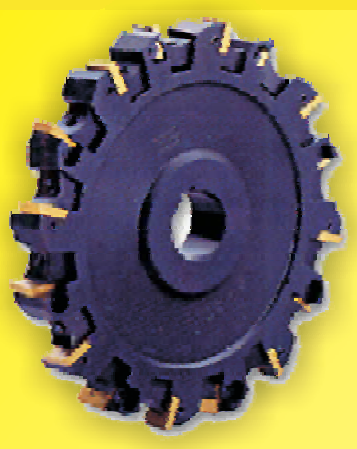
Quality Mantra
January 2013
A Newsletter of International Certification Services



Special Issue On CNC Precision Machining & Measurement Systems

JAS-ANZ
M 1900799IM

NABCB
QM0009
EM0003

Accuracy by Precision

Systematic QA/QC method

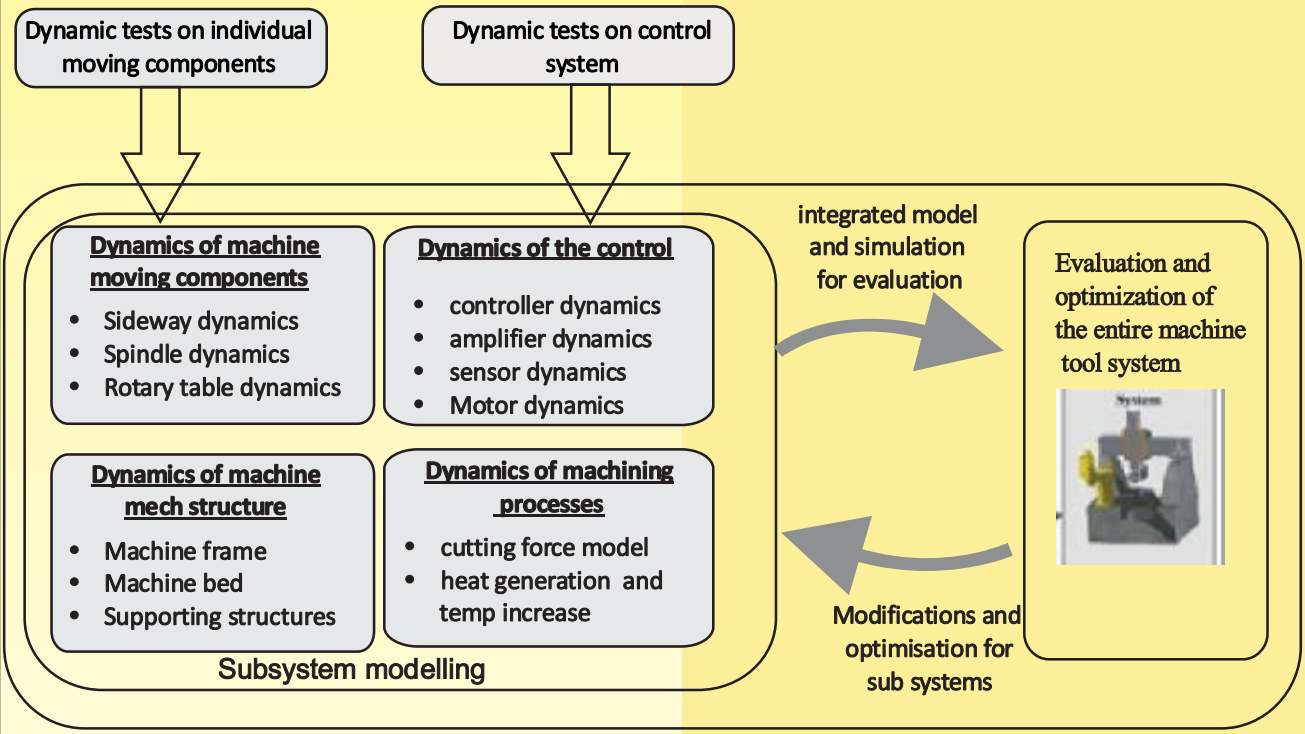
Quality Mantra
January 2013
A Newsletter of International Certification Services

Message from the desk of :
Sumeet Kataria
(Technical Director)

Increasing demands on manufacturing precision products require the development of precision machines for engaging high value manufacturing.

A trend in developing precision machines is that machine tool developers are expected to not only concenrtrate on the optimisation of the machine tool itself in terms of maximum speeds and acceleration of machine axis, but also take account the machine dynamics in process.

Therefore it is essential to consider mechanical structures, control system dynamics, and the machining process dynamics simultaneously.



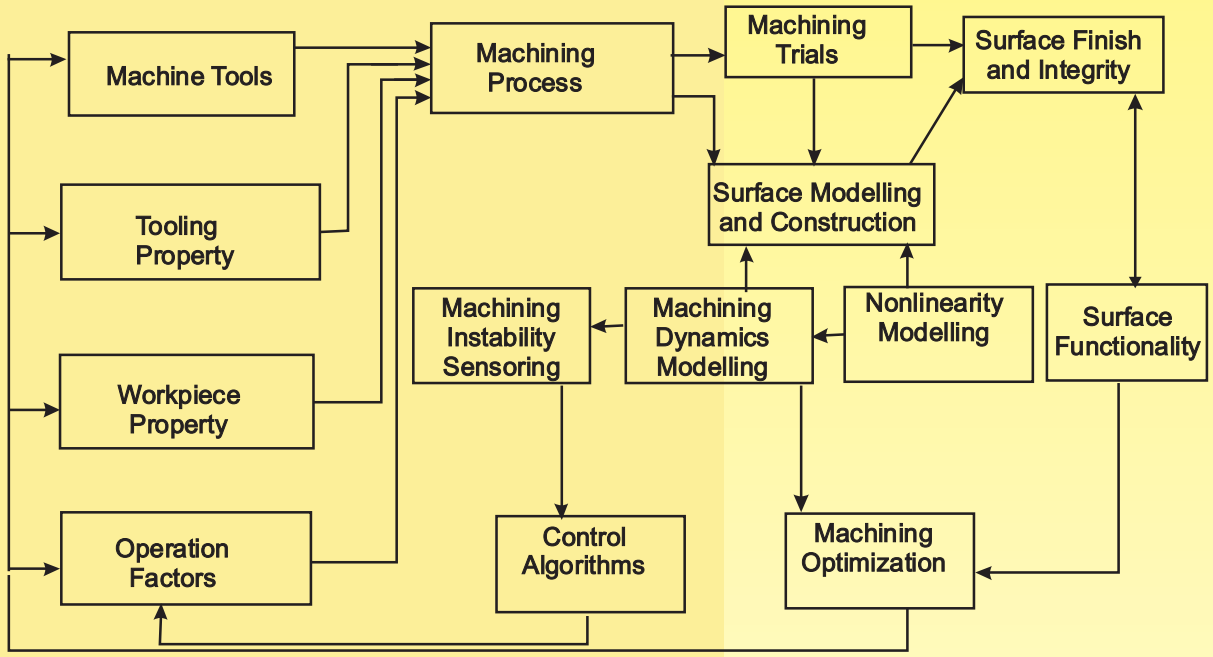
High accuracy mechanical minitaurised components with dimensions ranging from a few hundred microns to a few milimerets or features ranging from a few to a few hundreds of microns are increasingly in demand for various industries, such as aerospace bio technology, electronics, etc.

Advanced high precesion machines have the unique advantage of manufacturing high-end miniaturised components in-terms of accuracy, surface finish and geometrical complexity in a wide range of engineering materials. Nevertheless the micro and functional features on the machined surfaces are becoming dominant particularly for the miniature and micro components and products. Therefore the detailed and understanding of the intricate relationships among machines, processes, tooling and materials are increasingly demanded and indispensable for implmenting high presesion and nano/micro machining.

As illustrated in the below diagram machines dynamics driven modelling and simulation can be utilised as a commencing point to comprehensively investigate the complex relationship and phenomenon including:

1. Prediction of the surface texture, integrity and the functionality generation in machining process.
2. Optimisation and control of machining processes against the functionality and performance requirements of the components and products.
3. Implementation of the industrial feasible control algorithms for engaging intelligent, adaptive and high through put manufacturing.

Quality Mantra
January 2013
A Newsletter of International Certification Services



HIGH PRECISION MACHINING IS ONE OF THE LATEST ADVANCEMENT

Message from the desk of :
Prasad Kulkarni
(Station Manager,
ICS Nashik)

High precision machining is one of the latest advancement.
In the technological processes, which is used widely in machining operation.
If you are working for a production house or own one, it is always advisable to have someone close to your plant, who can help out in the necessary emergencies.

Knowing about Precision CNC engineering can be very helpful as it has affected all the aspects of life. Abundantly used in all the spheres of our lives including motors, electronic motors, car engines, car parts, car wheels, and much more. The process has marked its presence in most of the industries owing to its high level of accuracy.

Common people are still not aware of Precision CNC engineering, but everyone has been benefited by the process in some way or the other. For example, some of the tasks that a typical High precision machining shop can do range from prototyping, fabrication and Shaping & molding of cutting tools. The first one, prototyping is the construction of a dummy or a duplicate model from an original or authentic item that looks exactly similar to the original one. It is used to create dummies for high tech equipment, industrial machinery, and any other type of equipment that requires any number of high precision pieces of equipment.

Thirdly, shaping & molding of cutting tools deals with the process of mechanical cutting of tool in various shapes and sizes. Shaping and molding are also involved in this process. A good quality precision CNC machining tool is well created high tech equipment, prepared by mantling together several high precision pieces of equipment. Although the CNC machines are a used for a number of items that we use in our day-to-day life, but it is best known to be used by custom car and custom motorcycle builders.

Also, the Flow Jet that uses the high pressured water is a good example of high precision machining CNC equipment. Another example of a CNC machine is the laser machine used for engravings and surface adjustments. People involved in the profession of welding, fabricating, engraving, and other similar fields are the local precision machinists, who we come across in our daily lives. One professional trait which is common to all of them is that they sculpt perfection with their flawless hands movements. These are some of the processes keep which occurring in the neighborhood precision shops on a regular basis.

Message from the desk of :
Vikas Ahire
(ICS Nashik)

COLD-DRAWING AND COLD-ROLLING: THE COST-EFFECTIVE ALTERNATIVES FOR PRECISION PARTS

When manufacturers are considering processes for creating precision shapes they generally start with the typical aspects -- machining and metal-stamping. However, in many cases, these processes are less-than-optimal; for example, in high volume, low-cost applications where precision is critical and margins are tight. In these instances both prior technologies have drawbacks – machining can be very expensive and wasteful in high volume cases and metal-stamping may lack the necessary precision and part-to-part consistency.
Fortunately, there is an alternative – cold-drawing – which reduces waste and increases quality in high volume production runs.

Cold-drawing involves the manufacture of precision parts using a cold metal formation process. Simply put, it is the drawing of metal wire through a series of dies. These dies are typically made from a solid piece of silicon carbide that has been precisely sized with CAD-controlled EDM equipment to create precision geometric shapes with tight dimensional tolerances of ± 0.0002 inches and cross sections ranging from hundredths of an inch up to several inches. Often an additional process called cold-rolling is used to pre-shape metal bar or coil stock between rollers before drawing. Cold-drawing lends itself to processing numerous grades of metal alloys to finish dimensions, including high and low carbon steel, stainless steel, tool steel, brass, copper, bronze, aluminum and many other exotic metals. After drawing, the shaped metal can be further processed by heat treating to harden the metal for high-strength applications; cut-off, to provide intermediate or final lengths; and straightening, to remove cast (any twisting caused by drawing) and camber (the slight curve left in processed stock).

PRACTICAL, COST-EFFECTIVE ALTERNATIVE TO MACHINING

Unlike machining, cold-drawing and rolling reform metal instead of removing amounts of it to create a shape; to make the same form in a machining process generates waste as material is removed to create the desired form. Machining uses more coolant than cold-drawing to protect the expensive tooling and lubricate the metal during the machining process. In addition to the waste material generated by machining you now have a hazardous waste as well – used coolant – which must be disposed. Cold-drawing uses a dry lubricant that stays on the metal and prevents corrosion. The result is a total waste stream of about 3% for cold-drawing, compared with rates as high as 15% for machining. This is important as manufacturers increasingly come under the gun from consumers and investors alike to become more "green" and show environmental responsibility.
Cold-drawing also provides a number of other benefits, including the ability to impart a variety of mechanical characteristics such as strength, stiffness, and hardness during the actual metal forming, enabling manufacturers to eliminate expensive and time-consuming secondary processing. Further time savings can be realized by the ease of tooling change-up – new tools can be quickly CAD-generated and EDM machined without specialty fabrication, exotic coatings and labor-intensive installation that is often required of CNC (computer numerically controlled) machining.

CNC machining can present further drawbacks if complex features are required on the metal component surface, which often necessitates several tooling change-ups that can slow production considerably. Precision cold-drawing can create complex features in a single, continuous, high-speed, in-line process, resulting in a considerable set-up and labor cost-savings.

Case Study: Commercial blender splines
Manufacturers are discovering that cold-drawing can often provide the magical three features everyone looks for – Speed, Quality and Cost. In the highly competitive world of appliance manufacturing, the component shaping process used can often make or break the ability to deliver a quality product at a competitive price.

MIXI is a commercial mill, mixer, and blender mfg. company. MIXI commercial blenders are used throughout the world by major restaurant and specialty food chains. Because of the heavy, daily use these blenders experience, company manufactures many of the components out of 304L stainless steel, including the torque transfer device used between the base motor unit and the blades in the blender jar. The manufacture of this key component is critical to producing a quality blender suitable for the abuse inherent in the commercial marketplace.

Quality Mantra
January 2013
A Newsletter of International Certification Services

Message from the desk of :
Vishal B. Hyali
(Lab Manager)
ICS Tech. Nashik,

IMPORTANCE OF CALIBRATION OF PRECISION MEASURING INSTRUMENTS

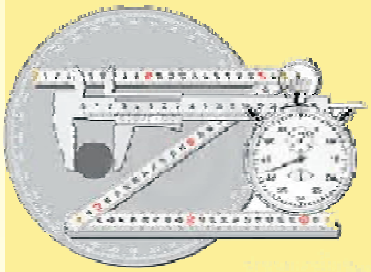
Calibration is the process of checking machines and making sure that values used in measurements allows to remain at standard point. It is the process of verifying a machine work and performance within a set of specifications.

When done the right way, calibration can make your life easier and better. Allows for faster processes and of course with lesser errors and mistakes. During calibration, it is also important to make sure that the measurements taken during the period is also valid. Remember that whatever values that you have got during the calibration process are the values that are accepted to be the most accurate and precise.

Problems however arise when the calibration service is not done correctly. This frequently happens when a low cost service are purchased. It is important that you get a good service especially if your company is operating under a standardized quality system like ISO 9000.

The implementation of ISO 9000 becomes one of the primary reasons why calibration software is so popular. In order to operate within the set standards, one needs to regularly check the machines and networks that are being used. Calibration is based on the data that has been collected and gathered by experts in the fields. Often, these data come from experiments, studies and projects which require calibration. The data supporting the process is the reason why calibration standards have long been established.

When calibrated a machine or a system is compared against another machines whose value have already been standardized and established. The larger the base that was used in the calibration, the better and wider will be the chance of the inaccurate value to be replaced and readjusted. The introduction of newer and more sophisticated models only serve to refine the standard. One of the wonders that people have of is covered in the world of science and measurements is calibration involves the entire process of adjusting the output\result or the indication on a measurements instruments to correlate with the value of the applied standard within the boundary of specific accuracy



WHY USE CALIBRATION?

In more modern and scientific language, calibration is referred to the natural process of transition that is used to measure accuracy and comparison of a measuring instrument that has a standard to determine basically the possible errors in a specific scale.

Today, calibration is basically used for the process of manufacturing so less and less possible mistakes and error can happen. This process and measuring apparatus and is also used to lower the cost of manufacture or production by determining or ensuring quality.

Calibration is also ideal in minimizing possible errors because it uses scientific method to determine impending miscalculations while doing something accurate . Calibration becomes more and more popular to companies because the method aims to economize time, labor, and other resources in any production by means of accurate verification.

Some Important Parameters while carrying out the calibration process are :-

1.The person who is doing the calibration should be qualified & skillful so that results will be accurate & precise
2.The master instrument accuracy should be ten times higher than the unit under calibration
3. Environmental conditions should be appropriate
4. Uncertainity of Measurement

IMPENDING PARADIGM SHIFT IN ENGINEERING SCIENCES AND FUTURE CHALLENGES !

Message from the desk of :
Late Priya Ahire
Nashik,

In early times, the practice of engineering was that of a trade or craft with training occurring through some form of apprenticeship. As it developed into a profession and more recently as an academic discipline, it took on the shape of other academic disciplines, with preparation being an education rather than a training.

It slowly became a real academic discipline in its own right rather than only an application of other disciplines. However, it retains the integrating role of applying the physical and life sciences using some of the tools of the social sciences, law, and policy and the values derived from the humanities, letters, arts, and business.

We are now going through a third transition in engineering in response to many factors in society and in technology itself. In the larger picture, society went through the agricultural phase, the industrial phase and now the information phase. These three phases of civilization created and were created by the most powerful and applicable technologies of the time. Engineering is and will be the creative element in the information age as it has been in preceding ages.

Sunshine has long offered a tantalizing source of environmentally friendly power, bathing the Earth with more energy each hour than the planet's population consumes in a year. But capturing that power,
converting it into useful forms, and especially storing it for a rainy day, poses provocative engineering challenges.

Another popular proposal for long-term energy supplies is nuclear fusion, the artificial re-creation of the sun's source of power on Earth. The quest for fusion has stretched the limits of engineering ingenuity, but hopeful developments suggest the goal of practical fusion power may yet be attainable.

Chief among concerns in this regard is the quality and quantity of water, which is in seriously short supply in many regions of the world. Both for personal use — drinking, cleaning, cooking, and removal of waste — and large-scale use such as irrigation for agriculture, water must be available and sustainably provided to maintain quality of life. New technologies for desalinating sea water may be helpful, but small-scale technologies for local water purification may be even more effective for personal needs.
An important way of exploiting such information would be the development of methods that allow doctors to forecast the benefits and side effects of potential treatments or cures.

“Reverse-engineering” the brain, to determine how it performs its magic, should offer the dual benefits of helping treat diseases while providing clues for new approaches to computerized artificial intelligence.
Advanced computer intelligence, in turn, should enable automated diagnosis and prescriptions for treatment. And computerized catalogs of health information should enhance the medical system's ability to track the spread of disease and analyze the comparative effectiveness of different approaches to prevention and therapy.Another reason to develop new medicines is the growing danger of attacks from novel disease-causing agents. Certain deadly bacteria, for instance, have repeatedly evolved new properties, conferring resistance against even the most powerful antibiotics. New viruses arise with the power to kill and spread more rapidly than disease-prevention systems are designed to counteract.

As a consequence, vulnerability to biological disaster ranks high on the list of unmet challenges for biomedical engineers — just as engineering solutions are badly needed to counter the violence of terrorists and the destructiveness of earthquakes, hurricanes, and other natural dangers. Technologies for early detection of such threats and rapid deployment of countermeasures (such as vaccines and antiviral drugs) rank among the most urgent of today's engineering challenges.

Horoscope Month of February 2013

ARIES

February 2013 will be a nice month. Not necessarily passionate, but rather cheerful, harmonious, generous. Venus (the planet of couples and for Aries, the ruler of the house of relationships) will be in Aquarius, in a bright area of the horoscope, which favors entertainment, conspiracies, communication, future plans, progress. The trine that Venus will make with Jupiter in Gemini promises an accomplishment related to a relationship or a positive event: you'll meet somebody new, you'll have a date, a discussion, a piece of information or a piece of news that will impact your sentimental life beneficially.

TAURUS

It'll be a romantic period for you, of great sensuality, but of great emotional sensitiveness also.You can easily oscillate between exaltation and sadness or disappointment. You might have moments in which you only see the positive side of things and moments in which you only see the negative one, moments of maximum openness and moments of reserve or block. No matter how good your bom psychological balance is, it could be disturbed now, when it comes to relationships and especially to love and couples.

GEMINI

Relationships will be the focus of attention in February 2013 too: friendship, collaboration and, of course, couple relationships. The involvement will be big, and the way to approach relationships will stay rather subjective, in spite of the demand for lucidity and reason. Some disturbance can occur on account of the different objectives (you'll set certain main aims in this period, while your partner will have other priorities) or on account of the interference of professional problems with the private area.

CANCER

Mars, Pluto and Saturn will play a decisive role in your relational life: Pluto will be in Cancer's house of couples, Saturn is the ruler of Cancer's house of couples and now it will be in your house of love, and Mars is the master of Cancer's house of love! Mars, Pluto and Saturn are sober and harsh planets though, which don't really play games, which want to be in control and can cause problems when they are placed disharmoniously.

LEO

There couldn't have been a more promising month! The Sun, Leo's ruler, will be right in Leo's house of couples, in the happy company of Venus, the planet of love and harmony! And that's not all: Venus will make a splendid trine with Jupiter, the Greater Benefic and at the same time the ruler of Leo's house of eroticism, located itself in a happy house, that of hopes and of fulfilled dreams.

VIRGO

What an exciting period! Mercury, the ruler of Virgo, will enter Virgo's house of couples where it'll stay for a much longer period than usual (February 5th - April 14th 2013), highlighting the couple life. By the side of Mercury there will also be the dynamic and passionate Mars, located in Virgo's house of couples between February 2nd and March 12th 2013.

LIBRA

A wonderful period! St. Valentine loves you. With the proud Sun and the seductive Venus in Libra's house of love, in February 2013 you'll be among the privileged of the zodiac. The trine Venus will make with Jupiter will bring an extra chance in the first part of February 2013, somehow connected to studies, trips or intellectual-cultural activities, which can have a beneficial influence on the affective life.

SCORPIO

In spite of the need for peacefulness and security, you might get some action, and a loud one even. Scorpio's house of couples seems to be calm in February 2013, especially as regards marital relationships or even the ones that are not official, but which are stable and go back a long time. Scorpio's house of love and eroticism overflows with adrenaline and desire for adventure. It's the house of free love, of falling in love, of hot affairs or affairs that experience the first thrills of pleasure.

SAGITTARIUS

With two very energetic planets in the relational houses (Jupiter in Sagittarius' house of couples and Uranus in Sagittarius' house of eroticism), the new, the unexpected, adventure, and passion can come into your life.
If we also take into account the fact that the ruler of Sagittarius' house of couples, Mercury, will keep busy around the impetuous Mars, which is the ruler of Sagittarius' house of eroticism, we already have a much clearer idea about the sentimental potential of February 2013.

CAPRICORN

It seems it will be quite a peaceful month, with no out-of-the-ordinary events. The couple's preoccupations seem to go mainly towards the practical aspects of life: money, calculations, daily tasks, various procedures.
February 2013 will be a month in which things will be weighed, evaluated, settled. For example, it'll be appropriate for setting the financial strategy of the couple or for assigning tasks to each of them.

AQUARIUS

Venus and the Sun will be right in the sign of Aquarius. Venus is the planet of love and of good understanding, and the Sun is the ruler of Aquarius' house of couples. The configuration promises peace and harmony, it promises to boost the capacity to seduce and the sentimental availability, and provides opportunities and happy events.
February 2013 is a wonderful period to meet the partner you've been dreaming of, to spend delightful moments with the dear one, to accomplish things together, to light the fire of passion again, to make up and experience romantic interludes.

PISCES

February 2013 will mark the beginning of an important period for relationships: Mercury, the ruler of Pisces' house of couples, will reach precisely Pisces where it'll stay almost twice as long as it usually stays in a sign (February 5th - April 14th 2013). In this interval it'll start its retrogradation movement (February 23rd - March 17th) and will form two conjunctions with the fierce Mars, also located in Pisces (February 2nd - March 12th).
February 2013 will be a busy month, scattered with incidents, challenging and stressful from all points of view, but especially for relationships. Don't make any final plans, because nothing is certain, but don't leave things as they come either, because they could go crazy!

Quality Mantra
January 2013
A Newsletter of International Certification Services

CORPORATE JOKE

A crow was sitting on a tree,
doing nothing all day.

A small rabbit saw the crow, and asked him,
"Can I also sit like you and do nothing all day long?"

The crow answered: " Sure, why not."

So, the rabbit sat on the ground below the crow, and rested.

All of a sudden, a fox appeared, jumped on the rabbit and ate it.

Management Lesson:
To be sitting and doing nothing, you must be sitting very, very high up.

QUALITY THOUGHT

When I Asked God for Strength
He Gave Me Difficult Situations to Face

When I Asked God for Brain & Brown
He Gave Me Puzzles in Life to Solve

When I Asked God for Happiness
He Showed Me Some Unhappy People

When I Asked God for Wealth
He Showed Me How to Work Hard

When I Asked God for Favors
He Showed Me Opportunities to Work Hard

When I Asked God for Peace
He Showed Me How to Help Others

God Gave Me Nothing I Wanted
He Gave Me Everything I Needed

WITH PRIDE AND PLEASURE ICS NASHIK CELEBRATED 64TH REPUBLIC DAY..

Please send us your valuable comments & suggestions *on* " suggestions@icsasian.com". *To* subscrite *for* a free subrcuption send us a mail with sub*ject* " subscribe for "QUALITY MANTRA"" at suggestions@icsasian.com

This Edition Compiled and Presented by
ICS Nashik Team

International Certification Services Pvt. Ltd.

Corporate Office

22/23 Goodwill Premises, Swastik Estate, 178 CST Road, Kalina, Santacruz (E),
Mumbai- 400 098. Maharashtra, INDIA.
Tel : 022-26507777-82, 42200900, 30608900- 4, **Fax :** 42200933, **Email :** info@icspl.org

Branch Offices

Ahmedabad 079 -27552585 Bangalore 080- 22384620 Baroda 0265-3202067 Belguam 0831-2443141
Chennai 044- 24719070 Dombivilei 0251-3279542 Guwahati 09508622059, Delhi 011- 22042107
Hyderabad 040-23713335 Indore 0731-4076365 Jaipur 0141-2610291 Kanpur 0512-2262648
Kolhapur 0231-2653722 Kolkata 033- 32542986 Ludhiana 0161- 3230461 Mumbai 022-26507777- 82
Nagpur 0712- 3292174 Nashik 0253- 3205994 Pune 020-25424204 Surat 0261- 2730980
Udaipur 0294 - 2522031 Vapi 0260-3291135

Overseas Offices

Dubai +9714-3933343 / Nepal +9771-4258455 / Muscat +968-24499785 / Turkey +90-312-4471428
Doha +974-4670022 / Sri Lanka +94-112-433406 / Ukraine +380-633363468 / Romania +40-21-6652608
China +86-755-83038357 / USA +1-919-342-5772