

Message to the National Seminar on Global Trends in Concrete-Steel Composite Structures Design and Construction, Bangalore, Karnataka, India

The Business of Civil Engineering

Dr. Amartya Kumar Bhattacharya

BCE (Hons.) (Jadavpur), MTech (Civil) (IIT Kharagpur), PhD (Civil) (IIT Kharagpur), Cert.MTERM (AIT Bangkok), CEng(I), FIE, FACCE(I), FISH, FIWRS, FIPHE, FIAH, FAE, MIGS, MIGS – Kolkata Chapter, MIGS – Chennai Chapter, MISTE, MAHI, MISCA, MIAHS, MISTAM, MNSFMFP, MIIBE, MICI, MIEES, MCITP, MISRS, MISRMTT, MAGGS, MCSI, MIAENG, MMBSI, MBMSM

Chairman and Managing Director,

MultiSpectra Consultants,

23, Biplabi Ambika Chakraborty Sarani,

Kolkata – 700029, West Bengal, INDIA.

Vice President (East),

Association of Consulting Civil Engineers (India).

E-mail: dramartyakumar@gmail.com

Website: www.multispectraconsultants.com

The concept of design and construction of concrete-steel composite structures is not too innovative. We have the concept of steel I-sections encased in concrete being used as beams under special circumstances. However, mixing concrete elements and steel elements innovatively to form a structure is still ongoing process and new ideas are being implemented routinely. In a sense, there is no end to this sort of innovation and however much new concepts might be implemented, there is always scope for further innovation.

Since the ongoing innovation in mixed concrete and steel structures falls under under the ambit of innovation, let us look a little closely at the concepts of innovation within the overall ambit of innovation in the business of Civil Engineering. We start by looking at the sources of innovation. Only sources of innovation relevant to the business of Civil Engineering are considered herein.

A. Source: Incongruities.

- 1. Incongruous Economic Realities;**
- 2. The Incongruity between Reality and the Assumptions about It;**
- 3. The Incongruity between Perceived and Actual Customer Values and Expectations.**

B. Source: Process Need.

Successful Innovations based on Process Needs require five basic criteria:

- A self-contained process;**
- One 'weak' or 'missing' link;**
- A clear definition of the objective;**
- A clear specification for the solution;**
- Widespread realisation that 'there ought to be a better way', that is, high receptivity.**

C. Source: New Knowledge.

The Primary Characteristic of Knowledge-Based Innovation is that it has the Longest Lead Time of All Innovations. Knowledge-Based Innovation Requires

- 1. Careful Analysis of All the Necessary Factors;**
- 2. Clear Focus on the Strategic Position;**
- 3. Need to Practice Entrepreneurial Management.**

Certainly

- 1. Innovation is Work;**
- 2. To Succeed, Innovators must Build on their Strengths;**
- 3. Innovation has an Effect on Economy and Society.**

Finally, Strategy is an Innovation when it creates a Customer by

- 1. Creating Utility;**
- 2. Pricing - particularly relevant to the business of Civil Engineering;**
- 3. Adaptation to the Customer's Social and Economic Reality;**

4. Delivering What Represents True Value to the Customer -again, this is particularly relevant to the business of Civil Engineering.

Innovative development implies development in a manner that is well thought-out, that does not harm the environment, that can be sustained without the need to radically alter the development strategy due to insufficient thought-input during the process of formulating the development strategy and that is marked by wisdom in chalking out all steps of the development process.

In this context, the theme of this seminar - National Seminar on Global Trends in Concrete-Steel Composite Structures Design and Construction - is apt.

I wish the National Seminar on Global Trends in Concrete-Steel Composite Structures Design and Construction all success.

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