

National Science Foundation
Small Business Innovation Research Program

PROJECT SUMMARY

NSF AWARD NO.

DMI-9461960

NAME OF FIRM	SensorData Technologies Inc.		
ADDRESS	43626 Utica Rd. Sterling Heights, MI 48314		
PRINCIPAL INVESTIGATOR (NAME AND TITLE)	Sherif S. Gindy Ph.D. (President)		
TITLE OF PROJECT	Optical Transfer of Data Between Rotating and Stationary Subsystems		
TOPIC TITLE	Civil and Mechanical Systems	TOPIC NUMBER AND SUBTOPIC LETTER	23 C
PROJECT SUMMARY			
<p>This Small Business Innovation Research Phase I project proposes an innovative solution to the <i>generic</i> problem of transfer of information, logical data and analog signals, between rotating and stationary members in a mechanical system. In particular it applies the solution to precision measurement of torque in a rotating shaft. The precision torque transducers available in the market are based on more than 20 years old technology, are costly to make, and require specialized equipment to recover the torque signal. They have a practical upper limit to shaft speed of about 25,000 RPM. The objective of this research is to develop a new technology for contact-less transfer of information between rotating and stationary members in a mechanical system. In particular, it will be directed to the goal of making precision contact-less torque transducers at lower cost which are suitable for speeds even up to 100,000 RPM. The approach to research is to process the analog torque signal on the rotating shaft where it is generated, and to optically communicate the result to the stationary subsystem. The goal of Phase I research is to build a test set-up to demonstrate the feasibility of the proposed concept. While the opportunity in this proposal is presented in terms of rotary shaft torque transducer application, the developed technology will be useful for measurement of other physical variables such as force, temperature, pressure, etc., in mechanical systems with moving parts.</p>			
<p>Potential Commercial Applications of the Research</p> <p>The proposed research will lead to a piece of hardware which will be a key element in transfer of information between rotating and stationary members of a mechanical system. It will find application in equipment used for product development in air craft, automobiles, heavy machinery, and durable goods industries. It has a potential for on-board applications in ships, aircraft, and automobiles, particularly in steering control of electric cars.</p>			
<p>KEY WORDS TO IDENTIFY RESEARCH OR TECHNOLOGY (8 MAXIMUM)</p> <p style="text-align: center;">Optical Data Transfer, Photoelectric Coupling, Torque Sensor/Transducer</p>			