



Chapter 14. Infrastructure and Work Environment

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0) Introduction

There are a few applicable clauses in this chapter. The focus is on infrastructure and work environment needed to support the operations. This chapter is only on provisions of infrastructure and work environment, and some conceptual changes. Details on their maintenance are in Chapter 27.

1) 7.1.3 Infrastructure (ISO9001)

(Clause Description-Paraphrase)

The organization shall determine, provide and maintain the infrastructure necessary for the operation of its processes and to achieve conformity of products and services. Infrastructure is explained in the note as: a) buildings and associated utilities; b) equipment, including hardware and software; c) transportation resources; d) information and communication technology.

(Highlights of the clause)

- (Ref to old Standards) There has been a similar clause 6.3, of the same title in the older version of ISO9001
- The previous requirements were all taken into the new Clause. And there is no additional requirements.
- The requirement is there shall be adequate infrastructure to support the production and quality obligations.
- The infrastructure shall be sufficient to, (a) to meet new requirement, (b) maintaining the required operation state.

(Compliance Best Practice)

7.1.3 Infrastructure

1. *When considering an RFQ, infrastructure will be reviewed for feasibility study. This is one way to assess adequacy of infrastructure. But it has some shortcomings.*
2. *Infrastructure are normally big-ticket items and involve high investments, and need be budgeted. Many RFQ has to be foregone due to lack of infrastructure. Infrastructure investment should be continuously provided so it would not be totally off limit to a new opportunity*
3. *One way is to conduct a review of infrastructure & environment once a year, e.g. during the internal audit. See **Exhibit 14-1** for a specimen. This was a requirement in the previous version of IATF.*

4. *The review is qualitative in nature and done on section to section basis, for the entire plant. This is sufficient as a first effort to assess adequacy. At least the general auxiliary improvement can be provided, so that any future RFQ investment will be lightened.*
5. *Plant, machinery and facilities need to be maintained. The emphasis is on preventive and predictive, and not on breakdown maintenance. See Chapter 27 more discussion.*

2) 7.1.3.1 Plant, facility, and equipment planning (IATF16949)

(Clause Description-Paraphrase)

The organization shall use a multidisciplinary approach for developing and improving plant, facility, and equipment plans. Organization shall also ensure good plant layout to achieve, a) optimize material flow, material handling, synchronous material flow and value-added use of floor space.

Manufacturing feasibility for new product or new operations shall be conducted. Capacity, proposed changes to existing operations, periodic re-evaluation relative to risk shall also be studied.

Author's note: For exact wordings, please refer to standard indicated after the clause title.

(Highlights of the clause)

- (Ref to old Standards). There has been a similar clause, 6.3.1, Plant, facility and equipment planning, in the old version of ISO/TS16949.
- This new Clause continues to emphasize the use of multidisciplinary approach for developing and improving plant facilities and equipment plans.
- The previous requirement on designing plant layout remained.
- There is a new focus is on new product, changes to existing operations, and capacity study. Risk evaluation, risk mitigation from changes also need to be studied and adopted.

(Compliance best practice)

7.1.3.1 Plant, facility, and equipment planning

1. *There are many requirements within this Clause. The first portion is about shop floor and equipment planning. IATF Auditor usually probe by asking if there had been any improvement study conducted on the shop floor. If so, the reports will be studied to assess the planning effectiveness and also any follow-up actions. Refer to Point 3 & 4 below.*
2. *The second portion of the clause deals conducting feasibility study on new product or changes to exiting products or operations. This is normally done during APQP and PPAP activities. If there has been any APQP/PPAP activities for the past year, they are your evidences of compliance.*
3. *The third portion of the clause is about maintaining existing process effectiveness. Processes need to be re-evaluated depending on risk analysis, and should show the incorporation of any changes made during process approval, control plan review, maintenance review; and verification of job set-ups etc. Note that SI-13 requires reporting of process studies, which is related this Clause. See **Chapter 23** for more information on process study.*
4. *For general plant and facilities, there are also some expectations for improvement:*
 - a) *Material flow study and time study can be achieved by means of value-stream analysis. The method available in the internet and not discussed here.*
 - b) *Plant layout improvement. This will be based on the findings of multidisciplinary team. Take note that some customers require to be informed in the event of changes done to production lines and facilities.*

3) 7.1.4 Environment for Operation of Processes (ISO9001)

(Clause Description-Paraphrase)

The organization shall determine, provide and maintain the environment necessary for the operation of its processes and to achieve conformity of products and services. Two (2) Notes say that social, psychological, physical considerations can be included; and for personnel safety, registration to ISO45001 is considered complying.

(Highlights of the clause)

- (Ref to old Standards). There has been a similar clause, 6.4 Work Environment, in the older version of ISO9001. The wordings differ somewhat but the content remained.
- From the NOTE, the scope now may include the 'comfort' part for work environment such as social, psychological and physical. Human and Physical factors are: (a) social (e.g. non-discriminatory, calm, non-confrontational); (b) psychological (e.g. stress-reducing, burnout prevention, emotionally protective); (c) physical (e.g. temperature, heat, humidity, light, airflow, hygiene, noise).
- The former Clause 6.4.1 (Personnel safety to achieve conformity to product requirement) under the old ISO/TS16949, has been removed.
- A NOTE now appeared stating that if there is a OHS (occupation health safety) program in force, safety and environment may be left out of the audit.

(Compliance best practice)

7.1.4 Environment for Operation of Processes

1. *IATF Auditor will check on this area during the production line audit, where he or she can understand what kind of work environment is needed and how it is provided and maintained.*
2. *There is no special evidence required, except for the availability of controls and maintenance of the required environment. For OHS, even if you have an ISO45001 certification, personnel safety is still subject to audit. IATF auditors however will not purposely look for non-compliances in OHS, such as picking on operators wearing safety-shoes or ear plugs. But processes that have potential impact on the operators will be looked into.*
3. *On the question of whether the comfort part should be provided is entirely at the discretion of the organization, as it is mentioned only as a "NOTE".*

4) 7.1.4.2 Environment for the operation of processes- supplemental (IATF16949)

(Clause Description-Paraphrase)

The organization shall maintain its premises in a state of order, cleanliness, and repair that is consistent with the product and manufacturing process needs.

(Highlights of the clause)

- (Ref to old Standards). There has been a similar clause, 6.4.2. Cleanliness of premise, in ISO/TS16949.
- There is no change and it appears in the same wordings. Therefore lack of 5S can be a finding in automotive QMS.

(Compliance best practice)



7.1.4.2 Env for the operation of processes- supplemental

1. Good housekeeping is a requirement for IATF16949, not for ISO9001
2. You don't need a full-scale 5S program, but keeping the place neat and tidy is required
3. Like in the case of safety, IATF auditor will not purposely look into compliance of this clause, but will pick up non-compliance while doing his/round rounds.

5) SIs & FAQs

SI Nbr	IATF	Clause Description
18	7.1.3.1 Plant, facility, and equipment planning	<p>The organization shall use a multidisciplinary approach including risk identification and risk mitigation methods for developing and improving plant, facility, and equipment plans. In designing plant layouts, the organization shall:</p> <ul style="list-style-type: none"> a) optimize material flow, material handling, and value-added use of floor space including control of nonconforming product; and b) facilitate synchronous material flow, as applicable; and c) implement cyber protection of equipment and systems supporting manufacturing. <p>Rationale for change: Cybersecurity is not limited to the support functions and office areas using computers. Manufacturing also uses computerized controls and equipment which would be at risk to cyber-attack. This addition drives the implementation of necessary protections to ensure continued operation and production to meet customer requirements.</p>

6) Supplementary Notes

Legend: HOC= Highlights of Clause, CBP= Compliance Best Practice, S&Q= SIs & FAQ, EXH= Exhibits

Clause	Section	Clarification Subjects
7.1.3	CBP	SN14-1. Do we need to conduct a periodic review on adequacy of infrastructure, equipment?
7.1.3.1	CBP	SN14-2. Why does the standard keep emphasizing multi-disciplinary appropriate for plant design, review and planning?
7.1.4	CBP	SN14-3. Does the clause 7.1.4 requires us to improve on the comfort part to all employees?
7.1.4.1	CBP	SN14-4. Do we need a formalized 5S program for compliance?
7.1.4.1	CBP	SN14-5. If I also have ISO45001, can I totally ignore the OHS clauses.

SN14-1. Do we need to conduct a periodic review on adequacy of infrastructure, equipment?

It used to be so, in the last version of IATF. But it is no longer required. It is still done, not as a fixed event, but most likely during RFQ. Review of risk and opportunity is another possibility that the infrastructure and working environment will be reviewed. But you can always carry out a review, as suggested earlier in the Best Practice, and the findings are submitted for management decisions. See **Exhibit 14-1**.

SN14-2. Why does the standard keep emphasizing multi-disciplinary team for plant design, review and planning?



In SME, it is common for the boss to make all the decisions, including equipment purchase, often without consulting. Operating experience and market feedback are also not considered much. When a wrong decision is made, the organization has to live with the mistake for a long time. Therefore IATF encourages to go team work, consult and based on informed opinions before acting.

SN14-3. Does the clause 7.1.4 requires us to improve on the comfort part to all employees?

No. the part of comfort is just a NOTE. It is not mandatory. But you can, you are encouraged to do so, as it attracts people to stay with you longer.

SN14-4. Do we need a formalized 5S program for compliance?

5S is required but not a formalized program. Auditor will base perception on what he/she see. It will not be a full scale 5S audit. Some posters will be good, but also not mandatory. Just keep the place neat and tidy.

SN14-5. If I also have ISO45001, can I totally ignore the OHS clauses?

No. Auditor still has the responsibility to ensure safety. The perception will be on what he/she see. Just keep the place safe and free of significant hazards. IATF auditors will be more concerned with work steps that can cause injury or health hazard to operators, not so much the general environment. Your WI must show safety caution as it is a requirement.

7) Exhibits

Exhibit 14-1. ISWE Review

ISWE Review						
Facilities/Department Reviewed	Team Leader	Members	Date			
Cutting						
Check Items	Audit Notes	NA	OK	Obs	NC	
A. Infrastructure						
1. Is there enough adequate space to perform work?	Space is very tight			x		
2. Are there sufficient filing cabinets and shelves?	No space but not required		x			
3. Are there sufficient equipment and are these equipment up to date?	Machine and forklifts-sufficient		x			
4. Can the equipment cope with an increased business of, say, 30%? (For forward planning purpose)	Doubtful. Forward planning needed now			x		
5. Are there sufficient storage areas and facilities for materials, WIP and tools?	Currently kept where space can be found, including walkways and machine areas. Trimming waste is also stack everywhere					x
6. Is the building and fixtures properly maintained?	Upkeep lacking					x
B Working Environment						
1. Is the temperature/lightings, humidity etc optimum to maintain product quality or perform testing?	Acceptable		x			
2. Are there problematic elements that may affect product quality or perform testing e.g. noise, odour, presence of insects?	Lighting is poor. Temperature is hot but more from OHS and productivity effect perspective		x			
3. Is the factory layout to minimize unnecessary movements and handling? Is there minimum cross crossing of material flow to avoid cross-contamination (where applicable)?	Flow from cutting to packing is not logical. Redesigning may be needed			x		
4. Is the place clean and orderly (5S)?	Drastic improvement needed.					x
Signatures of ISWE Team Members						

Remarks given in this section explain on the Exhibit. Do not include them as part of the document

- This is not a mandatory activity, but one with good merits. It is good for renewal of strength. Infrastructure ages and losing efficiency with time, even with good maintenance program.
- Best to do this annually, and the findings can be considered for budgets for the coming year.
- Relying solely for RFQ to analyze infrastructure may be inadequate, as some of these are big-ticket items that need a longer time-frame to plan. They may also need time to acquire, even with the funding available