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Better by design

Innovation: *Shift your car to top gear at 20 kilometres per hour*

By N. Bhanutej/Mysore

**transformed Indica and Victor**

Drive my Indica," says Somender Singh, giving me the keys. The engine is noiseless and the power exhilarating. The wheel-spinning indicates that the car is tuned to race performance. It can go into top gear at speeds as low as 20 kilometres from where it moves to top speed in no time, even with the air conditioner on. There is no chugging or knocking. The fuel consumed is minimum, considering that the car can move in top gear through congested roads.

Technology in motion: Somender Singh with his

Singh's Indica (and his Victor motorbike) seems to have all the characteristics one dreamed of in a single machine thanks to his 'design to improve turbulence in combustion chambers'. "The Indica you drove was this technology in motion," says Singh, who has a US patent (No. 6237579) for the design.

The technology is the result of decades of self-funded research in his garage (Garuda R&D) at home in Mysore, Karnataka. A self-made engineer who was a racing legend in the 70s and 80s, Singh has to his credit more than 1,500 flying hours in his three home-built ultralight aircraft powered by motorcycle engines. He has spent the better part of his life understanding engine designs and modifying them for extreme applications.

"Dreaming up an idea is one thing," says Singh. "Transforming that into reality is challenging. Patenting the idea in the US with no past experience is like scaling an unknown peak barefoot hoping it will be named after you." Helping him get the patent in 2001 were friends and racing associates Joe P. Joseph and Stephan G. Matzuk.

Singh and friends have approached market leaders such as Ford Global Technologies and Briggs & Stratton of the US, and Rotax Bombardier of Austria with the design. "Most companies have long-drawn procedures, which require you to sign a disclosure document, confidential waiver along with an unsolicited project proposal empowering them to test out the design without your involvement," he says. "People are reluctant to take new ideas that come from outside the industry and the scientific community."

It is frustrating, especially when he has transformed around 70 vehicles including the Ford Escort, Ikon, Opel Astra, Cielo, Matiz, Fiat Uno and Palio, the full range of Marutis and the older generation of automatic gear transmission cars besides every possible Indian bike one can think of.

Most of the manufacturers turned him down saying that 'our products are perfected and certified, hence any changes will require approval from our principals'. Some even said that he would lose his warranty because he had tampered with the engine.

Singh says that manufacturers are secretive about their upcoming products, "little realising that confined nuts like me will find more ways than one to better the performance as there is plenty of scope for improvement in products that are produced on a mass scale".

Today's refinements in engine, he argues, are restricted to electronic gadgetry, sensors and systems that support the main computer governing the engine management systems.

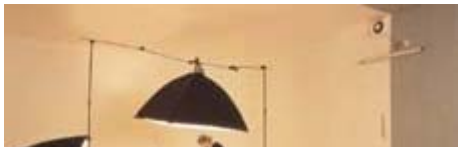
"The internals of the cylinder have not changed much since the early overhead valve designs except for additional valves, ports and twin igniters to improve performance," says Singh, whose design involves changes in the combustion chamber of the IC engines. All the air and fuel charge is compressed into and ignited in this chamber.

The result of this 'bang' inside the cylinder reflects on the engine's efficiency to burn fuel. Lab experiments show that Singh's design improves the thermal efficiencies of the engines. It also produces noticeable increase in torque and power along with low emissions of unburnt hydrocarbon, carbon-monoxide, carbondioxide and nitric oxides. "Most people in the industry and the scientific community doubt my claims," says Singh. "I will prove them wrong."



Shooting gallery

PHOTOGRAPHY: *Learn at Light and Life Academy*



R. Sunder has been shooting people for a long time. But one week at the Light and Life Academy in Ooty, he says, gave him an eye-opening experience. The people and fashion photographer



from Bangalore is all praise for the academy which offers scientific photography education.

The academy began in 2001 with a two-year postgraduate diploma and a number of short-duration workshops like the 'people photography workshop' which Sunder attended. It is now all set to start a four-year certificate course in professional photography, opening up new horizons for students who have passed the 12th standard. The academy hopes to become a Deemed University soon.

Founded by Iqbal Mohamed, an alumnus of the Brooks Institute of Photography, USA, and leading advertising photographer in India, the academy offers world-class photography education with state-of-the art facilities which include seven studios fully equipped with lights and accessories, daylight studio, digital studio, and black and white film processing and printing labs. The faculty comprises renowned photographers and teachers from India and abroad.

Light and Life Academy is an educational trust recognised by the Directorate of Technical Education, Tamil Nadu, and is supported by Eastman Kodak Company (USA), Kodak India, Lakshmi Machine Works (Coimbatore), Calumet Photographics (USA), Elinchrom Studio Flash Systems (Switzerland), Epson, Zen Task and Photo District News (USA).

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