

## **YESTERDAY, TODAY, TOMORROW**

(Yesterday is History, Today is the Present, and Tomorrow is a Mystery)

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As the Irish folk singer, Daniel O'Donnell, sings in one of his songs no truer words have ever been spoken because it has applications to our everyday life, the business world, and the manufacturing industries.

### **YESTERDAY IS HISTORY**

Since yesterday is History and we cannot change what has been past, it is unwise to spend time worrying of what we should have done because we cannot change anything. If we keep doing things the same way we have always done them in the past, there very little chance that anything will ever change and therefore we cannot keep up with those who use the more efficient and latest technological developments.

It is wise to keep the principles of the things that worked well in the past but keep an open mind and realize that the world and human knowledge is constantly changing and improving the way people live and work.

A famous quote attributed to Henry Ford in the early days of automobile manufacturing was that the customer can have any car they desire as long as it is black. My how times change and the need and wishes of the customers quickly changed this concept since they soon went to other manufacturers who could and would provide cars in different colours..

### **TODAY IS THE PRESENT**

Nothing contributed more to our present way of life than the invention of the steam engine and the boring mill that made the engine possible. They gave tremendous impetus to the Industrial Revolution, which in only 150 years, generated far greater gains in material welfare than humans experienced in all previous history.

### **Handling Technological Change**

In the advanced technology world we live in today, there is no escaping from constant change. Constant-changing technology, although not always easy to understand, is one that can work either to a company's benefit or against a company depending on how concerned they are about the future.

The introduction of new technology into a manufacturing operation as quickly as possible is critical to keeping up with competition throughout the world. The longer a company waits to use new technology, the further they fall behind the competition in productivity and the ability to produce world-class quality products. The longer the implementation of new technology is delayed, the harder it is to implement with a possibility that a company may not survive.

*It is not the case of whether you can afford the new technology but can you afford to be without it.*

## **TOMORROW IS A MYSTERY**

Manufacturing is critical to creating economic wealth, providing well-paying quality jobs, helping companies to be more competitive in world markets, sustaining economic growth, and providing for the future prosperity of a country.

If it were possible to gaze into a crystal ball and look into the future of manufacturing,

many amazing things are happening now and will happen in the near future, Fig 1. The use of the Internet, now in its infancy, will play a major role in how manufacturing is conducted throughout the world. Some of the Web-based technologies such as machine tool control, machine diagnostics online, e-Procurement, e-Manufacturing, Virtual Reality and Simulation, etc., are available right now. Investments



being made now in new technology will pay huge dividends in product quality, increased productivity, decreased time to market, reduce manufacturing the future.

*The world is a user of tools. In this constantly changing technological world, new tools and manufacturing processes are being developed. Those who recognize the tools of tomorrow and use them today, assure themselves of a share of tomorrow's prosperity.*

## **Nanotechnology**

The concept of manipulating very small things, has been around since the beginning of time. The term nanotechnology applies to the technology of controlling the structure of materials down to a few atoms or molecules. Nanotechnology and nanoscience deal with those that are observed at the border of quantum mechanical effects that occur at the 1 to 100 nanometer range. This size is so small that it cannot be seen with the human eye and it was not until the invention of the scanning tunneling microscope in the 60s and 70s that scientist were able to bring it into view.

When you consider the range of processes that go on in biological cells, typically between 1 and 100 microns in size, you have to admit that when it comes to nanotechnology, **Mother Nature got there first.** Nature gives us a good vision of what it is possible to do when the growth and location of molecules are controlled (programmed) in a specific pattern. All

living things on earth start as molecules and through Mother Nature's various secret formulas produce plants, animals, fish, birds, and human beings. If you would like to see a good example of Mother Nature's nanotechnology, look at yourself in the mirror. All living things such as humans, plants, trees, animals, fishes, etc. started off as molecules

Scientific researchers have been working many years to unlock Mother Nature's secrets of controlling molecular growth to produce useful manufactured products. Imagine using atoms and molecules as the source of raw product and by arranging these molecules in the correct order being able to produce products we can use. This could result in no depletion of our natural resources, such a trees and minerals, no pollution to the environment, and make the world a better place in which to live.