

Standards and Assessment Guide

Industrial Mechanics

Introduction

Welcome to the Standards and Assessment Guide (SAG), a comprehensive resource designed to support excellence in assessment practices for all skills competitions hosted at the WorldSkills Competition. A key component of the SAG is the commitment to continuous improvement through ongoing review, ensuring that these guides consistently reflect the latest industry innovations and high standards of assessment in an open and transparent manner.

Purpose

The primary purpose of this guide is to provide a structured framework for the consistent and fair assessment of each skill competition. It aims to ensure that all assessments are conducted with a high degree of accuracy, reliability, validity, and reflect global industry standards. By adhering to these guidelines, assessors can maintain the integrity of the competition and uphold the high standards associated with WorldSkills.

Note: this guide is not a replacement for the Marking Scheme and should only be used as a reference when required during the assessment process. Competitors are not allowed to have a copy of this SAG in the workshop in either digital or paper form.

Scope

This document covers general assessment practices applicable to a diverse range of industry sectors including:

- Manufacturing and Engineering Technology
- Information and Communication Technology
- Construction and Building Technology
- Transportation and Logistics
- Social and Personal Services
- Creative Arts and Fashion

Each skill competition has its unique requirements and benchmarks, which are detailed within sections of this guide. The consistency of assessment across each skill is the overarching principle, ensuring a unified approach to evaluating Competitor performance to the highest standards.

Key Components

The guide is structured into several key components, each addressing critical aspects of the assessment process:

Assessment Principles and Objectives

- Emphasis on fairness, transparency, and objectivity in assessments.
- Alignment with global industry standards and best practices.

Assessment Methods and Tools

- Description of various assessment methods in Measurement and Judgement.
- Guidance on the application of appropriate assessment tools and equipment (if applicable).

Criteria and Benchmarks

- Examples of assessment criteria and aspects for each skill, outlining the expected competencies and performance standards.
- Benchmarks for different levels of proficiency i.e. Judgement award range 0, 1, 2, 3 or Yes/No criteria alongside clear measurable descriptors.

Expert assessment requirements

- Completion of the Access Programme.
- Approved Curriculum Vitae (CV).
- Reaching 100% Expert preparedness.
- Full participation of online and in-person Mandatory Assessment Training (MAT).
- Completion of practical assessment testing at the Competition.

Quality Assurance and Improvement

- Monitoring and evaluation: Ensuring assessments are carried out correctly and produce reliable results.
- Continuous improvement: Using feedback from Experts and Skill Competition Managers to enhance future assessments.
- Periodic review: Regularly updating processes to reflect current industry and WorldSkills standards.

Implementation

For effective implementation, this guide should be used for guidance purposes only and in parallel with the Technical Description for each skill. Experts are encouraged to familiarize themselves thoroughly with both the general guidelines and the particular requirements of their respective skill areas. Collaborative efforts between the Skill Management Team, Experts, and Competitors are vital for achieving the ultimate goal of global skills development.

Conclusion

The Standards and Assessment Guide embodies the commitment of the WorldSkills movement to nurturing talent and promoting the highest standards of vocational education and training worldwide. By providing clear and comprehensive guidance, we aim to empower Experts to conduct marking and assessment practices that are not only rigorous and equitable but also inspiring and transformative for all participants.

Thank you for your dedication to upholding these standards and contributing to the success of the WorldSkills Competition. Together, we can continue to champion skills excellence and celebrate the achievements of talented individuals from around the globe.

Skill 01 – Industrial Mechanics

Measurement

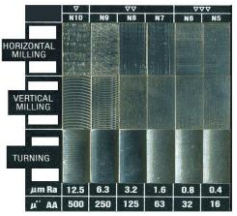
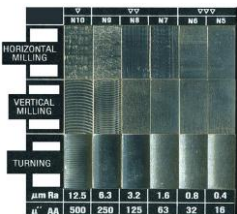
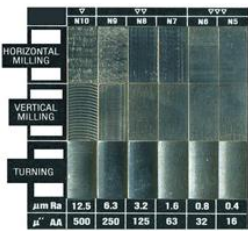
Measurement is used to assess accuracy, precision, and other performance that can be measured objectively. It is used where ambiguity must be avoided.

The total marks allocated to measurement marking may vary from competition to competition depending on the Test Project.

Aspect	WSOS section as per TD	Descriptor		
Dimension	5	The dimension within its limit of size?	+/- 2mm inclusive	Full Marks
			Above or below +/- 2mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 1.5mm inclusive	Full Marks
			Above or below +/- 1.5mm inclusive	Zero
Dimension	4	The angle within its limit of size?	+/- 2° inclusive	Full Marks
			Above or below +/- 2° inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 0.5mm inclusive	Full Marks

Aspect	WSOS section as per TD	Descriptor		
			Above or below +/- 0.5mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 0.2mm inclusive	Full Marks
			Above or below +/- 0.2mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 0.15mm inclusive	Full Marks
			Above or below +/- 0.15mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 0.1mm inclusive	Full Marks
			Above or below +/- 0.1mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	+/- 0.05mm inclusive	Full Marks
			Above or below +/- 0.05mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	0.00 / + 0.04mm inclusive	Full Marks

Aspect	WSOS section as per TD	Descriptor		
			Above or below 0.00 / + 0.04mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	0.00 / - 0.03mm inclusive	Full Marks
			Above or below 0.00 / - 0.03mm inclusive	Zero
Dimension	5	The dimension within its limit of size?	- 0.01mm inclusive	Full Marks
			Above or below - 0.01mm inclusive	Zero
Dimension	4	The dimension within its limit of size?	+ / - 0.5° inclusive	Full Marks
			Above or below + / - 0.5° inclusive	Zero

Aspect	WSOS section as per TD	Descriptor		
Dimension	4	The Surface Finish Ra Micro Metres 0.8? 	Ra Micro Meters 0.8 or below Above Ra Micro Meters 0.8	Full Marks Zero
Dimension	4	The Surface Finish Ra Micro Metres 1.6? 	Ra Micro Meters 1.6 or below Above Ra Micro Meters 1.6	Full Marks Zero
Dimension	4	The Surface Finish Ra Micro Metres 3.2? 	Ra Micro Meters 3.2 or below Above Ra Micro Meters 3.2	Full Marks Zero

Health & Safety	1	The Competitor is on each day of the competition wearing the correct PPE? • Safety Glasses or goggles • Work boots or shoes • Shop appropriate clothing	Yes No	Full Marks Zero
Health & Safety Welding	1	The competitor is wearing the correct welding PPE during the welding portion of the project challenge. • Welding helmet • Grinding Mask • Welding Jacket • Gauntlet Welding Gloves	Yes No	Full Marks Zero
Health & Safety Machining	1	The competitor did use the lathe, and associated tooling properly during the machining project challenge?	Yes No	Full Marks Zero
Health & Safety Fluid Power	1	The competitor did use the fluid power equipment and hoses properly.	Yes No	Full Marks Zero
Health & Safety Hand tools & equipment	1	The competitor did during each day of the competition use the hand tools and associated equipment properly?	Yes No	Full Marks Zero

Judgement

Judgement is used to assess the quality of performance about which there may be small differences of view when applying the external benchmarks.

The Resources column in the table below may include all kinds/formats of resources such as a link to a YouTube video, a website link, an illustration, a photo, a reference to a book, and so on. It needs to be as detailed as possible to show the differentiation between 0, 1, 2, 3.

Generic rules:

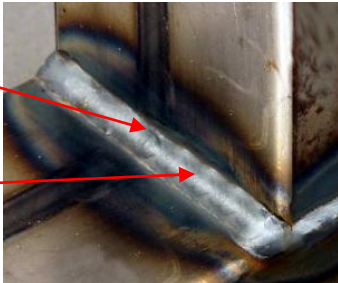
The assessment group comprises three Experts plus one Expert who acts as the supervisor. The supervising Expert will replace an Expert in the marking group to prevent compatriot marking.

The difference of the three Experts' scores may not exceed 1. If this is the situation the Experts must re-score until there is a maximum difference of 1. As long as the three Experts judge within 1, the result can be entered into the CIS.

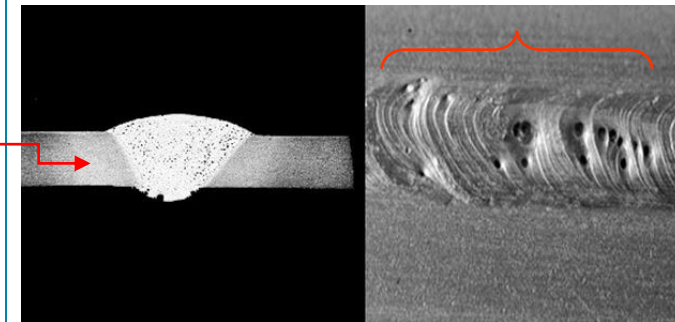
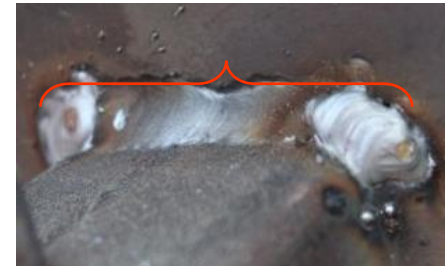
The total marks allocated to judgement marking may vary from competition to competition depending on the Test Project.

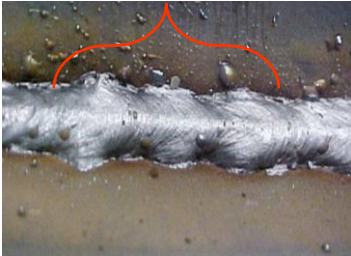
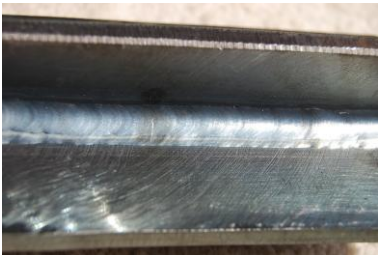
Aspect – Welds exhibit a full radius contour.

WSOS section as per TD	Score	Descriptor	Resource
4	0	Unacceptable or not presented – Joint not filled or with flat profile	

WSOS section as per TD	Score	Descriptor	Resource
	1	Acceptable – Radius profile with flat areas and/or excess welds at the toes	
	2	Good – Radius profile with slight flatness in some areas	
	3	Excellent – Full radius profile equal to material thickness	

Aspect – General – surface porosity, spatter, undercut and smoke has been removed from 100% of the joints and surrounding area.

WSOS section as per TD	Score	Descriptor	Resource
6	0	Unacceptable or not presented – 40% of the welds or less are free of surface porosity, spatter, undercut and smoke	  

WSOS section as per TD	Score	Descriptor	Resource
	1	Adequate – 60% of the welds are free of surface porosity, spatter, undercut and smoke	 A close-up photograph of a weld joint. A red line is drawn over the weld surface, highlighting areas of surface porosity, spatter, and undercut.
	2	Good – 80% of the welds are free of surface porosity, spatter, undercut, and smoke	 A close-up photograph of a weld joint. The weld surface shows some surface porosity, spatter, and undercut, but it is generally smoother than the 'Adequate' level.
	3	Excellent – All welds are completely free of surface porosity, spatter, undercut and smoke	 A close-up photograph of a weld joint. The weld surface is smooth and free of any visible surface porosity, spatter, undercut, or smoke.