

2022 POST-SECONDARY PROVINCIAL SKILLS CANADA COMPETITION

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Contest Description

Edmonton Expo Centre, Edmonton

May 3 - 5, 2022

EVENT: Welding	LEVEL: Post-Secondary	
WORLDSKILLS TRADE #: 10	LOCATION: Hall A, Edmonton EXPO Centre, Edmonton	
DURATION: 16 Hours Over 3 Days of Competition		
May 3: Orientation: 12:00-2:00PM Competition: 2:00-6:00pm	May 4: Competition 8:00am-12:00PM Lunch: 12:00-12:30 Competition: 12:30-5:30	May 5: Competition 8:00am-11:00AM Lunch: 12:00-12:30

CONTEST INTRODUCTION

Purpose of the Challenge

Assess the contestant's ability in the trade of welding. Contestants must demonstrate their knowledge in reading plans and interpreting welding symbols, and their mastery of the main welding processes used in today's industry. Assess the contestant's ability in the trade of welding. Contestants must demonstrate their knowledge in reading plans and interpreting welding symbols, and their mastery of the main welding processes used in today's industry.

- This will be shown in 4 separate modules, utilizing SMAW, GMAW, FCAW and GTAW welding processes.

SKILLS AND KNOWLEDGE TO BE TESTED

Assess the contestant's ability in the trade of welding. Contestants must demonstrate their knowledge in reading plans and interpreting welding symbols, and their mastery of the main welding processes used in today's industry.





CONTEST DESCRIPTION

Tasks that may be performed during the contest

Work organization and management

The individual needs to know and understand:

- The standards and legislation relating to the health, safety, security, and hygiene in the welding industry
- The range, use and maintenance of personal protective equipment used in the industry for any given circumstances
- The selection and use of safety equipment related to specific or hazardous tasks
- ISO A and/or E (American and European) drawing representation
- Technical terms and symbols used in drawings and plans
- Terminology and safety data supplied by manufacturers
- The requirements and effects of welding production for the environment and sustainability issues
- Basic mathematical manipulation and unit conversion
- Geometrical principles, techniques, and calculations.

The individual shall be able to:

- Work safely with regard to themselves and others.
- Select, wear, and maintain PPE as required
- Recognize hazardous situations and take appropriate actions with regard to their own and others safety
- Follow correct procedural processes when working in hazardous environments
- Locate and identify dimensions and weld symbols
- Adhere to manufacturers' safety data sheets
- Maintain a clean working environment
- Complete work within agreed timescales
- Make essential connections for specific welding procedures.



Preparation and assembly techniques

The individual needs to know and understand:

- The interpretation of fabrication or engineering drawings and weld symbols
- The classification and specific uses of welding consumables including:
 - Coding and designation of welding rods
 - Diameters and specific use of welding wire
 - Choice and preparation of welding electrodes
- How surface contamination can influence the finished weld characteristics
- The correct machine settings to be aligned to:
 - Welding polarity
 - Welding position
 - Material
 - Material thickness
 - Filler material and feed speed
- Any fine adjustments needed to machine hardware, TIG electrode shape, wire type and diameter etc.
- The methods of edge preparation to align with joint profile, strength, and material
- Methods of distortion control in steels, alloys, and aluminum

The individual shall be able to:

- Set up welding equipment to manufacturers' specifications including (but not limited to)
 - Welding polarity
 - Welding amperage
 - Welding voltage
 - Wire feed speed
 - Travel speed
 - Travel/electrode angles
 - Mode of metal transfer
- Prepare material edges in line with specifications and drawing requirements
- Set up and operate appropriate controls to minimize and correct distortion



- Carry out appropriate procedures to control heat input

Welding Materials

The individual needs to know and understand:

- The mechanical and physical properties of:
 - carbon steels
 - aluminum and its alloys
 - stainless steels;
- Correct the alignment of process with the material being used
- The selection of welding consumables
- The correct storage and handling of welding consumables
- Terminology, characteristics, and safe use of welding and purging gases
- The effects of welding on the structure of the material

The individual shall be able to:

- Use materials with consideration to their mechanical and physical properties
- Store welding consumables correctly with reference to type, use and safety considerations
- Select and prepare materials with reference to drawing material list
- Select methods used in shielding the weld area from contamination
- Select gasses used for shielding and purging

SMAW (111) and GMAW (135) Process

The individual needs to know and understand:

- Drawing weld symbol interpretation
- Weld positions, weld angles and travel speeds
- The techniques for efficient stops/starts
- The techniques utilized to deposit single sided root penetration welds
- The techniques utilized to deposit defect free butt and fillet welds



The individual shall be able to:

- Make welded joints in relation to international specifications
- Interpret welding terminology to complete task to specification
- Perform welding of carbon steel material in all positions (except vertical down) on pipe and plates deposit single sided full penetration root pass welds
- Deposit full penetration butt and fillet welds on pipe and plate
- Perform stop/starts

FCAW-G (136) Process

The individual needs to know and understand:

- Drawing weld symbol interpretation
- Weld positions, weld angles and travel speeds
- The techniques for efficient stop/starts
- The techniques utilized to deposit defect free butt and fillet welds

The individual shall be able to:

- Make welded joints in relation to international specifications
- Interpret welding terminology to complete task to specification
- Perform welding on carbon steel material in all positions (except vertical down) on pipe and plate
- Perform stop/starts
- Deposit full penetration butt and fillet welds on pipe and plate

GTAW (141) Process

The individual needs to know and understand:

- Drawing weld symbol interpretation
- Weld positions, weld angles and travel speeds
- The techniques for efficient stops/starts
- The techniques utilized to deposit defect free butt and fillet welds

The individual shall be able to:

- Make welded joints in relation to international specifications
- Interpret welding terminology to complete task to specification
- Perform welding on carbon steel, aluminum sheet and stainless-steel sheet material in all positions (except vertical down) on pipe and plate
- Perform stop/starts
- Deposit full penetration butt and fillet welds on pipe and plate
- Deposit utilizing a single pass on stainless steel and aluminum sheet, root and capping pass combination

Finishing, quality assurance, and testing

The individual needs to know and understand:

- The international specifications for the control of weld quality
- Specific terminology used in the welding industry
- Imperfections/defects that may occur during welding
- The importance of weld metal cleanliness in weld quality
- A range of destructive and non-destructive testing
- Welder certification test coupons in accordance with international standards

The individual shall be able to:

- Produce welds to meet drawing and legislative specifications
- Recognize weld defects and take appropriate action to rectify them
- Utilize correct techniques to ensure weld metal cleanliness is maintained
- Dress welds using wire brushes, scrapers, chisels, etc.
- Check completed work against drawing requirements to reflect accuracy, square and flatness where necessary
- Carry out basic non-destructive testing and be familiar with more advanced testing methods
- Complete pressure vessels capable of withstanding hydrostatic pressure testing.

EQUIPMENT, MATERIAL, CLOTHING

Equipment and material provided by Skills Canada Alberta (SCA)

- Lincoln Power Wave® 300C Advanced Process

- Work space, welding table with positioning arm
- Practice materials
- All consumables (Filler Wire, Electrodes, & Shielding gases)

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCA. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

Equipment and material provided by the competitor

This list of tools IS SUBJECT TO CHANGE, DUE TO COVID-19

- No more than 3 5" Grinders. (can be battery type or plug in)
- No more than 2 2" Die Grinders (can be battery type or plug in)
- Battery Charger if using battery type grinders
- Locking C-clamps
- Metric tape measure
- Torpedo level
- Hammers
- Chisels
- Files
- Metric combination square
- C-clamps
- Scriber
- Weld gauges
- Metric steel ruler
- Soapstone
- Dividers

Toolboxes Guidelines

The toolboxes brought by Competitors will be restricted to the items in section 4.2 only. There is no exception to this rule. If the Competitor brings other tools, they will be removed and will not be used during the competition.

The Competitor toolbox must not exceed 2 meters³ in volume. It can be multiple toolboxes but the total of all toolboxes must not exceed the maximum volume indicated. There is no exception to this rule. If the Competitor toolbox is larger than what is indicated, the

Competitor with the guidance of the Expert, will need to remove items from the toolbox and those items will not be used during the competition. All tools must fit inside one or more toolboxes. Tools outside of a toolbox will not be permitted.

Required clothing provided by the competitor

- Appropriate clothing (100% cotton coveralls recommended)
- Long Sleeve Denim Shirt or Jacket - 100% cotton

List of required personal protective equipment (PPE) provided by Skills Canada Alberta

- Hearing protection
- Safety glasses
- Clear face shield

List of required personal protective equipment (PPE) provided by the competitor

- CSA approved safety shoes
- Welding helmet
- Welder's gloves
- Rubber gloves
- Leather work gloves

Note: Contestants who do not have the required protective gear will not be allowed to participate in the contest.

ASSESSMENT

Point breakdown

Note: This list is subject to change

TASKS	/100
Work organization and management	10
Preparation and assembly techniques	10
Welding Materials	10
SMAW (111) and GMAW (135) Process	25
FCAW-G (136) Process	10
GTAW (141) Process	15
Finishing, quality assurance, and testing	20



CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Use of technology - personal laptops, tablets, memory sticks and mobilephones	Competitors, Judges and Expert are allowed to use these devices during competition days.
Equipment failure	<ul style="list-style-type: none"> • If equipment or tools which are brought by the Competitor fail there is no extra time allowed. • If equipment or tools supplied by the Competition Organizer fail extra time is allowed only if the Technician of the sponsor or supplying company specifies and proves it is not a "user error".

TIE BREAKERS

- **Tiebreaker #1:** The competitor that has the highest marks in the X-rays (combined)
- **Tiebreaker #2:** The competitor that has the highest marks on the module 2 (including pressure test)
- **Tiebreaker #3:** The competitor that has the highest marks on module 4 (Stainless steel)

ADDITIONAL INFORMATION

Skills Canada Alberta Regional and Provincial Rules and Regulations

[Regional and Provincial Rules and Regulations](#)

Competitors must be prepared to adhere to all public health measures in place at the time of the PSCC.

Lunch

Lunch for competitors will be provided by Skills Canada Alberta.

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Parking & Venue Maps

<http://edmontonexpocentre.com/attend/parking/>

Competitor Registration

Competitor Registration for the PSCC will take place on Tuesday May 3, 2022 from 9:00am-6:00pm outside Hall B of the Edmonton EXPO Centre. Please note you will be required to present your COVID-19 proof of vaccination.

Virtual Awards Ceremony

The Virtual Awards Ceremony will take place **Friday, May 6th at 6:30pm**. A link will be made available on the website with additional information prior to the ceremonies.

Team Alberta Information

Team Alberta (Post-Secondary) will be selected at the PSCC happening on May 4 - May 5, 2022. Top eligible medalists will compete at the Skills Canada National Competition (SCNC) May 24-28, 2022 in Vancouver, BC. It is recommended that competitors review the SCNC contest description to be familiar with the national contest description and project at <http://www.skillsCanada.com/>.

If a competitor is not able to attend the SCNC, competitors MUST notify Katherine Kupchenko katherinek@skillsalberta.com prior to the start of competition. If a gold medalist is not able to attend the SCNC, the next top-ranking individual will be asked to participate.

Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, PTC can change a maximum of 30% of the work content.

COMMITTEE MEMBERS

Ken Heather Brad Hollman Kevin Vadori
Dan Lynge Brent Melnyk Ken McKen
Dave Heins Doug Sontag Lyle Kragnes
Julia Penner Jethro Ulrich Nigel Peter



Last Updated: Mar 24, 2022