NFPC
Integrated Systems Engineering
Hydraulics • Pneumatics • Electronics
National Fluid Power Centre

# How Competent is Your Workforce ?

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***Introduction:***

*BS EN ISO 9001:2015- Clause 7.2 outlines organisational responsibilities relating to COMPETENCE of their Staff.*

*Organisations shall:*

*a) determine the necessary competence of person(s) doing work under its control that effects the performance and effectiveness of the QMS*

*b) ensure that these persons are competent on the basis of appropriate education, training or experience*

*c) where applicable, take actions to acquire the necessary competence and evaluate the effectiveness of the actions taken*

*d) retain appropriate documented information as evidence of Competence*

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**Overview**

With the continuous drive towards Automation and Control across an extensive range of Sectors, this begins to greatly affect the knowledge and skills of the UK workforce.

Automation and Control introduces greater levels of Integrated Systems Engineering involving Hydraulics, Pneumatics and Applied Electronics. This places greater demands upon Employers to invest in the "Learning and Developments" of their Maintenance and Engineering Staff to be able to effectively manage these systems.

This now raises the subject of COMPETENCE, a word that is used loosely where by Employers often relate to years of service and experience as being a conformation of Competence.

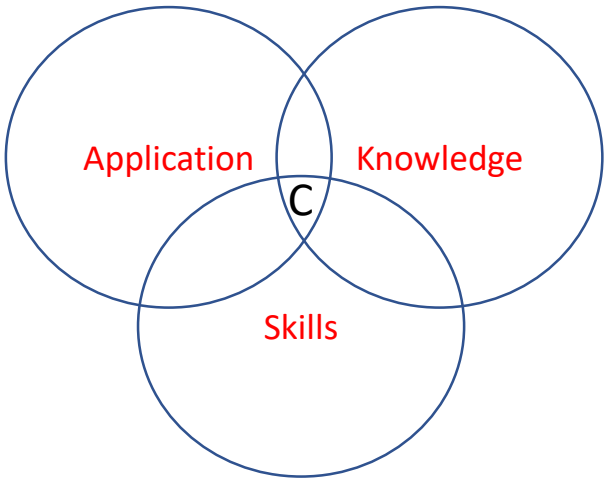
Clearly good experience (that which cannot be read in books) adds great value to the case of a persons capability. However, bad practices creep in and are often transferred to others, often with unforeseen circumstances and often at a later date.

Lets consider a plan for all to follow: (reference Current Staff knowledge to be determined)

1. On the NFPC Website Home Page we offer FOC an online self assessment process consisting of a knowledge based series of tests, each taking approximately 15 minutes to complete. At the end of the test (s) Candidates are given a score reflecting their current knowledge levels and training recommendations are presented.
2) Employers should have a "learning and development" plan and this should progressively aim to educate and upskill their staff
3) So far we have not addressed COMPETENCE, this is the next stage of the plan. At this stage lets us define in this case "Technical Competence"

**DEFINITION of Competence**

**" The APPLICATION of KNOWLEDGE and SKILLS to effectively carryout a TASK, SAFELY in a given amount of TIME to the required STANDARD and with REPEATABILITY"**



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Let us look at the roles carried out by Maintenance Staff- they involve:

- Planning and the development of work schedules
- Use and application Technical Data
- Installation
- Commissioning
- Performance Testing
- Maintenance and Systems Management
- Fault diagnosis/prevention
- Servicing and component replacement
- Design modifications and sustainability

To effectively carryout this range of skills and align these to specific Competence levels, each should be carefully analysed following the procedures below:

1. Identify Occupational Levels 1, 2 or 3- these relate to the levels of responsibility

**Level 1**: **First Line (Advanced Apprentice/Technician)** This person will: perform activities, following an established procedure. use suitable test equipment to ensure safe isolation of systems when performing specific tasks. carry out activities which will be of short duration and which reoccur frequently. identify problems which will be reported and rectified through predefined actions.

**Level 2: Second Line (Technician)** This person will: perform a variety of activities needing some understanding of the technical factors involved. carry out activities which may require the interpretation and application of varied and non-routine specifications. carry out activities which will involve the use of simple diagnostic checks and ability to make a positive response to deviations. work in co-operation with others in teams or work groups as may be required.

**Level 3: Third Line (Senior Technician/Engineer)** This person will: be involved in a broad and often complex range of activities, often requiring independent decisions to be made on technical matters concerning specifications, resources or processes. be responsible for planning of work will be a responsibility, as well as the finding and rectification of faults.

*At all levels, Health and Safety, application of Safe Working Practices and Risk Management will be applied as core elements throughout*

**PROCESS**

**For each Key Skill aligned to the Occupational Level we need to:**

1. List the necessary "Performance Criteria" as a TASK
2. Identify the list of Evidence Indicators to be used to address competency

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**Typical Example- relating to a Level 1 Occupation**

**TASK 1- Performance Criteria- relating to a particular machine system – involving:**

- Recognition of selected Component Parts, functionality, circuit/symbol recognition.
- Checking operating pressures at strategic points and recording the results.

**Evidence Indicators**

- Obtain the Risk Assessment Profile, study and establish safe working practices to carry out this task including LOTO procedures
- Identify the key components and explain there functionality and position on the Circuit diagram
- Identify the pump type and its connections
- Identify methods employed for controlling pressure and flow and explain the effects on performance if adjustments to their settings takes place
- Identify actuator types
- Identify the location of the filter and its specification
- Identify the pressure test points on the circuit diagram and actual machine
- Establish a test point check list and action plan to carryout pressure checks
- Demonstrate measuring and recording pressure readings safely
- Complete a report of all actions taken

**The process of Assessing Competence would be carried out by a Technical Assessor working closely with Employers and would involve two key assessment elements:**

1. **A written test assessing knowledge**
2. **Practical Task Assessments via, observation, non-intrusive dialogue and running commentary**