and expanding our market base in the automotive segment abroad and untapped domestic markets. We are seeking strategic investments and partnerships in our product development projects and business expansion process.

We have exclusive 100 per cent ownership of IP rights by way of granted patents in 51 countries worldwide for a disruptive high potential multi-faceted invention. A global automotive major has been our first strategic customer licensee of technology. With no prior existing standard technology development scheme, Gyatk demonstrated its capability of taking the concept to end product from design conceptualisation, modelling, mechanism development and analysis, manufacturing, assembling and testing in two and a half years to satisfactorily project the viability of RVCR for gaining the confidence of its first customer licensee, thus proving our engineering credential.

Do you feel that this technology holds potential?

Oil and economic structures are facing a wrath of environment concerns and additional government regulatory pressure. Many governments are now focusing on non-fossil fuel-based energy systems. However, the existing cycle of investments in oil economy and the massive momentum and complete dependency on fossil fuel is resistant to changes. In this environment the technology, which is adaptive to both fossil fuel and green and zero emission fuel becomes very relevant as it satisfies both the conflicting concerns of the fossil fuel-dependent economies and the environment groups.

RVCR is a natural solution as it addresses this space, wherein it uses fossil fuel ever more efficiently and producing lesser carbon emissions while at the same it is flexible towards the usage of green fuels; hence bridging the gap between the two. RVCR is a potent technology that can get world economy unhooked from fossil fuel usage and yet be adaptable enough to revert back to fossil fuel usage as and when required. Therefore, I see it as a game-changer and the product will appeal to both established and emerging markets.

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