

**IMPLEMENTATION OF ISO 9000
QUALITY STANDARD IN INDIAN INDUSTRY**

by

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A B S T R A C T

This paper is based on ISO 9000 which was conducted by making personal visits to plants located in Bangalore. It deals with:

- * The overall structure of ISO 9000 Quality Standard
- * Activities involved in implementing an ISO 9000 Quality Standard and the planning required in successfully implementing the programme.
- * Issues involved in implementation.
- * Distribution analysis of QS certificates awarded to Indian Companies upto October, 1993.

The understanding, discussion and implementation of ISO 9000 has recently assumed lot of importance not only in our country but also in other parts of the world. Various reasons could be attributed to this. Some of them are:

- (1) Product/Service Quality has been identified as one of the important factors for becoming competitive.
- (2) Globalisation in almost all types of activities is forcing many global players to insist on quality inputs irrespective of the source from which they are procured. In other words, a company which wishes to do business globally has to ensure quality performance with respect to their activities.
- (3) To gain entry into EC market many companies have been insisting on the interested party to demonstrate that they have a system which can ensure the quality of the product/service provided those who wanted to respond to the changes that are taking place had gone for some sort of quality certification such as ISO 9000.
- (4) As far as India is concerned, after liberalisation, companies have realised that to do business, they have to be competitive, and to survive within the country and also to compete in the global market they have to improve their performance especially in the quality front. This development has forced many companies to go for quality certification.

As the activity of getting quality certification is picking up quite fast, it has become, therefore, necessary to understand not only the subject but also the various management dimensions of implementing a quality standard such as ISO 9000. With this in view, a pilot project using IIM-B research fund was undertaken to understand and prepare a report on the following:

- a. The structure of ISO 9000 Quality Standard.
- b. Identification of various activities associated with implementing an ISO 9000 Quality Standard and also the guidelines for sequencing the activities.
- c. Identification of various issues/concerns that one has to deal with in successfully implementing the programme.
- d. Develop a case using real life data to highlight the various issues associated with implementing an ISO 9000 Quality Standard.

The author visited M/s Kirloskar Electric Co.Ltd., Unit-III and Bharat Heavy Electricals Ltd (Electronics Division) which are located in Bangalore to gather first-hand information on the above aspects. Further, the author also had detailed discussion with the executives associated with implementing ISO 9000 in Bharat Electronics Ltd., (BEL), Bangalore.

Analysis of Quality Standard certificates awarded to various companies upto October, 1993.

What is ISO-9000?

ISO stands for International Organisation for Standardisation. It can also be referred to as International Standards Organisation (as it has been abbreviated as ISO instead of IOS).

It is located in Geneva and established in the year 1946. Its membership exceeds 90 countries and India is also one of the members of ISO.

The establishment of ISO-9000 series by ISO started with the launching of Technical Committee 176 (TC 176) during the year 1979 in order to deal with the generic quality principles of minimum international standards for establishment of quality control standards. The series of TC 176 meetings resulted in evolving a number of quality systems and management standards called ISO-9000 series in the year 1987.

It is essentially a quality management system standard and does not stand for product quality standardisation. It is a certificate awarded by an accredited independent third party to a company or organisation with respect to the company's quality assurance system.

The certificate is neither awarded specifically to a product nor to a service as such. However, the certificate indicates the scope of the products or services covered.

The series of international standards covered include ISO-9000 to ISO 9004.

What is the need for development of ISO-9000 standards as compared to already existing product standards? (like BIS)

Many organisations are engaged either in the production of goods or services intended to satisfy the needs of the customers. Normally the customers' requirements are adhered

to through 'Specifications'. These specifications usually are referred to as 'Technical Specifications' and meeting the technical specifications requirement may not always guarantee that a customer's requirements are consistently met. The inconsistency in meeting the requirements may be due to certain deficiencies in the specifications or it may be due to deficiencies in the organisational system to design and produce the product or provide the service.

In order to ensure the customers that 'technical specifications' are achieved consistently, the International Standards Organisation embarked on a development activity to come up with quality system standards and guidelines. The result was development of ISO-9000 quality system standards series.

The overall structure, scope and relationship, if any, of ISO-9000 series standards:

The ISO-9000 series standards are brought out in six separate documents numbered as follows

ISO 8402
 ISO 9000
 ISO 9001
 ISO 9002
 ISO 9003 &
 ISO 9004.

What is the structure of the ISO-9000 series standards?

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ISO
8402  Vocabulary
!
!
ISO   Quality Management and Quality
9004  System Elements - Guidelines
!
!
ISO   Quality Management and Quality
9000  Assurances Standards - Guide-
      lines for Selection and Use
  
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ISO-9001 Model For: Design, Development, Production, Installation & Service	ISO 9002 Model For: Production & Installation	ISO 9003 Model For: Final Inspec- tion & Test	ISO 9004 Part-2 Model For: Services Standard
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Overall Structure of ISO-9000 Series Standard

ISO 8402 (1986)

It is a standard on terminology and is also referred to as 'Quality - Vocabulary'. It is a twelve page document defining the various terms used throughout the ISO-9000 series. The definitions of the following terms are reproduced here as examples:

Quality: It is defined as: 'the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs'.

Quality Policy: It is defined as: 'the overall quality intentions and directions of an organisation as regards quality, as formally expressed by top management.

The document also defines such terms as grade, quality, policy, management, assurance, control, system, plan audit and the important concept such as 'traceability', etc. It also defines other important terms such as 'non-conformity' and 'specification'.

ISO 9000: It is generally referred to as 'Quality management and quality assurance standards - Guidelines for selection and use'.

The objectives or purposes of this international standard are stated as:

- (1) To clarify the distinctions and interrelationships among the principal quality concepts; and
- (2) To provide guidelines for the selection and use of a series of International Standards on quality systems that can be used for internal quality management systems (ISO 9004) and for external quality assurance (contractual) purposes (ISO 9001, ISO 9002 and ISO 9003).

*** What does the ISO 9000 expect the suppliers to achieve?**

The same is explained under clause 4.0 with respect to ISO 9000 and is titled as 'Principal Concepts'.

It states that an organisation should seek to achieve the following three objectives with regard to quality:

- (i) The organisation should achieve and sustain quality of the product or service produced so as to meet the purchaser's needs (stated or implied) on a continuous basis.
- (ii) The organization should gain the confidence of the management that the intended quality requirements are being achieved and sustained.
- (iii) The organization should also establish confidence in the purchaser that the intended quality requirements are being met or will be achieved in the products delivered or the service provided. Under contractual requirements the establishment of confidence would involve actually demonstrating the achievement of stated requirements.

***Which are the situations in which the ISO 9000 series standards are applicable?**

The standards are intended to be used in two different situations: (a) Contractual; and (b) Non-contractual.

In an actual situation, a purchaser may be specifically interested in certain elements of the quality system of the supplier and would expect the same to be incorporated as a contractual requirement so that he can be sure of the quality of the product or service provided by the supplier. The specific element mentioned for inclusion may be a critical one for achieving consistent quality or service provided by the supplier.

In actual practice a supplier may be involved in contractual or non-contractual situations in his operations. The supplier may supply certain products in non-contractual situations and some other items in contractual situations.

It is also possible that a supplier may buy some items from standard inventory without contractual quality assurance requirements and buy some other materials or components under contractual quality assurance requirements.

***What are the factors that are considered important for selecting a suitable model for Quality Assurance?**

The ISO 9000 standard identifies six factors (clause 8.2.3) to be fundamental for selecting the appropriate model for product or service:

- (a) Design, Process Complexity
- (b) Design Maturity
- (c) Production - Process Complexity
- (d) Product or Service Characteristics
- (e) Product or Service Safety
- (f) Economics.

***How do they (certifying agency) ensure that a Quality System Standard exists?**

In order to ensure that a Quality System Standard has been implemented, the requirements of ISO 9000 insist on that the quality system elements are documented and demonstrated in a manner consistent with the requirements of the selected model.

The documentation may include quality system elements such as quality manuals, description of quality-related procedures, quality system auditing reports and other quality records.

Audit of all these is carried out by the agency before issuing the certificate.

ISO 9001: Model for Quality Assurance in Design/ Development, Production, Installation and Servicing

This is the model to be adopted by companies who want to ensure their customers that conformity to specified requirements is met through all the stages of production, installation and servicing including design and development phase. This is specifically suitable in situations where the companies have to design the product or service depending upon the technical specifications supplied by the customers and then manufacture the same or provide the service as per the design.

Therefore, this system is applicable to contractual situations where a contract specifically requires design effort and the product requirements are stated in performance terms or the need to be established. For a contract to supply water coolers with a capacity to hold and cool so many litres of water and leaving the design aspect to the manufacturer, ISO 9001 will be an applicable model for external quality assurance.

ISO 9002: Model for Quality Assurance in Production and Installation

This is applicable in situations where the contract involves supply of a product whose design is a known and already an established standard. For a contract requiring supply of refrigerators as per Indian Standard IS 1476, the applicable model for quality assurance will be ISO 9002.

This seems to be one of the most commonly used models. The supplier who is in the process of adopting ISO 9002 has the responsibility of demonstrating that he has the capabilities in production and installation/

ISO 9003: Model for Quality Assurance in Final Inspection and Test

This is applicable in situations where a contact between two parties requires demonstration of a supplier's capability to detect and control the disposition of any product non-conformity during final inspection and test. The product in this case is supplied by the 'Purchaser' of this service, who could also be the manufacturer of the product in some cases.

The companies who would like to go for ISO 9003 should not only meet the above requirements but also should meet the following requirements:

- * Usual requirement for policy and organisation
- * System for document control
- * System for product identification and marking
- * System for control of products that do not meet or pass specified test requirements
- * System for handling and storage system
- * System for use of statistical techniques wherein appropriate and
- * System for training.

This is the least used standard for external quality assurance purposes.

ISO 9004: It has two parts - Part 1 and Part 2

Part 1 deals with: Quality Management and Quality System Elements - Guidelines
ISO/DIS 9004 Part 2 deals with: Standard for Services

ISO 9004 details out all the important constituents of Quality System Standard and the guidelines given for each one of the elements could be used by any Company to develop their own Quality System.

A cross-reference list of quality system elements are presented in the following table. The elements referred to in this table are from ISO 9004 standard.

TABLE 1

CROSS-REFERENCE LIST OF QUALITY SYSTEM ELEMENTS

Clause or sub-clause) No. in ISO 9004	Title	Corresponding clause (or sub-clause) Nos in		
		ISO 9001	ISO 9002	ISO 9003
4	Management Responsibility	4.1 F	4.1 X	4.1 Y
5	Quality System Principles	4.2 F	4.2 F	4.2 X
5.4	Auditing the Quality System (internal)	4.17F	4.16X	-
6	Economies -Quality-related Cost Considerations	-	-	-
7	Quality in Marketing (Contract Review)	4.3 F	4.3 F	-
8	Quality in Specification and Design (Design Control)	4.4 F	-	-
9	Quality in Procurement (Purchasing)	4.6 F	4.5 F	-
10	Quality in Production (Process control)	4.9 F	4.8 F	-
11	Control of Production	4.9 F	4.9 F	-
11.2	Material Control and Traceability (Product Identification and Traceability)	4.8 F	4.7 F	-
4.4 X				
11.7	Control of Verification Status (Inspection and Test Status)	4.12F	4.11F	4.7 X
12	Product Verification (Inspection and Testing)	4.10F	4.9 F	4.5 X
13	Control of Measuring and Test Equipment (Inspection, Measuring and Test Equipment)	4.11F	4.10F	4.6 X
14	Non-conformity (Control of Non-conformity Product)	4.13F	4.12F	4.8 X
15	Corrective Action	4.14F	4.14F	-
16	Handling and Post Production Functions (Handling, Storage, Packaging and Delivery)	4.15F	4.14F	4.3 X
16.2	After-sales Servicing	4.19F	-	-
17	Quality Documentation and Records (Document Control)	4.5 F	4.4 F	4.3 X
17.3	Quality Records	4.16F	4.15F	4.10X

contd...

Clause or sub-clause) No. in ISO 9004	Title	Corresponding clause (or sub-clause) Nos in		
		ISO 9001	ISO 9002	ISO 9003
18	Personnel (Training_	4.18F	4.17X	4.11Y
19	Product Safety and Liability	-	-	-
20	Use of Statistical Methods			
	(Statistical Techniques)	4.20F	4.18F	4.12X
-	Purchaser Supplied Product	4.7 F	4.6 F	-

Key: F: Full Requirement; X: Less stringent than ISO 9001; Y: Less stringent than ISO 9002; and - : Element not present.

- Notes:**
1. The clause (or sub-clause) titles quoted in the table above have been taken from ISO 9004: the titles given in parentheses have been taken from the corresponding clauses and sub-clauses in ISO 9001, ISO 9002 and ISO 9003.
 2. Attention is drawn to the fact that the quality element requirements in ISO 9001, ISO 9002 and ISO 9003 are in many cases, but not in every case, identical.

Reproduced from ISO 9000, 1987 (ED) Document, page. 6.

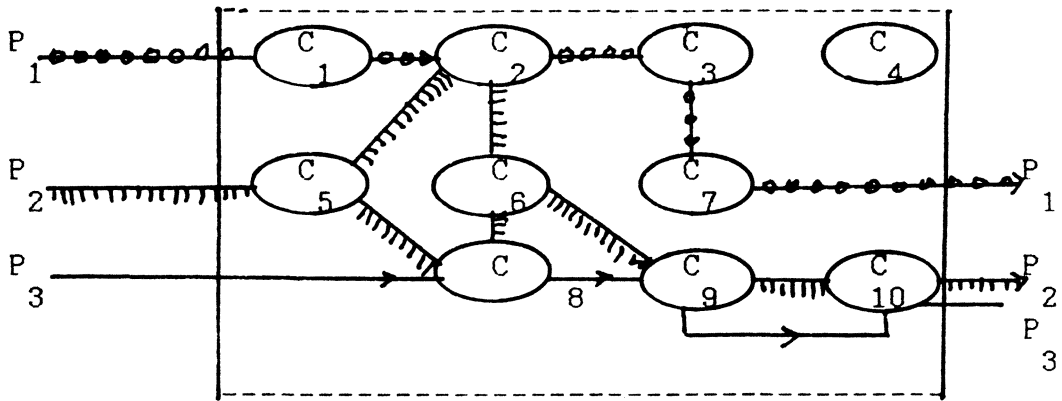
What is the strategy a company should adopt to get ISO 9000 certification for only certain number of products from among the range of products manufactured by the Company in the same location/plant?

If the units/departments can be identified uniquely with respect to the products or services under consideration without any overlap with other products, then it is feasible to obtain the certification for those departments with the scope of products as identified above. In the case of products for which the facilities/departments cannot be identified uniquely and the same facilities/departments are also used by other products which are not to be considered for certification, then you have a problem of certification which cannot be sorted out under the present guidelines of ISO 9000. Some implementers have drawn the attention of ISO 9000 authorities so that this issue can be sorted out in future.

Some of the issues are illustrated below:

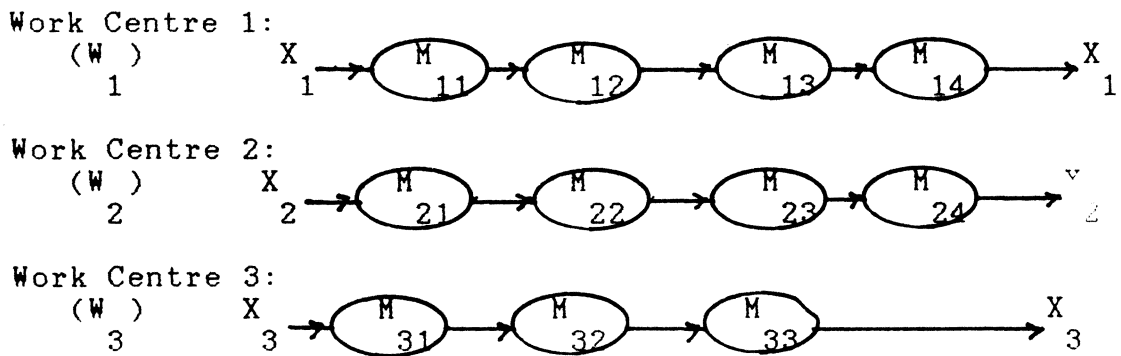
- (a) A company manufactures 3 products but not (P , P , & P)
1 2 3

about certification of the system?



**Product Movement Diagram through work centres CC
1 10
within a manufacturing plant**

(b) The company manufactures 3 products (X₁, X₂ & X₃), but not interested in getting certification for all of them. How does one go about getting certification?



The plant consists of three work centres W₁, W₂ & W₃ and each work centre has specific number of machines through which the respective products have to go through. Each of these machines is designated as M_{ij} where i refers to the centre and j refers to the machine number.

It is possible to get the certification for each work centre with the scope of the product as mentioned. You can also get the certification for all the work centres together with the scopes of the products as X₁, X₂ and X₃.

If the certificate is obtained for the whole plant (W₁, W₂ and W₃) and if a non-conformity occurs w.r.t. any work

If the certificate is obtained for the whole plant (W₁, W₂ and W₃) and if a non-conformity occurs with respect to any work centre and could not be corrected, the certificate may be canceled for the whole plant even though other work centres may be within the standard.

The same approach is applicable to any multiplant-operations. But within a plant, if a situation arises as discussed in (a), then it requires to be resolved in consultation with the certification agency.

Which are the various National Standards and their equivalent to ISO 9000 Series Standards?

National Standards Equivalent to the ISO 9000 Series Standards

Countries	ISO 9000	ISO 9001	ISO 9002	ISO 9003	ISO 9004
Australia	AS 3900	AS 3901	AS 3902	AS 3903	AS 3904
Britain	BS 5750 Part 0	BS 5750 Part 1	BS 5750 Part 2	BS 5750 Part 3	BS 5750 Part 4
Denmark	DS/ EN 29000	DS/ EN 29001	DS/ EN 29002	DS/ EN 29003	DS/ EN 29004
European	EN 29000	EN 29001	EN 29002	EN 29003	EN 29004
Germany	Din/ ISO 9000	Din/ ISO 9001	Din/ ISO 9002	Din/ ISO 9003	Din/ ISO 9004
India	IS 14000	IS 14001	IS 14002	IS 14003	IS 14004
Netherlands	NEN/ ISO 9000	NEN/ ISO 9001	NEN/ ISO 9002	NEN/ ISO 9003	NEN/ ISO 9004
USA	ANSI/ASQC Q90	ANSI/ASQC Q91	ANSI/ASQC Q92	ANSI/ASQC Q93	ANSI/ ASQC Q94

Source: Girish Kumar, ISO 9000 - A Step towards Excellence, Sept. 1993 (Unpublished write-up).

Note: Some of the other National Standard equivalent to ISO 9000 - France: NFX 50-131; Norway: NS 5801; Switzerland: SN 029 100A; Ireland: IS 300.

Who are the accredited agencies (certification bodies) who can issue Quality Standard Certificates?

INDIAN REGISTER QUALITY SYSTEMS (IRQS) (a department of Indian Register of Shipping) is the first certification body not only in India but in the whole of Asia to be accredited by Road Voor de Certificate (RVC), the Dutch Council for Certification, Netherlands, for Assessment and Certification of Quality Management Systems to ISO 9000/EN 29000/BS 5750 series.

Address:

Indian Register Quality Systems
72, Maker Towers F' Cuffe Parade
Bombay 400 005 (INDIA)
Phone (022) 218 6376
Fax (022) 218 1241
Telex 011 83364 IRS IN
Grams: SHIPCLASS

BUREAU VERITAS QUALITY INTERNATIONAL (BVQI)

BVQI is a multinational organisation founded in 1828 and has offices in 125 countries. Its activities cover classification, survey and inspection services for ships, aircraft, materials and equipments, vehicles, machines, engines and all kinds of structures and systems including building and civil engineering works. Bureau Veritas is also concerned with product certification.

BVQI offers an independent international service for the assessment and certification of Quality Management Systems.

It complies whenever possible with for National Accreditation Rules. Rules for National Accreditation cover the structure, accountability, management and technical competence of certification bodies. The current European reference Standard is EN 45012 and BVQI undertakes all its work against an internal quality system which complies fully with this standard.

Address:

Bureau Veritas Quality International
C/o Bureau Veritas
Industrial Services (India) Pvt. Ltd.
44, Arcadia NCPA Marg
Nariman Point
Bombay 400 0021
Fax: 202 3907
Ph: 2021279/2043559

SQ Scheme: (A scheme for certification of Quality Systems to the requirements of ISO-9000 for Electronics Industries)

Under the newly launched Certification Scheme for ISO 9000 jointly by Standardisation, Testing and Quality Control (STQC) & BSI-UK, a quality system certification known as 'SQ' is awarded.

Certification through SQ scheme will ensure mutual recognition with TUV product services - Germany and mutual recognition with BSI-QA U.K.

One can also obtain certificate of European Network of Quality Assessment and Certification from BSI-QA which is the only certifying body member of EQNET in U.K.

Address:

STQC Directorate, Dept. of Electronics
Government of India
Electronics Niketan
No.6, CGO Complex
New Delhi 110 003

Ref: STQC News Vol. II, No.3, July 1993; Published Quarterly.

TUV India Private Ltd.

Fiji House
Damodar Sukhadwala Marg
Bombay 400 001

Bureau of Indian Standards

Manak Bhavan
9, Bahadur Shah Zafar Marg
New Delhi 110 002

Det Norske Veritas

96/98, 9th Floor
Maker Tower 'F'
Cuffe Parade
BOMBAY 400 005
Fax: 2180271 Ph: 2185614, 2181080, 2187107

NQA

Quality Systems Registrar
720, International Trade Tower
Nehru Place
New Delhi 110 019
Fax: 646 7687/644 4207

SGS India Ltd

SGS House
Naoroji Furdoomji Road
Colaba, Bombay 400 039

British Standards Institution (BSI), U.K.

Australian Standards Association (ASA) Australia

What are the various activities associated with going in for ISO 9000 certification? (Not strictly in order)

- (i) Selection of the system suitable for the activities of the organisation? ISO 9001, 9002, 9003 or 9004 (services).
- (ii) Decision with respect to whether one certificate for all the products/services, with regard to all the plants in different locations?

or

One certificate for all products in each location?

Feasibility of the above alternatives has to be analysed before landing up with the actual preparation for the certification.

- (iii) Selection of the certifying body (when & whom?).
- (iv) Appointment of consultants required at various stages (when & whom).
- (v) Appointment of the Management Representative (when & whom).
- (vi) Selection & Training of Internal Auditors.
- (vii) Selection & Training of Lead Assessors.
- (viii) Training of Top Management.
- (ix) Training of Senior and Middle level Managers.
- (x) Training of Junior Staff & Operating level people.
- (xi) Identification of External Agency for Training the Top, Senior and Middle level Management.
- (xiii) Formation of Task Forces/Committees for Execution and monitoring of various activities.
- (xiv) Preparation of Manuals and Organisation of Manuals at different levels.
- (xv) Preparation of documents and writing down of procedures.

Decision with respect to who should write down the procedures and prepare the various documents.

- (xvi) Preparation of the infrastructure for implementing the ISO 9000

- * Organising for introduction of change.
- * Organising for companywide housekeeping.
- * Organising for creating companywide awareness on ISO 9000 and commitment to Quality.
- * Improving the capabilities of processes wherever necessary with fresh investments, if required.

- * Calibration of all instruments and tools and make additional investments, if necessary.
- * Conduct seminars/debates/discussion/competitions for involving people at different levels on various activities.

- (xvii) Conduct number of internal audits (using consultants, if necessary) to establish the gap that exists in terms of what is actually to be carried out as compared to what is being carried out.
- (xviii) Prepare a Financial budget by identifying the various heads under which expenses may be incurred (including any investments in time, equipment, facilities, etc.).
- (xix) Identifying potential areas of benefits which may result in by implementing ISO 9000 series.
- (xx) Identifying milestones to be achieved with specific time by which they should be carried out and also the sequence in which to be carried out.
- (xxi) Carrying out adequacy audit when the organisation is ready.
- (xxii) Final Audit by the accredited body.
- (xxiii) Correction of Non-conformities.
- (xxiv) Obtaining the final certificate.
- (ii)a Carryout a preliminary audit of the company's Quality Management system.

It is suggested that the preliminary audit should collect detailed information with respect to the following:

- (a) How customer enquiries are handled? Conduct a mock enquiry and get a feel of the response of the company staff/reception to the enquiry made by the 'customer'.
- (b) Ascertain to what extent specifications exist with regard to raw materials and other components delivered by the vendors.
- (c) Audit the system for transforming the customer orders into finished goods or services.

This involves auditing the entire system consisting of various steps and stages starting from handling enquiries and order execution resulting in production, inspection,

testing and delivery of finished goods.

Can a broad outline of steps be given to start implementing ISO 9000 series standard (The above gives only a checklist of activities)?

The various activities associated with implementation have already been identified in 7.0. Only thing that is missing is the sequence in which they have to be accomplished. The following sequence of tasks as suggested by Mr. Lamprecht is reproduced here as a guideline:

- (i) To compare your quality assurance system with the appropriate ISO standard.
- (ii) To close the gaps between the two systems.
- (iii) To formulate a methodology on how to achieve (ii); and
- (iv) To conduct internal audits to verify the effectiveness of the quality assurance system.

In order to accomplish the above tasks, it is necessary to fit into the ISO 9000 series standard framework (i.e., referring to clauses which have to be implemented first and then to others which have to follow the earlier ones).

Lamprecht suggests the following order:

Phase I : 4.28 (Training):

It is important to communicate/inform/train people as to:

- (a) What is the ISO 9000 series?
- (b) Why is it important to achieve registration?
- (c) State objectives and formulate how the company will achieve stated objectives (i.e., formulate commitment)
- (d) Delegate tasks, which can only be achieved after (a) to (c) s first completed.

In order to improve the chances of success, the top management should first.

* Receive some training (one day) consisting of an overview of the ISO 9000 series; what is involved and which strategy to adopt

* Also arrange some in-house training for two days in the form of seminar followed by workshop to a select team of "implementers".

The team can now organise itself to accomplish the tasks (i to iv). However, it is required to fit into the format of ISO 9000 series standard.

Phase II 4.1 (Management Responsibilities):

- 4.2 (The Quality System). At this stage one should assess the existing quality system.
- 4.5 (Document Control). One should decide well ahead of time as to what format to use for document control process with respect to the current organisation.
- 4.16 (Quality Records). For each department, the quality record base should be identified.

Phase III 4.17 (Internal Audits): The internal audit process should start as and when appropriate and not wait till the end of the whole exercise. It is suggested that all other paragraphs usually could follow the sequence : 4.3, 4.4, 4.6, etc.

It may be noted that the above steps are only a guideline and there may be number of other tasks that may have to be performed simultaneously and coordinated in such a way that a well documented (Ref.7) Quality System is developed and ready for registration through a third party who is a qualified certification body.

What are the various issues/concerns that one has to deal with in successfully implementing ISO 9000 series standard?

- (i) The implementation of ISO 9000 experience shows that it takes on an average 6 to 14 months to achieve registration.

- * Bharat Electronics at Ghaziabad took 15 months to get the certificate.

- * Kirloskar Electric-Unit (III), Bangalore took 10 months to get the certificate.

It is observed that in the Indian situation, normally it takes 6 to 20 months. This variability in time is due to many factors. Some of them are listed below:

- * The size of the Company
- * Interest in achieving the registration
- * Current state of readiness
- * Other changes being introduced or system being

- introduced in the organisation
- * Existence of Total Quality Management (TQM)
 - * Degree of professionalism in organising and allocating various tasks
 - * The morale and culture of the organisation/ people
 - * Whether the Existing Quality System is well documented or not?
 - * Existence of any other Quality Standards or experience in undergoing third party audit
 - * Resistance to change.

It is a formidable task for management to achieve successful implementation within the specified duration and meeting all other objectives. It requires a very well coordinated effort to go through the ISO 9000 implementation successfully. They have the big task of bringing everything and everybody together.

- (ii) Employees attitude towards change influenced by the culture existing in the organisation. In some of the organisations studied by the author, the initial response itself for ISO 9000 was quite lukewarm. Some of the reasons attributed were as follows:

The organisation being referred to is a leading manufacture of electronic products supplying to Indian industries and also to specific requirements of the Defence.

* Initially the resistance was mainly coming from officers who were responsible for starting the programme. The reasons given by them were as follows:

- It was not very clear to them as to why they should go for the programme/certification.
- Quite a few of them felt that the scheme has been designed by foreigners to fleece the Indian industry with high fees for consultation and certification.
- During the discussion session, the top management of the company told their officers that the certification would promote the company's products to be exported to Europe and other countries as well. On the contrary, the officers observed that their unit was not involved in any export in the past and would not be involved in future also as it stands now. Hence they felt that the whole certification is irrelevant with respect to

the Company's operations.

They went even a step further by saying that the certificate is being imposed on them indirectly and has been made mandatory to export to EC countries with the idea of tightening Indian exports to Europe.

With the above indifference, about the certification a strong mental barrier was formed which was working totally against implementation of ISO 9000.

To overcome the initial road blocks, the Company invited large number of practicing managers on ISO 9000 as guest speakers who could highlight on the importance of ISO 9000 by referring to real life examples from their own experiences. Defence people who had been associated with Quality Certification in their own organisation as well as in other organisations were also invited to give lectures. (Since Defence Department was an important customer.) Finally, with all these orientation, the mental barrier was broken.

* Another problem which the organisation faced was that the people were not convinced that implementation of ISO 9000 would contribute to substantial improvement within the organisation. This impression was more so when they could not see any improvement physically or the improvement if any was not so easily visible. They wanted some tangible proof in the short-run to show that 'Quality' has really improved.

* In most of the Indian companies and, also to some extent abroad, the employees feel that they know everything and this feeling makes them to become complacent about any new thing. But what is actually happening is that many of the things which they claim as known to them is not actually being practiced in the work situation. When one discusses about implementation, it is useful to emphasise that one should put the following points on paper in an organised way (BS 5750)

- * Say what you do
- * Do what you say
- * Demonstrate what you did
- * Keep a record of what you did.

Implementation may insist that rejected parts and approved parts may be kept separately. On some occasions due to lack of space (real life problems) the material which has neither been classified as rejected

nor as approved may be temporarily kept in one of the locations allotted for rejects/approved parts. But according to ISO 9000, the above activity will be classified as a non-conformity. One can always find a method of tackling this provided that he is interested and sincere in implementing what is actually stipulated. what is needed in this situation is a cultural change in the individual, i.e., to avoid the casual approach.

* Habit

Habit plays a vital role in the way various activities are being carried out. In order to change the way the jobs are done, one of the roadblocks, viz., the habit should be broken.

As an illustration we can think of of a company interested in taking up calibration for improvement.

Calibration: In the normal situation as a habit, instruments are recalibrated only when it goes out of order. But this should be changed to: Do it before it goes out of order (based on a schedule).

(iii) First order changes (Lamprecht), or the maintenance of the status quo, are often experienced during ISO implementation.

During such implementation, one comes across expressions such as:

"I don't have the time"

"You don't understand how complicated it is"

"I have so many other important jobs on hand".

All the expressions giving out reasons for not doing the desired thing focuses towards one common thing, viz., not enough time. The task of the management at this point is to investigate the reason for such a behaviour. In this situation one of the reasons could be that employees expect some reward to be given for the extra effort to be put in. Therefore, if the management has to go ahead with the original change and implement it successfully, they have to introduce another change, viz., a reward scheme or at least time must be allocated within the schedule to implement the change. A change within a change is called 'second-order change'.

It is observed that the route to second-order change will not always be smooth and one may have to face lot of hurdles and road blocks.

With regard to managing the first order change, one may introduce another change which will try to address the problem in a different way through some reorganisation

or reallocation of the task under consideration. But it may not always result in implementation of the change.

In many situations, a second-order change of the sort is required to successfully implement the desired change.

- iv) It has been observed in many organisations that Quality Assurance System are written to describe as to what should be done and not actually what is currently being done. The supplier who is working towards getting ISO 9000 certification has to not only to interpret the requirement of the standard for his nature of activities but he is also expected to demonstrate what is written down in his Quality Assurance Document is actually practiced.

Therefore, it is expected to achieve a 100% matching of Documented Quality Assurance System with the Working System (i.e., application of the documented system) without any non-conformity occurring. In view of this, the organisation should go about achieving the objective in a more systematic way. The factors that may affect this process could be some of the following:

- * Awareness level of all the requirements of the standard.

- * The methodology adopted to establish the gap that may exist between what is documented and what is really practiced.

- * Corrective action taken to do away with the non-conformities.

- * Capability to ensure that system is able to sustain the demands of the newly introduced QA system.

- v) Most of the organisations who are going in for ISO 9000 certification create an impression that their ultimate aim is to install a system which will finally pave the way for getting the certification. It is needless to say that whatever is installed as QA system, it should result in substantial improvement from status quo and should continue to improve the satisfaction of the ultimate customer. Therefore, the success of the programme in a real sense means, satisfying the customers (internal as well as external). His requirements from various angles must be met satisfactorily through the system.
- vi) While going in for ISO 9000 implementation, management should decide in advance the 'Scope of Coverage of Products and Services'. The following issues/questions may arise:

* Whether organisation like BHEL or BEL should go for one single certificate for all the units/plants located in different places?

* Whether the certificate can be obtained for each and every unit separately? What are the guiding principles?

* Is it possible to get a certificate without mentioning the scope? (Because they say that ISO 9000 is a system certification and not a product certification).

* Is it possible to get a certificate only for a division from among the number of divisions existing in the plant?

* Is it possible to leave out certain products from the total list of products. What are the guiding principles in resolving the above issues?

The Indian experience in this regard is as follows:

N G E F - Going by product

B E L - Going by product

Kirloskar Electric - Whole plant

I T I - Pilot plant has been taken up first

B H E L - All the products in a plant have been taken up for certification. Each plant is expected to apply for certification independently.

* Risk involved in loosing the certificate.

* Cost involved in getting the certificate individually for each unit as compared to collectively for all units.

* Managing implementation.

* Gaining acceptability of all the employees.

* A system can't be audited partially.

vii) Sustaining ISO 9000 Certificate

While discussing some of the implementation aspects with some senior BHEL executives who were involved in ISO 9000 implementation, it was pointed out that the managements of many organisations would have to put in lot of effort to maintain the system and also could retain the accreditation. It is an important area for focus and discussion. If the system has to sustain, the following points should be borne in mind:

(a) There is a necessity for all employees to work together as a team to commit themselves to ensure

that the stipulated system and procedures and standard practices are all adhered to on a continuous basis. The following instances are given as examples.

* In most of the organisations there is always hesitation to convey the deficiency/defects to the originator. This is a road block to making improvement. This attitude can't be changed without personal involvement.

* Usually and invariably documents should be verified by the user for its correctness. They normally take any document that they receive to be correct and hesitate to question the data in the document for fear of unfavourable reaction from their superiors or management or because of sheer habit or even indifference. Normally the employees think that the responsibility for the correctness of the document lies with the person sending that document and the person receiving it should not bother about verifying the statements.

Therefore, the above examples show that one of the important issues is as to how to change people to get involved and interact positively and to commit themselves to maintain the system on a continuous basis.

- (b) The system installed will not be able to deliver the goods in the long run unless otherwise communication aspect is given its due importance. It is felt that in many organisations, the level and quality of communication between various layers is not adequate enough to meet the requirement of the changed situation. If the following activities have to be performed efficiently and effectively, communication should play a vital role.

* Implementing concept of internal customer:

Formal and Informal communication channels should be developed and encouraged for really benefiting out of implementation of internal customer concept.

* Resolving Nonconformity:

Usually nonconformities are required to be resolved through analysis and discussion with the concerned departments and individuals. This requires lot of initiative from the individuals or groups to come out of the four walls of their rooms and start discussing with their other colleagues. In the traditional

approach to Quality Control usually nonconformities are "attended to" and "not corrected" at the source of the error to stop any fresh defects occurring in future.

- (c) As we observed above, in a situation like this, the demand on the individual employees to commit, communicate and discipline themselves to gear up to meeting the requirements on a continuous basis is definitely very high. If this has to happen, there has to be a tremendous change in the value system to which the employees have subscribed to so far and so long.

It is also suggested by some observers that introduction of TQM along with ISO 9000 would pave the way for such a change take place.

- (d) In order to make these changes happen (with respect to individuals), the management should contribute towards imparting the requisite training and education of all the employees at all levels on a regular basis and not adopting to the usual casual approach. The author observes at least after ISO 9000 implementation some organisations have stepped up their training effort (at least for retaining the accreditation!)

DISTRIBUTION ANALYSIS OF QUALITY STANDARD CERTIFICATES AWARDED:

The analysis (Tables 3,4 & 5) covers 137 certificate awarded upto October 1993 and as such no agency has prepared consolidated list of all the certificates so far awarded, and hence there is likely to be some chances that a few companies have been left out in our attempt to consolidate. The number of companies covered by these certificates comes to 134. This number is less than the certificates awarded because in some company locations more than one certificate has been awarded. Typical example is the case of Kirloskar Electricals Unit III, Bangalore. This unit has obtained ISO 9001 and ISO 9002. Similarly, there are a few other companies of this category. The following highlights the analysis done with respect to the above data.

OVERALL INDUSTRY ANALYSIS:

Out of 137 certificates awarded, 43.8% comes under ISO 9001 and accordingly 56.2% comes under ISO 9002 (Table 3). The data shows that ISO 9003 has not been awarded to any company so far. It may be recalled that ISO 9003 is a model for 'Quality Assurance in final inspection and test'. It only indicates that no manufacturing unit has gone just for ISO 9003. If one is getting ISO 9001 or 9002, it implies that ISO 9003 requirement is

automatically met. (Note: In the earlier version of ISO 9000 series, ISO 9002 does not include servicing).

Analysis of distribution of Quality Standard Certificates issued (137) by various sectors of industry (Table 4) shows that Electrical and Electronics accounts for 35.0% of the total certificates awarded, Engineering industries accounts for 37.2%, chemicals 10.2%, steel 4.6%, Textiles 2.3%, Auto-parts manufacturers 6.6% and the rest (software projects, project management, etc.,) accounts for 4.6%. With Electrical and Electronics 52.1% of the certificates awarded accounts for ISO 9001 and balance of 47.9% accounts for ISO 9002. Similarly, with respect to engineering industries 44.0% of the certificates awarded account for ISO 9001 and 51.0% accounts for ISO 9002. For chemical, 21.4% of the certificates awarded accounts for ISO 9001 category and 78.6% of the certificates awarded account for ISO 9002. In the steel sector as well as in textiles, all the certificates so far awarded account for ISO 9002. Out of 9 certificates awarded to Auto Parts industries, 44.4% accounts for ISO 9001 and 55.6% accounts for ISO 9002. Finally in the 'others' category equal number of certificates have been awarded with respect to ISO 9001 and ISO 9002.

It can only be concluded that there will be continuously more number of Electrical and Electronics and also Engineering Industries going in for ISO 9000 certification. More number of Software organisations and also service-oriented organisations like banks would be planning for ISO 9000 certification. Since international activities/ operations have not taken up in a big way in many of the nationalised banks there seems to be a lethargic attitude to go in for ISO 9000 and in fact the same is true even for starting a TQM programme. As usual, banks are not concerned about improving the services in the domestic front. However, there is going to be more pressure on Software development organisations because of their exposure to international market and competition.

Distribution of Certifying Agencies:

There are totally 10 agencies operating in India as on date (October '93) and except SGS all others have been engaged in awarding the certificates. As per the data SGS has not awarded any certificate so far. Analysis of the data agencywise shows that 82.5% of the certificates awarded is accounted for by four organisations viz., BVQI, TUV, BIS and IRQS in that order. It is worth mentioning that BVQI alone was associated with 43.8% of the certificates awarded so far.

TABLE 3

DISTRIBUTION OF CERTIFICATES BY QUALITY STANDARD

Quality Standard	ISO			Total
	9001	9002	9003	
Number Awarded	60	77	-	137
Per cent Awarded	(43.8)	(56.2)	(0)	100

TABLE 4

DISTRIBUTION OF QUALITY STANDARD CERTIFICATES
BY VARIOUS SECTORS OF INDUSTRY

Quality Standard	Electrical & Electronics	Engineering	Chemicals	Steel	Textiles	Auto Parts	Others
ISO 9001	25 (52.1)	25 (49.0)	3 (21.4)	- (0)	- (0)	4 (44.4)	3 (50)
ISO 9002	23 (47.9)	26 (51.0)	11 (78.6)	6 (100)	3 (100)	5 (55.6)	3 (50)
ISO 9003	-	-	-	-	-	-	-
Percentage of Total awarded]	48 (35.0)	51 (37.2)	14 (10.2)	6 (4.6)	3 (2.3)	9 (6.6)	6 (4.6)

TABLE 5

**DISTRIBUTION OF CERTIFICATES ISSUED TO INDIAN COMPANIES
BY VARIOUS CERTIFYING AGENCIES**

Name of the Agency	No. of certifi- cates issued
* Indian Register Quality System (IRQS)	16 (11.7)+
* Bureau Veritas Quality International (BVQI)	60 (43.8)
* Standardisation, Testing and Quality Control (STQC) or SQ	8 (5.8)
* TUV (German)	20 (14.6)
* Bureau of Indian Standards (BIS)	17 (12.4)
* Det Norske Veritas (DNV)	9 (6.6)
* NQA (U.K.)	3 (2.2)
* SGS	- -
* British Standards Institution (U.K.) (BSI - U.k.)	3 (2.2)
* Australian Standards Association (ASA)	1 (0.7)
Total	----- 137

+percentages.

COST OF IMPLEMENTING ISO 9000 QUALITY STANDARD:

The various cost elements associated with implementing and obtaining ISO 9000 certification are as follows. None of the organisations which the author had visited, had kept track of all the expenses involved. However, they have been able to give details of heads under which expenses have been incurred. They are also consolidated and included in the list that is furnished below:

FOR A TYPICAL CASE

- * Auditor's (Final) Fee: Rs.5 lakhs
- * Training of Lead Assessors:
Training cost (approximate) Rs.30,000/person
Number of Lead assessors to be trained varies from

organisation to organisation. For example BHEL (Electronic Divn.) B'lore had 17 Lead Assessors trained.

- * Training other categories of people on ISO 9000:
Training for a batch of 20 participants, with fees alone comes to Rs.3 lakhs and plus cost of course material.
- * Cash outflow on employing other consultants for auditing and advice on various other aspects of ISO 9000 implementation (This is other than Final audit):
One organisation estimates this cost as approximately Rs.10 lakhs (BHEL, Bangalore).
- * Cost of introducing change in the infrastructure elements listed below should be taken into account:
 - Layout
 - Instruments for calibration
 - New Jigs and Fixtures and instruments
 - Addition of new equipments to improve/meet process capability requirements
 - New racks and other structures/frames to hold material and also equipments to load/unload/retrieve materials.
 - Creation of new documents.

DRAFT UPDATES TO ISO 9000 SERIES STANDARDS:

The ISO 9000 series are subjected to review every five years. The Quality Standard series which are currently being implemented in many organisations is referred to as ISO 9000 Series: 1987. The revision to this (1987) standards is already overdue and a draft on the updates of the ISO 9000 series has already been approved by member countries during the meeting held at Budapest in the month of September (20 to 24) 1993. By going through the draft recommendations one can conclude that the overall structure and format has been maintained same as 1987 standards. However, some changes have been made within the structure to achieve more clarity with respect to some clauses and also the elements within those clauses. Therefore, now the document has been made more readable. Some of the changes brought out in the draft are highlighted and no attempt has been made to give a complete list of changes.

1. In all the standards the element 'Scope' has been modified to focus on the customer. The following example with respect to ISO 9001 will clarify the point.

The aim of ISO 9001 standards as described under 'Scope' reads as follows: 'The requirements specified in this International Standard are aimed primarily at preventing non-conformity at all stages from design through to servicing'.

In the draft proposal the above has been modified as:

'The requirements specified in this International Standard are aimed primarily at achieving customer satisfaction by preventing non-conformity at all stages from design through servicing.'

Further, the sub-paragraph (1.2) viz., 'Field of Application' has been merged with (1.1) viz., 'Scope' and the main paragraph (1.0) viz., Scope and Field of Application has been titled as 'Scope'.

2. ISO 9002 is described as 'Quality Systems - Model for Quality Assurance in Production and Installation' according to 1987 version. Now after the draft proposal, it reads as follows:

'Quality System - Model for Quality, Assurance in Production, Installation and Servicing'. This is quite logical because ISO 9001 and ISO 9002 should differ only with respect to design/development element (Note: ISO 9002 includes all the elements of ISO 9001 except design/ development element). The absence of 'Servicing' in ISO 9002 in the 1987 version has created lot of confusion.

3. The following changes with respect to the title of the elements have been incorporated (only examples):

OLD TITLE	REVISED TITLE
a. Document Control (4.5)	a. Document and <u>Data control</u> (4.5)
b. <u>Purchaser</u> Supplied Product (4.7)	b. <u>Customer</u> Supplied Product (4.7)
c. Inspection, Measuring, and Test Equipment (4.11)	c. <u>Control</u> of Inspection, Measuring and Test Equipment (4.11)
d. Quality System (4.2)	d. Quality System (4.2) <u>General (4.2.1)</u> <u>Quality System Procedures (4.2.2)</u> <u>Quality Planning (4.2.3)</u>

The revised titles and additions adds clarity to the system elements.

4. The numbering of the clauses in all the standards are now similar and all the 20 elements are included in all the Standards (9001, 9002 & 9003). Wherever a particular element is not relevant to a standard (ISO 9002/ISO 9003), it is indicated that the scope does not include the particular element under consideration (E.g. "4.4 Quality in Specification and design" not relevant for ISO 9002 and ISO 9003). The uniformity in numbering makes comparison and cross referencing among the

standard much more easier than with the earlier ones.

Example: (Before Revision)

<u>ISO 9001</u>		<u>ISO 9002</u>	
<u>Element</u>	<u>No.</u>	<u>Element</u>	<u>No.</u>
Process Control	4.9	Process Control	4.8
Purchasing	4.6	Purchasing	4.5
Corrective action	4.14	Corrective action	4.13

5. Wherever appropriate the word 'Purchaser' has been replaced with 'Customer'. The following is an example with respect to ISO 9001.

<u>OLD TITLE</u>	<u>NEW TITLE</u>
4.7 Purchaser Supplied product	4.7 <u>Customer</u> Supplied product

6. The requirements of following certain statistical approaches/ techniques have now become mandatory. Earlier version of the standards (1987) gives the option to the supplier (Ref. clause 4.20).
7. ISO 9000 and ISO 9004 provide lot more information than the earlier versions. The table of contents for ISO 9000 indicates that there are as many as 30 headings under which information has been provided. The earlier version of ISO 9000 deals only with 8 topics. A reading of the ISO 9000 documents should provide useful information with respect to Quality Concepts, Procedures, Documentation and General Information with regard to various international standards.

Conclusions:

Based on the limited discussions the author had with the companies visited, the following observations are worth mentioning:

1. To implement ISO 9000, companies have to do lot of homework to fit into the structure/framework of ISO 9000. This is because the guidelines given are very general and whereas the certification demands demonstrating the practice of procedures as written out in the manuals, through evidences.
2. In order to manage ISO 9000 implementation effectively one has to identify and organise as many as 24 activities (macro). This task involves bringing

everything and everybody together.

3. The study identifies various issues/concerns that one has to deal with successfully implementing ISO 9000. Some of them are listed below:

- a) The size of the company
- b) Interest in achieving the certification
- c) Current state of readiness
- d) Other changes being introduced or system being introduced in the organisation
- e) Existence of Total Quality Management (TQM)
- f) Degree of professionalism in organising and allocating various tasks.
- g) The morale and culture of the organisation/people
- h) Whether the existing Quality System is well documented or not?
- i) Existence of any other Quality System or experience in undergoing third party audit
- j) Resistance to change
- k) Decision with regard to scope of coverage of products and services.
- l) Ability to sustain ISO 9000 certification.

Some of the above issues are discussed in detail in the text.

4. An industry analysis of the certificates awarded upto (October 1993) indicates the following trend:

- a) Out of 137 certificates awarded upto October 1993, 43.8% accounts for ISO 9001 and 56.2% accounts for ISO 9002;
- b) Industry sectorwise analysis shows that 35.0% accounts for Electrical and Electronic industries, 37.2% for Engineering industries, 10.2% for chemicals, and 4.6% for steel, textiles 2.3%, auto-parts manufacturers 6.6% and the rest (Software Projects, Project Management, etc.);
- c) Within Electrical and Electronics 52.1% accounts for ISO 9001 and the balance of 47.9% accounts for ISO 9002. Similarly, within Engineering industries, 49.0% accounts for ISO 9001 and 51.0% accounts for ISO 9002.

5. Discussions with the executives involved in implementing ISO 9000 indicates that the total expenses involved is much more than the fees paid to the consultants and certifying agencies. Some of the major heads of expenditure involved includes:

- * Training of all cadres of employees
- * Cost involved in actually changing the system to the requirements of ISO 9000.
- * Additional investments to be made in acquiring new equipments, instruments, etc., cost involved in improving the capability of the equipment/processes.

6. With regard to quantifying the benefit of ISO 9000 certification, one of the important parameters identified by every company is the decrease in the rejection percentage. No serious attempts have been made to identify and quantify other parameters like increase in throughput quantity, reduction in lead-time, overall productivity, etc.

QUALITY POLICY

THE QUALITY POLICY OF KIRLOSKAR ELECTRIC COMPANY SHALL BE TO DESIGN, MANUFACTURE, MARKET AND SERVICE PRODUCTS OF SUCH QUALITY WHICH RESULTS IN CUSTOMER SATISFACTION, QUALITY REPUTATION AND MARKET LEADERSHIP.

MISSION

KIRLOSKAR ELECTRIC IS A LEADER IN INDIA IN ELECTRICAL EQUIPMENT. OUR MISSION IS TO GROW IN THE BUSINESS OF ELECTRICAL, ELECTRONIC AND ALLIED PRODUCTS AND EXECUTE SYSTEMS AND PROJECTS USING STATE-OF-THE-ART TECHNOLOGY TO MEET CUSTOMER EXPECTATIONS, ENSURING A REASONABLE RETURN ON INVESTMENT.

VALUES

HOW THE MISSION IS ACCOMPLISHED IS AS IMPORTANT AS THE MISSION ITSELF. THE FOLLOWING BASIC VALUES ARE FUNDAMENTAL TO OUR SUCCESS.

PEOPLE - OUR PEOPLE ARE THE SOURCE OF OUR STRENGTH. THEY DETERMINE OUR REPUTATION AND VITALITY. OUR CORE HUMAN VALUES ARE TEAM WORK, LOVE AND RESPECT FOR EACH OTHER.

PRODUCTS - OUR PRODUCTS ARE THE RESULTS OF OUR PEOPLE, PROCESSES AND TECHNOLOGY. OUR PRODUCTS SHALL BE RESPECTED AT INTERNATIONAL MARKETS. QUALITY OF OUR PRODUCTS IS A DIRECT REFLECTION ON US.

PROFITS - PROFITS ARE NECESSARY FOR SURVIVAL AND GROWTH. PROFITS ARE THE ULTIMATE MEASURE OF HOW EFFICIENTLY WE PROVIDE CUSTOMERS WITH THE BEST PRODUCTS FOR THEIR EXPECTATIONS.



GUIDING PRINCIPLES

QUALITY COMES FIRST - TO ACHIEVE CUSTOMER SATISFACTION, THE QUALITY OF OUR PRODUCTS AND SERVICES IS OUR HIGHEST PRIORITY.

CONTINUOUS IMPROVEMENT IS ESSENTIAL TO ACHIEVE EXCELLENCE - WE SHALL STRIVE FOR EXCELLENCE IN ALL AREAS IN OUR PRODUCTS AND SERVICES, OUR HUMAN RELATIONS, OUR COMPETITIVENESS AND OUR PROFITABILITY.

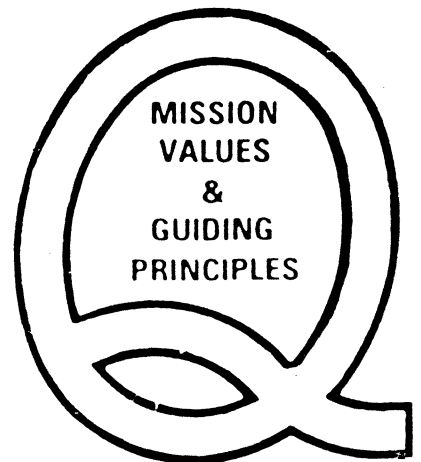
CUSTOMERS ARE THE FOCUS OF EVERYTHING WE DO - WE SHALL PROVIDE QUALITY PRODUCTS AND SERVICES TO CUSTOMERS BETTER THAN COMPETITION.

EMPLOYEE INVOLVEMENT IS OUR WAY OF LIFE - WE ARE A TEAM. WE MUST TREAT EACH OTHER WITH TRUST AND RESPECT.

DEALERS AND SUPPLIERS ARE OUR PARTNERS - WE MUST MAINTAIN MUTUALLY BENEFICIAL RELATIONSHIPS WITH DEALERS, SUPPLIERS AND OTHER BUSINESS ASSOCIATES.

RETURN ON INVESTMENT TO BE MAXIMISED - WE ARE COMMITTED TO ACHIEVE MAXIMUM RETURN ON INVESTMENT CONSISTENT WITH THE GROWTH OBJECTIVES.

INTEGRITY IS NEVER COMPROMISED - WE MUST CONDUCT OUR BUSINESS IN A MANNER THAT IS SOCIALLY RESPONSIBLE AND COMMANDS RESPECT. SOCIAL RESPONSIBILITY WILL BE SHOULDERS BY COMPLYING WITH THE LAWS OF THE STATE AND CONVENTIONS OF THE SOCIETY AND BY MAINTAINING A SAFE, CLEAN AND HEALTHY ENVIRONMENT.



KIRLOSKAR ELECTRIC CO. LTD.
UNIT III, BANGALORE.



Certificate of Approval

Awarded to

**BHARAT HEAVY ELECTRICALS LIMITED,
ELECTRONICS DIVISION
BANGALORE, INDIA.**

*Bureau Veritas Quality International certify that the
Quality Management System of the above supplier
has been assessed and found to be in accordance
with the requirements of the quality standards
and scope of supply detailed below.*

QUALITY STANDARDS

EN 29001-1987 ISO 9001-1987 BS 5750:PART 1:1987

SCOPE OF SUPPLY

**DESIGN, DEVELOPMENT, MANUFACTURE AND SERVICING OF
POWER SEMICONDUCTORS, ENERGY METERS, TELECOMMUNICATION
SWITCHING EQUIPMENT, POWER ELECTRONICS, AUTOMATION
AND CONTROL SYSTEMS FOR POWER, INDUSTRY AND
TRANSPORTATION SECTORS.**

*Subject to the continued satisfactory operation of the supplier's
Quality Management System, this Certificate is valid for a period of three years from:*

27TH JULY, 1993

For Bureau Veritas Quality International

Date **16TH AUGUST, 1993**



A handwritten signature in black ink, appearing to be 'S. S. S.', is written over a horizontal line.

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