INDUSTRIAL MEASURMENT AND CONTROL SECTOR RESEARCH FINDINGS SUMMARY

1. Research objectives

The specific research objectives were to:

- Identify broad issues in the workplace and learning environment that impact on the current and future skill needs for instruments technicians.[1]
- Gather descriptive information to support the upcoming review of the National Certificate in Industrial Measurement and Control (Level 4).

2. Research methodology

Information was gathered from surveys, interviews, and telephone and email correspondence as well as from the internet and ETITO's database.

3. Information gathered from the research

3.1 Industry Environment

- Current trainees are male, predominantly European/Pakeha, involved in dual skilling (usually with an electrical qualification first) and the majority are 30 years or over.
- There is an IMC skill shortage. The current level of uptake of IMC qualifications is low. Some people perform an IMC role with no formal IMC qualification. Instrument technicians are listed on the Department of Labour's Immediate Skill Shortage List.
- IMC is seen as a desirable job by both employers and trainees. However, the profile of instrument technicians is low with most people not knowing what the job entails.
- Technological advances in process control will impact on companies with large plants through the introduction of more complex process control systems and will impact on society at large by the embedding of process control systems into an increasing number of products.
- There are conflicting views as to whether there will be a demand for more, or fewer, instrument technicians; whether IMC contractors or IMC employees will be used and whether instrument technicians will require more or less specialised skills. Concurrent with this is the conflicting view that the current Industrial Measurement and Control (Level 4) may, or may not; need to exist in the future. Higher levels of IMC qualifications or more general qualifications with IMC embedded may be what are required.
- Instrument technicians will move from a reactive approach to work to a more proactive one and will spend less time in the field due to remote diagnostic fault finding capability.

3.2 Skills and Attributes

- Skills are needed for both old and new technologies.
- Providing a more general qualification is seen as a way of accommodating the ongoing changes in technology and a way of 'future proofing' skills learnt.
- More electronic and complex industrial measurement and control systems will influence future skill needs, with more focus on process technology and information technology skills.

Note that for the purpose of this research the title of 'instrument technician' was used as a generic title to represent a person with IMC skills and/or qualifications

- More academic and analytical ability; the showing of initiative and interest in information technology will help instrument technicians perform their role effectively in the future.

3.3 Qualification

- Employers value Industrial Measurement and Control (Level 4). It provides a national benchmark for quality and in many instances is a basic requirement for employment.
- Off-job and on-job training and assessment are predominantly viewed positively in terms of meeting current and future skill needs, provided continuous and rigorous reviews of the qualification continue. However some suggestions for improvement were identified.

Key points for each aspect of the qualification are detailed below.

Content

- Understanding obsolete equipment is important as it is still in use and understanding how such equipment works provides the basis for understanding new technology.
- The inclusion of content relating to installation is challenged by some, as installation is rarely done by instrument technicians in New Zealand. Some respondents feel that the content should be maintenance focused only.

Off-job training

- The effectiveness of off-job training is tutor dependent.
- The monopoly status of the provider leads to complacency on the part of the provider and lack of choice on the part of trainees.

Off-job assessment

- The giving of two or three chances to trainees to pass this qualification is diminishing the status of the qualification.

On-job training

- On-job training continues to be viewed as the best way to learn.
- An employer's ability to provide exposure to tasks varies according to the company's process and instrumentation equipment. It is therefore suggested that ETITO assess employer capability to provide on-job training exposure prior to the signing of a training agreement.
- It is suggested that ETITO formalise a system to ensure more companies work together to provide adequate on-job training exposure.
- There are mixed views as to the effectiveness of work place log books (WPLB's) for on-job training (and assessment).
- Some employers aren't skilled in mentoring or providing structured training. They could benefit from ETITO providing guidelines to support effective on-job training.

On-job assessment

- On-job assessment does not work as well in some companies as it does in others, due to a shortage of assessors, subjectivity of assessment and lack of regular moderation.

Barriers to completing the qualification

- Although most people feel that there are no barriers to completing the qualification, a significant minority did identify barriers.

3.4 Pathways

Recruitment

- People are attracted into an instrument technician role as it is well paid and provides interesting, varied and challenging work. People will be even more attracted to it in the future as it will be an even cleaner job, carry a higher status than electrical or mechanical technician roles and become even better paid.

Entry Level

- Most have NCEA Level 1 or higher in maths and science.
- Many complete an electrical apprenticeship first.

Predominant pathway currently

Most instrument technicians dual skill with both a National Certificate in Electrical Engineering [Electrician for Registration] (Level 4) and a National Certificate in Industrial Measurement and Control (Level 4).

Other IMC qualifications

- Some feedback suggested there is no need to dual skill and gain both the National Certificates in Electrical Engineering [Electrician for Registration] (Level 4) and Industrial Measurement and Control (Level 4).
- Some people feel that there is a future for two forms of electricians: a commercial electrician and an industrial electrician. This is consistent with some other countries.
- Awareness of IMC Level 5 as a further qualification option appears to be increasing.
- A National Diploma in Engineering followed by either a Bachelor of Engineering Technology or Bachelor of Engineering are available qualification pathways.

3.5 Support systems

Company support

- Most companies have human resource support systems in place to support instrument technicians involved in completing Industrial Measurement and Control (Level 4).
- Where performance management systems were in place they tended to relate to overall performance on the job rather than individual key performance areas.
- Although gender is not viewed as a direct barrier to employment as an instrument technician, it is viewed as an indirect barrier as there is a historical belief that women do not do trade jobs. Ethnicity is not viewed as a barrier, however, level of education and the lack of good English are seen as barriers.

ETITO support

- ETITO support was predominantly rated as adequate or good; however some suggestions for improvement were identified.

- This research process and the recent IMC assessor forum were positively viewed as ETITO is typically seen as not giving the IMC sector sufficient focus.

Provider support

- Provider support was predominantly rated as good or better, however some suggestions for improvement were identified.

Industry association's support

- The Institute of Industrial Measurement and Control was largely unknown.
- The existence of any IMC Advisory Group was unknown to most.

4. Recommendations

A number of recommendations arise from this report.