TECHNICAL DESCRIPTION
MECHATRONICS

MANUFACTURING AND ENGINEERING TECHNOLOGY

WorldSkills International, by a resolution of the Technical Committee and in accordance with the Constitution, the Standing Orders and the Competition Rules, has adopted the following minimum requirements for this skill for the WorldSkills Competition.

The Technical Description consists of the following:

Effective 12.08.14

Stefan Praschl
Chair Technical Committee

Michael Fung
Vice Chair Technical Committee

1 INTRODUCTION

1.1 NAME AND DESCRIPTION OF THE SKILL COMPETITION

1.1.1 The name of the skill competition is

Mechatronics

1.1.2 Description of the associated work role(s) or occupation(s).

Mechatronics technicians build automated systems for industry. Mechatronics involves mechanics, electronics, and pneumatics and computer technology. The computer technology element covers information technology applications, programmable machine control systems, and technology which enable communication between machines, equipment and people.

Mechatronics combines skills in mechanics, pneumatics, electronically controlled systems, programming, and robotics and systems development. Mechatronics technicians design, build, maintain and repair automated equipment, and also program equipment control systems.

Outstanding mechatronics technicians are able to meet a variety of needs within industry. They carry out mechanical maintenance and equipment building. They also deal with equipment for information gathering, components (sensors) and regulating units. Mechatronics technicians install, set-up, repair and adjust machine components and manage equipment control systems, including their programming.

The more common and visible mechatronics appliances include shop tills (belt and cash register assemblies) and automated bottle machines.

Industrial applications include automated production and process lines that include assembly, packaging, filling, labelling and testing, as well as automated distribution and logistics systems.

1.1.3 Number of Competitors per team

Mechatronics is a team skill with two Competitors per team.

1.2 THE RELEVANCE AND SIGNIFICANCE OF THIS DOCUMENT

This document contains information about the standards required to compete in this skill competition, and the assessment principles, methods and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

1.3 ASSOCIATED DOCUMENTS

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSI – Competition Rules
- WSI – WorldSkills Standards Specification framework
- WSI – WorldSkills Assessment Strategy (when available)
- WSI – Online resources as indicated in this document
- Host Country – Health and Safety regulations

2 THE WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

2.1 GENERAL NOTES ON THE WSSS

The WSSS specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSSS).

The skill competition is intended to reflect international best practice as described by the WSSS, and to the extent that it is able to. The Standards Specification is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will not be separate tests of knowledge and understanding.

The Standards Specification is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards Specification. The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those skills that are set out in the Standards Specification. They will reflect the Standards Specification as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

2.2 WORLDSKILLS STANDARDS SPECIFICATION

SECTION		RELATIVE IMPORTANCE (%)
1	**Work organization and management**	10
	The individual needs to know and understand: • Principles and applications of safe working generally and in relation to mechatronics • The purposes, uses, care and maintenance of all equipment and materials, together with their safety implications • Environmental and safety principles and their application to good housekeeping in the work environment • Principles and methods for work organization, control and management • Principles of team working and their applications • The personal skills, strengths and needs that relate to the roles, responsibilities and duties of others individually and collectively • The parameters within which activities need to be scheduled	

	The individual shall be able to: • Prepare and maintain a safe, tidy and efficient work area • Prepare self for the tasks in hand, including full regard to health and safety • Schedule work to maximize efficiency and minimize disruption • Select and use all equipment and materials safely and in compliance with manufacturers' instructions • Apply or exceed the health and safety standards applying to the environment, equipment and materials • Restore the work area to an appropriate state and condition • Contribute to team performance both broadly and specifically • Give and take feedback and support	
2	**Communication and interpersonal skills**	**10**
	The individual needs to know and understand: • The range and purposes of documentation in both paper and electronic forms • The technical language associated with the skill • The standards required for routine and exception reporting in oral, written and electronic form • The required standards for communication with clients, team members and others • The purposes and techniques for generating, maintaining and presenting records	
	The individual shall be able to: • Read, interpret and extract technical data and instructions from documentation in any available format • Communicate by oral, written and electronic means to ensure clarity, effectiveness and efficiency • Use a standard range of communication technologies • Discuss complex technical principles and applications with others • Complete reports and respond to issues and questions arising • Respond to clients' needs face to face and indirectly • Arrange to gather information and prepare documentation as required by the client	

3	**Developing mechatronics systems**	20

	The individual needs to know and understand:
	• Principles and applications for
	
	    • Designing, assembling and commissioning a mechatronics system
	    • The components and functions of hydraulics systems
	    • The components and functions of electrical and electronic systems
	    • The components and applications of derives
	    • The components and applications of industrial robotics systems
	    • The components and functions of PLC systems
	
	• Principles and applications of design and assembly of mechanical systems including pneumatic and/or hydraulic systems, their standards and their documentation
	• Principles and applications for incorporating industrial robots within the system	

	The individual shall be able to: • Carry out systems design for given industrial applications • Identify and resolve areas of uncertainty within the briefs or specifications • Optimize the design within the parameters of the specification • Assemble machines according to documentation • Connect wires and tubes according to industry standards • Incorporate industrial robots within systems as required • Install, set up and adjust as required the mechanical, electrical and sensor systems • Commission machines with the use of auxiliary equipment and a PLC, using their standards and documentation	
4	**Using industrial controllers**	20
	The individual needs to know and understand: • The functions, structures and operating principles of PLCs • The functions and structures of industrial controllers (PLCs) • The configuration of the industrial controller • The methods by which software programs relate to the actions of machinery	
	The individual shall be able to: • Connect PLCs to mechatronics systems • Make the necessary configurations of industrial controllers • Configure all aspects of PLCs as required, together with the associated control circuitry for correct operation	
5	**Software programming**	20
	The individual needs to know and understand: • How to program using standard industrial software • How a software program relates to the action of machinery and systems	

	The individual shall be able to: • Write programs to control a machine • Visualize the process and operation using software • Program PLCs, including digital and analogue signal processing and industrial field buses	
6	**Circuit design**	**10**
	The individual needs to know and understand: • The principles and applications for circuit design • Methods for designing and assembling electrical circuits in machine and controller systems	
	The individual shall be able to: • Design pneumatic, hydraulic and electrical circuits • Design the circuits using modern software tools	
7	**Analysis, commissioning and maintenance**	**10**
	The individual needs to know and understand: • Criteria and methods for testing equipment and systems • Analytical techniques for fault finding • Techniques and options for making repairs • Strategies for problem solving • Principles and techniques for generating creative and innovative solutions • Principles and applications of Total Productive Maintenance (TPM)	
	The individual shall be able to: • Test run individual modules and assembled systems • Review each part of the assembly process against established criteria • Find faults in a mechatronic system using appropriate analytical techniques • Repair components in efficiently • Optimize the operation of the machinery through analysis and problem solving • Optimize the operation of each module of the mechatronics system • Optimize the operation of the mechatronic system as a whole • Present the assembly to the client and respond to questions	

3 THE ASSESSMENT STRATEGY AND SPECIFICATION

3.1 GENERAL GUIDANCE

Assessment is governed by the WorldSkills Assessment Strategy. The Strategy establishes the principles and techniques to which WorldSkills assessment must conform.

Expert assessment practice lies at the heart of the WorldSkills Competition. For this reason it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the WorldSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the WorldSkills Competition falls into two broad types: measurement and judgment. These are referred to as **objective** and **subjective**, respectively. For both types of assessment the use of explicit benchmarks against which to assess each Aspect is essential to guarantee quality.

The Marking Scheme must follow the weightings within the Standards Specification. The Test Project is the assessment vehicle for the skill competition, and also follows the Standards Specification. The CIS enables the timely and accurate recording of marks, and has expanding supportive capacity.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed and developed through an iterative process, to ensure that both together optimize their relationship with the Standards Specification and the Assessment Strategy. They will be agreed by the Experts and submitted to WSI for approval together, in order to demonstrate their quality and conformity with the Standards Specification.

Prior to submission for approval to WSI, the Marking Scheme and Test Project will liaise with the WSI Skill Advisors in order to benefit from the capabilities of the CIS.

4 THE MARKING SCHEME

4.1 GENERAL GUIDANCE

This section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the WorldSkills Competition, in that it ties assessment to the standards that represent the skill. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards Specification.

By reflecting the weightings in the Standards Specification, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Standards Specification, if there is no practicable alternative.

The Marking Scheme and Test Project may be developed by one person, or several, or by all Experts. The detailed and final Marking Scheme and Test Project must be approved by the whole Expert Jury prior to submission for independent quality assurance. The exception to this process is for those skill competitions which use an external designer for the development of the Marking Scheme and Test Project.

In addition, Experts are encouraged to submit their Marking Schemes and Test Projects for comment and provisional approval well in advance of completion, in order to avoid disappointment or setbacks at a late stage. They are also advised to work with the CIS Team at this intermediate stage, in order to take full advantage of the possibilities of the CIS.

In all cases the complete and approved Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition using the CIS standard spreadsheet or other agreed methods.

4.2 ASSESSMENT CRITERIA

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived in conjunction with the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards Specification; in others they may be totally different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme must reflect the weightings in the Standards Specification.

Assessment Criteria are created by the person(s) developing the Marking Scheme, who are free to define criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I).

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria.

The marks allocated to each criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each aspect of assessment within that Assessment Criterion.

4.3 SUB CRITERIA

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a WorldSkills marking form.

Each marking form (Sub Criterion) has a specified day on which it will be marked.

Each marking form (Sub Criterion) contains either objective or subjective Aspects to be marked. Some Sub Criteria have both objective and subjective aspects, in which case there is a marking form for each.

4.4 ASPECTS

Each Aspect defines, in detail, a single item to be assessed and marked together with the marks, or instructions for how the marks are to be awarded. Aspects are assessed either objectively or subjectively and appear on the appropriate marking form.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it and a reference to the section of the skill as set out in the Standards Specification.

The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the skill in the Standards Specification. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4.1)

4.5 **SUBJECTIVE MARKING**

Subjective marking uses the 10 point scale below. To apply the scale with rigour and consistency, subjective marking should be conducted using:

- benchmarks (criteria) to guide judgment against each Aspect
- the scale to indicate:
    - 0: non attempt;
    - 1-4: below industry standard;
    - 5-8: at or above industry standard;
    - 9-10: excellence.

4.6 **OBJECTIVE MARKING**

A minimum of three experts will be used to judge each aspect. Unless otherwise stated only the maximum mark or zero will be awarded. Where they are used, partial marks will be clearly defined within the Aspect.

4.7 THE USE OF OBJECTIVE AND SUBJECTIVE ASSESSMENT

The final deployment of objective or subjective assessment will be agreed when the Marking Scheme and Test Project are finalized. The table below is advisory only for the development of the Test Project and Marking Scheme.

SECTION	CRITERION	MARKS		
		Subjective	Objective	Total
A	Task one: Assembly, programming and commissioning of a Station	0		16
A1	Allocation to be checked using simulation box	0	4.8	
A2	Function to be checked using PLC board	0	7.2	
A3	Professional Practice	0	4.0	
B	Task two: Maintenance in the station	0		10
B1	Allocation to be checked using simulation box	0	1.6	
B2	Function to be checked using PLC board	0	4.4	
B3	Professional Practice	0	2.0	
B4	Time evaluation	0	2.0	
C	Task three: Assembly, programming and commissioning of a small production line	0	24	24
D	Task four: Assembly, programming and commissioning of a production line	0	24	24
E	Task five: Optimizing of a production line	0	16	16
F	Task six: Maintenance in a production line	0	10	10
	Total	**0**	**100**	**100**

4.8 COMPLETION OF SKILL ASSESSMENT SPECIFICATION

Assessment specification is as per the Annexure in the Memorandum of Understanding: Specific Aspects of Involvement by Festo.

The above mark distribution (Section 4.7) is an indication only.

The Competition Information System (CIS) will perform the calculations required for the allocation of time points.

Final assessment criteria will be supplied as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

The following criterions have to be added to the evaluation:

- Mechanical assembly (Assembly must ensure correct functioning of the system)
- The wiring of I/O´s must be according to the given I/O table
- The maximum value of the time points will not exceed 20% of the total mark for the competition.

Competitors may not modify work pieces in any way during competition. Exceptions will be announced by the Chief Expert.

Festo support team provides spare and replacement parts by Competitors only during competition time. Exceptions will be announced by the Chief Expert.

4.9 SKILL ASSESSMENT PROCEDURES

Assessment "best practices and procedures" are described the Guidelines for Assessment: Skill Mechatronics (See appendix).

5 THE TEST PROJECT

5.1 GENERAL NOTES

Sections three and four govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the skills in each section of the WSSS.

The purpose of the Test Project is to provide full and balanced opportunities for assessment and marking across the Standards Specification, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme and Standards Specification will be a key indicator of quality.

The Test Project will not cover areas outside the Standards Specification, or affect the balance of marks within the Standards Specification other than in the circumstances indicated by Section 2.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work.

The Test Project will not assess knowledge of WorldSkills rules and regulations.

This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standards Specification. Section 0 refers.

5.2 FORMAT/STRUCTURE OF THE TEST PROJECT

Separately assessed modules.

5.3 TEST PROJECT DESIGN REQUIREMENTS

Overall the Test Project must:

- Be modular;
- Be accompanied by a marking scale that will be finalized at the Competition in accordance with Section three;
- Be validated according to Section 5.5;
- Be supplied at the Competition for Expert teams to develop the project with fully functioning equipment. This is to allow the Experts to form a consistent evaluation of the tasks with the working models.
- Be supplied with documentation clarifying the operation of special or new equipment for the Experts to finalize the Test Project;
- Be supplied with a library of photographs or drawings to clarify requirements of the tasks.

5.4 TEST PROJECT DEVELOPMENT

The Test Project MUST be submitted using the templates provided by WorldSkills International (www.worldskills.org/expertcentre). Use the Word template for text documents and DWG template for drawings.

5.4.1 Who develops the Test Project or modules

The Test Project/modules are developed by Festo Didactic, in collaboration with the Chief Expert.

5.4.2 How and where is the Test Project or modules developed

Test Projects tasks are developed in close cooperation with the R and D and Product Management of Festo Didactic as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

Extracts from the Annexure in the MOU: specific aspects of involvement by Festo is located in the Appendix on page 17 of this document.

5.4.3 When is the Test Project developed

The Test Project/modules are developed before the current Competition and finalized at the current Competition as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

The Test Project is developed according to the following timeline:

TIME	ACTIVITY
Six (6) months prior to the Competition	The known stations and the robot type will be announced.
Three (3) month prior to the Competition	The documentation for all components of known stations comprising the Test Project must be disclosed.

5.5 TEST PROJECT VALIDATION

It must be demonstrated that the Test Project/modules can be completed within the material, equipment, knowledge and time constraints. This will this be demonstrated as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

The assembly and testing of the Test project must be done before the Competition.

5.6 TEST PROJECT SELECTION

The Test Project is selected as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

5.7 TEST PROJECT CIRCULATION

The Test Project is circulated via the website as follows:

The Test Project is circulated as per the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

5.8 TEST PROJECT COORDINATION (PREPARATION FOR COMPETITION)

Coordination of the Test Project will be undertaken by the Chief Expert and Festo.

5.9 TEST PROJECT CHANGE AT THE COMPETITION

The Test Project 30% change will be as described in the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo.

5.10 **MATERIAL OR MANUFACTURER SPECIFICATIONS**

Specific material and/or manufacturer specifications required to allow the Competitor to complete the Test Project will be supplied by the Competition Organizer and are available from www.worldskills.org/infrastructure located in the Expert Centre.

PLC specifications and quantity are to be posted on the Discussion Forum at least six months before the Competition by the Chief Expert.

6 SKILL MANAGEMENT AND COMMUNICATION

6.1 DISCUSSION FORUM

Prior to the Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the skill specific Discussion Forum (http://forums.worldskills.org). Skill related decisions and communication are only valid if they take place on the forum. The Chief Expert (or an Expert nominated by the Chief Expert) will be the moderator for this Forum. Refer to Competition Rules for the timeline of communication and competition development requirements.

6.2 COMPETITOR INFORMATION

All information for registered Competitors is available from the Competitor Centre (www.worldskills.org/competitorcentre).

This information includes:

- Competition Rules
- Technical Descriptions
- Marking Schemes
- Test Projects
- Infrastructure List
- Health and Safety documentation
- Other Competition-related information

6.3 TEST PROJECTS [AND MARKING SCHEMES]

Circulated Test Projects will be available from www.worldskills.org/testprojects and the Competitor Centre (www.worldskills.org/competitorcentre).

6.4 DAY-TO-DAY MANAGEMENT

The day-to-day management of the skill during the Competition is defined in the Skill Management Plan that is created by the Skill Management Team led by the Chief Expert. The Skill Management Team comprises the Jury President, Chief Expert and Deputy Chief Expert. The Skill Management Plan is progressively developed in the six months prior to the Competition and finalized at the Competition by agreement of the Experts. The Skill Management Plan can be viewed in the Expert Centre (www.worldskills.org/expertcentre).

7 SKILL-SPECIFIC SAFETY REQUIREMENTS

Refer to Host Country/Region Health and Safety documentation for Host Country/Region regulations.

- In the case of using electrical screwdrivers with battery drive to be used with a drill bit, no safety glasses are necessary;
- The use of knives is prohibited due to the risk of injury;
- Experts will use the appropriate personal safety equipment when inspecting, checking or working with a Competitor's project;
- Competitors must wear closed shoes.

8 MATERIALS AND EQUIPMENT

8.1 INFRASTRUCTURE LIST

The Infrastructure List details all equipment, materials and facilities provided by the Competition Organizer.

The Infrastructure List is available at www.worldskills.org/infrastructure.

The Infrastructure List specifies the items and quantities requested by the Experts for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Items supplied by the Competition Organizer are shown in a separate column.

At each Competition, the Experts must review and update the Infrastructure List in preparation for the next Competition. Experts must advise the Technical Director of any increases in space and/or equipment.

At each Competition, the Technical Observer must audit the Infrastructure List that was used at that Competition.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

8.2 MATERIALS, EQUIPMENT AND TOOLS SUPPLIED BY COMPETITORS IN THEIR TOOLBOX

- Any commercially available tools may be used. This is subject to approval by the Workshop Manager from a safety perspective, but must not take away from commonly used "tools of the trade" as used by the Competitors in their every day job. The use of knives is prohibited due to the risk of injury;
- Competitors must supply their own tools;
- Competitors must supply computers and PLC programming software;
- The team is responsible for the provision of connectors, adaptors, plugs, and interfaces suitable for the Host Country/Region and for the PLC to any station;
- Competitors may supply their own consumables;
- Competitors may not supply components as spare parts;
- Competitors are not allowed to use pre-cut cables;
- Competitors are allowed to prepare air infrastructure during Familiarization Day;
- The electrical tool check will be done during the Familiarization Day.

8.3 MATERIALS, EQUIPMENT AND TOOLS SUPPLIED BY EXPERTS

Not applicable.

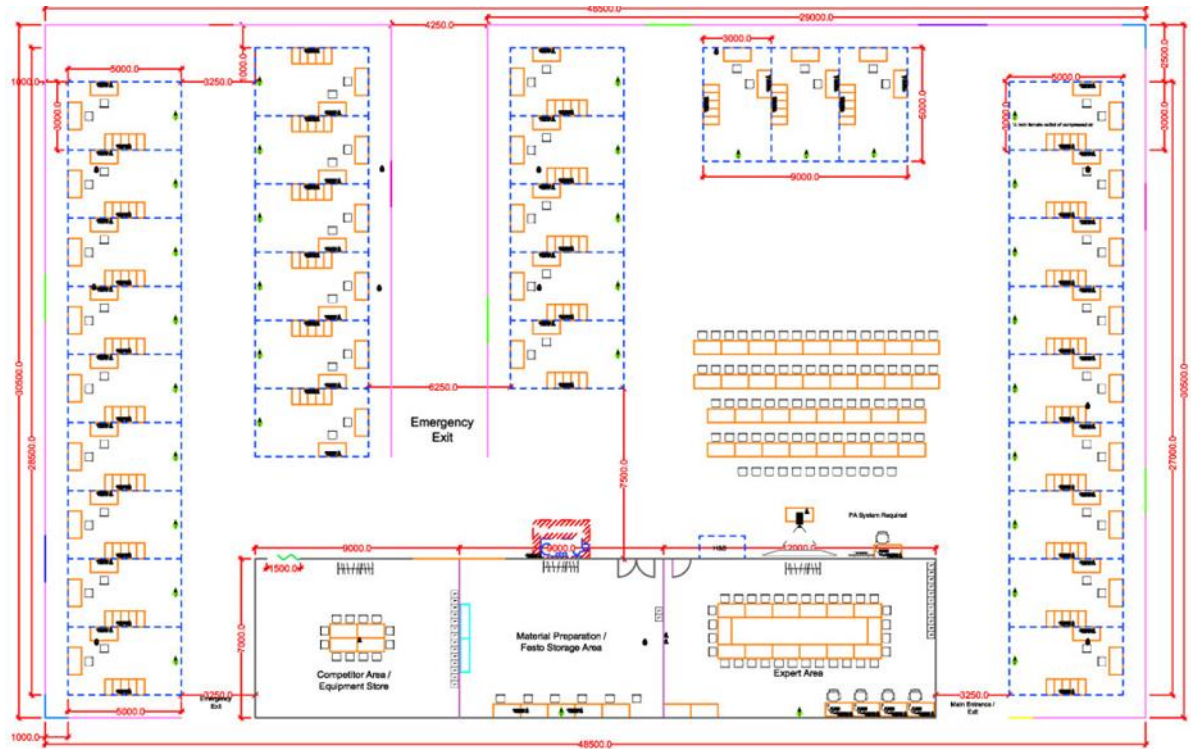## 8.4 MATERIALS AND EQUIPMENT PROHIBITED IN THE SKILL AREA

Only those items listed in paragraph 8.2 are allowed.

8.5 PROPOSED WORKSHOP AND WORKSTATION LAYOUTS

Workshop layouts from previous competitions are available at www.worldskills.org/sitelayout.

Example workshop layout:

9 VISITOR AND MEDIA ENGAGEMENT

The following ideas may be considered to maximize visitor and media engagement:

- Display screens - some web cams could be dispatched on the Competition area and show details of the task to the public and on a website;
- Test Project descriptions;
- Enhanced understanding of Competitor activity;
- Competitor profiles - For each Competitor team provide a sticker with the national flag, the name of the Competitor and a brief description of their studies;
- Daily reporting of Competition status;
- Do it yourself workshop - in the Mechatronic workshop provide an area where young people and public could implement Mechatronic systems. This activity could be managed by a couple of students of Mechatronics studies from the Host Country/Region. Those students could explain the way to become a Mechatronic technician and answer public questions;
- Developing Mechatronics Test Projects in different countries/regions and presenting awards at the Competition.

10 SUSTAINABILITY

- Recycling;
- Use of 'green' materials;
- Use of completed Test Projects after Competition;
- Transmission of the Test Project digitally to the Competitor's computer immediately before starting the task.

11 APPENDIX

11.1 MEMORANDUM OF UNDERSTANDING

Following are extracts relevant to the Test project development which can be found in the Annexure in the Memorandum of Understanding: specific aspects of involvement by Festo, version 1.3, dated 30.05.07.

Transparent and secure project development for Mechatronics

- Five to eight tasks are to be developed.
- The tasks must be compatible with Festo Didactic products. Therefore the test project author must prepare the tasks in close cooperation with the R and D and Product Management of Festo Didactic.
- Information on the tasks will be distributed strictly on a need-to-know basis: information will only be given to those involved in development who need to know, and they will only get the information they need to make their contribution. Each person involved in the development process must sign a confidentiality agreement prior to receiving any competition-sensitive information (agreement to be a Festo and WSI agreement).
- The author of the tasks must be familiar with Festo Didactic products and possible future products. The issue of presenting unknown stations was so important in the past, that special stations were created for the competition in order to ensure that no country would have an advantage. This makes the use of an external author difficult.
- In the event that a Festo employee is the task author, WorldSkills can nominate an auditor to monitor the development process. (This can be a group of Experts who have a deeper understanding of the technology).
- Approximately six months before the Competition the Chief Expert and the project author check the concept of the eight tasks.
- All Experts send a signed confidentiality agreement to the Chief Expert of Skill 04, Mechatronics.
- Three months before the competition two stations from four or five of the project will be announced on the Mechatronics discussion forum on worldskills.org.
- The tasks in Skill 04 are closely associated to the hardware used – so no significant changes can be made shortly before the Competition. Tasks for troubleshooting and optimizing can be defined at the competition and represent 30% of the total score.
- In order to keep the competition fair, the author must keep the tasks secret. A trusted third party – an auditor – can monitor the preparation of the competition, receiving the completed tasks from the Chief Expert three months before the competition. The auditor can be nominated by WorldSkills Technical Committee.