



## Reverse Engineering: Technology of Reinvention in Materials Science

By Dr. Wego Wang

**Short Course:** 27 Nov 2011, Fiesta Americana Condesa All Inclusive Resort, Cancun, Mexico

During the past decade reverse engineering has become a common and acceptable practice utilized by many aftermarket suppliers and even the original equipment manufacturers (OEMs). This course focuses on the application of modern technologies used to decode the design details and manufacturing processes of an existing part in the absence of the original design data. It emphasizes the real-life practice of reverse engineering in industries from both scientific and legal points of view. Attendees will learn the applicability and limitations of reverse engineering through case studies.

By attending this course, the attendees will be able to:

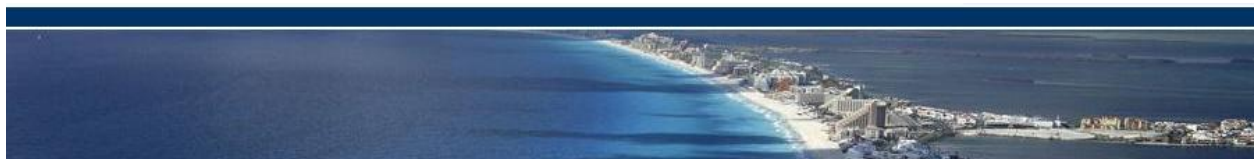
- Define the critical elements of reverse engineering
- Describe the measurements and analyses required to reinvent an OEM part by reverse engineering
- Evaluate the feasibility of a reverse engineering proposal or project

### Who Should Attend

This course is designed to assist individuals in various industries including, but not limited to, materials, metallurgical, energy, mechanical and manufacturing firms. Corporate senior executives, engineering managers, engineers, technicians from these firms; and government inspectors, sales managers, salespersons, lawyers and legal counselors will find this course relevant and informative.

### Course Outline

Various measurement instruments, ranging from traditional micrometers to computer-aided laser probes, will be compared for their merits and shortcomings. The statistics of dimensional measurements and the acceptable tolerance of variations, with emphasis on industrial standards in real-life practice will be discussed. Material identification, manufacturing process verification and the system compatibility of the





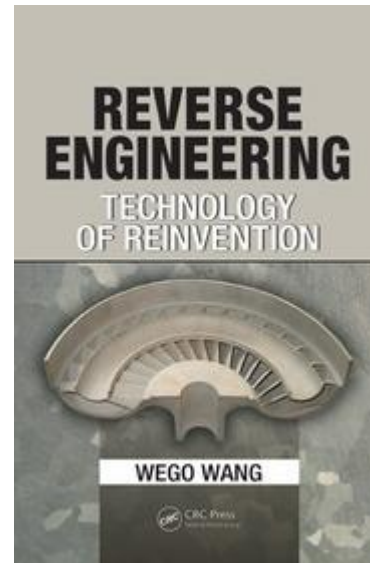
subject part to be reverse engineered will be covered in substantial detail. In addition, the material specifications will be exemplified as useful supporting documents for substantiation data.

### Topics Include :

- Historical Background
- Geometrical Form
- Material Identification and Process Verification
- Raw Data Processing and Statistical Analysis
- Performance Evaluation and System Compatibility
- Acceptance and Legality
- Case Study

### The participants will also receive:

- ◆ Course material handout (in PowerPoint format)
- ◆ A book entitled "Reverse Engineering: Technology of Reinvention" at a Symposium discount rate (of about \$100\*)
- ◆ Lunch and refreshments



\* about 330 pages, either to be included as additional course registration fee or as an option

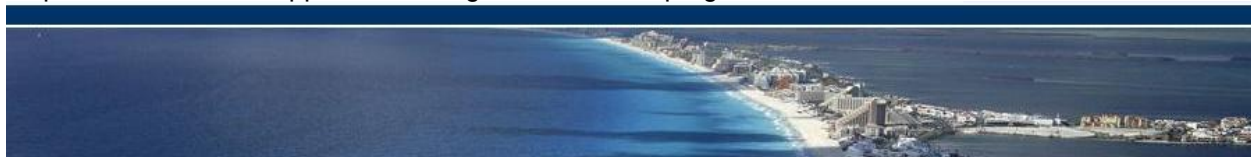


### Course Instructor Dr. Wego Wang

Dr. Wego Wang has been a technical instructor and a researcher in mechanical engineering and materials science for three decades. He is currently an adjunct faculty teaching machine design in the Engineering Technology Department at the University of Massachusetts - Lowell and previously taught at Northeastern University and Boston University.

He was elected an ASM International Fellow in 2009, and has received many awards, commendations, and recognitions from the Army Research Laboratory, the Federal Aviation Administration, and TMS International. Dr. Wang published a book entitled "Reverse Engineering: Technology of Reinvention" in 2010. He also authored and co-authored a number of technical and professional articles and presented lectures and reports at numerous seminars and conferences. He was the 2005-2006 Chairman of the ASM International Boston Chapter and is currently on the executive committee of this professional organization. He also served on the executive committee of TMS Boston Section, where he was president from 1993-1995.

Dr. Wang earned a Bachelor of Science degree in Mechanical Engineering from National Cheng - Kung University, a Master of Science degree (MS) in Mechanical Engineering from National Taiwan University, as well as a second MS and a Doctor of Science degree in Materials Science and Engineering from the Massachusetts Institute of Technology. He works at the Federal Aviation Administration (FAA), primarily on parts manufacturer approval and engine certification programs.



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