



Photo Courtesy of the Oberon Company

Safety Measures ^{ELECTRICAL}

“Elimination is the first priority!
Ensure a risk assessment is completed before energized work tasks are completed.”

Energized Electrical Work Permit... — YES or NO? —

By Terry Becker, P.Eng., CEM, IEEE Senior Member

The CSA Z462 Workplace electrical safety Standard has always required that an Energized Electrical Work Permit (EEWP) to be issued for all energized electrical work tasks unless exempted. The problem is misinterpretation in industry of this requirement related to the justification for energized electrical work if an Electrically Safe Work Condition cannot be established.

In CSA Z462 Clause 4.3.2.3 Energized Electrical Work Permit it states:

When work is performed as permitted in accordance with Clause 4.3.2.2, an energized electrical work permit shall be required and documented under any of the following conditions:

(a) When work is performed within the restricted approach boundary; or

(b) When the worker interacts with the equipment when conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists.

An example EEWP is illustrated in Figure 1, based on the recommendations of CSA Z462 Clause 4.3.2.3.2. The employer can use this format or can even

adapt an existing Safe Work Permit process to fulfill the requirements of the EEWP when and if it is required. If the EEWP process is understood correctly an EEWP would be required rarely and specific only to justified energized electrical equipment repair or alteration work tasks.

Some of the incorrect interpretation and miss information in industry is most likely based on information provided in generic CSA Z462 “arc flash awareness” or “arc flash training.” Ultimately employers need to review the CSA Z462 Workplace electrical safety Standard directly in developing and implementing an Electrical Safety Program and ensuring they clearly understand what CSA Z462 is requiring as a mandatory practice or policy. Additional interpretation with respect to when an EEWP is actually required should be undertaken.

With respect Clause 4.3.2.2 Energized work CSA Z462 outlines when energized electrical work can be performed if an “Electrically Safe Work Condition” cannot be established. Energized electrical work tasks can be performed when the employer can demonstrate that de-energizing:

1. Introduces additional hazards or increased risk; or
2. When the work task to be performed is infeasible in a de-energized state because of equipment design or operational limitations; or
3. Electrical equipment operates at less than or equal to 30V.

When I review the requirements for an EEWP related to policy requirements in an employer’s Electrical Safety Program I ensure that a review of when the electrical equipment can be turned off and isolated is analyzed. Does the employer’s business allow for electrical equipment be turned off after 5:00 pm where the business is not a continuous process? Is there an opportunity to schedule work where a short duration shutdown can be planned for not only electrical equipment maintenance but process/mechanical equipment maintenance? How urgent is it to add additional circuit breakers to panelboards? Ultimately our goal is to eliminate any energized repair or alteration related work tasks on electrical equipment.

Currently in CSA Z462 exemptions are listed when an EEWP is not

ENERGIZED ELECTRICAL WORK PERMIT (EEWP)

Part I: Requester		
Date:		EEWP #:
		Work Order #:
QEW, or TQW Name:		
EEWP Requester:		
Job Description:		
Electrical Equipment ID:		
Work Task Description:		
Justification for Work Task:		

Part II: Qualified Electrical Worker, or Task Qualified Worker		
Job procedures to be used?		
Safe work practices that apply?		
Results of Shock Risk Assessment:	Limited Approach Boundary	
Max. Exposure Voltage: Other shock PPE, tools & equipment:	Restricted Approach Boundary	
	RIG Class # & Max. Use Voltage	
Results of Arc Flash Risk Assessment:	Incident Energy or AFPPE Cat #	
	Working Distance	
	Arc Flash Boundary	
Electrical Work Zone barricading that will be applied:		
Evidence of Job Briefing, Discussion of Job-Related Hazards? Y/N		
Do you agree that you can complete the Job and Work Tasks safely? Y/N		
QEW, or TQW: [Sign and Print Name, Date]		
QEW, or TQW: [Sign and Print Name, Date]		

Part III: Approval Signatures		
QEW, or TQW: [Sign and Print Name, Date]		
Supervisor: [Sign and Print Name, Date]		
Manager: [Sign and Print Name, Date]		
Safety: [Sign and Print Name, Date]		

Figure 1. Example EEWP based on CSA Z462 Clause 4.3.2.3.2

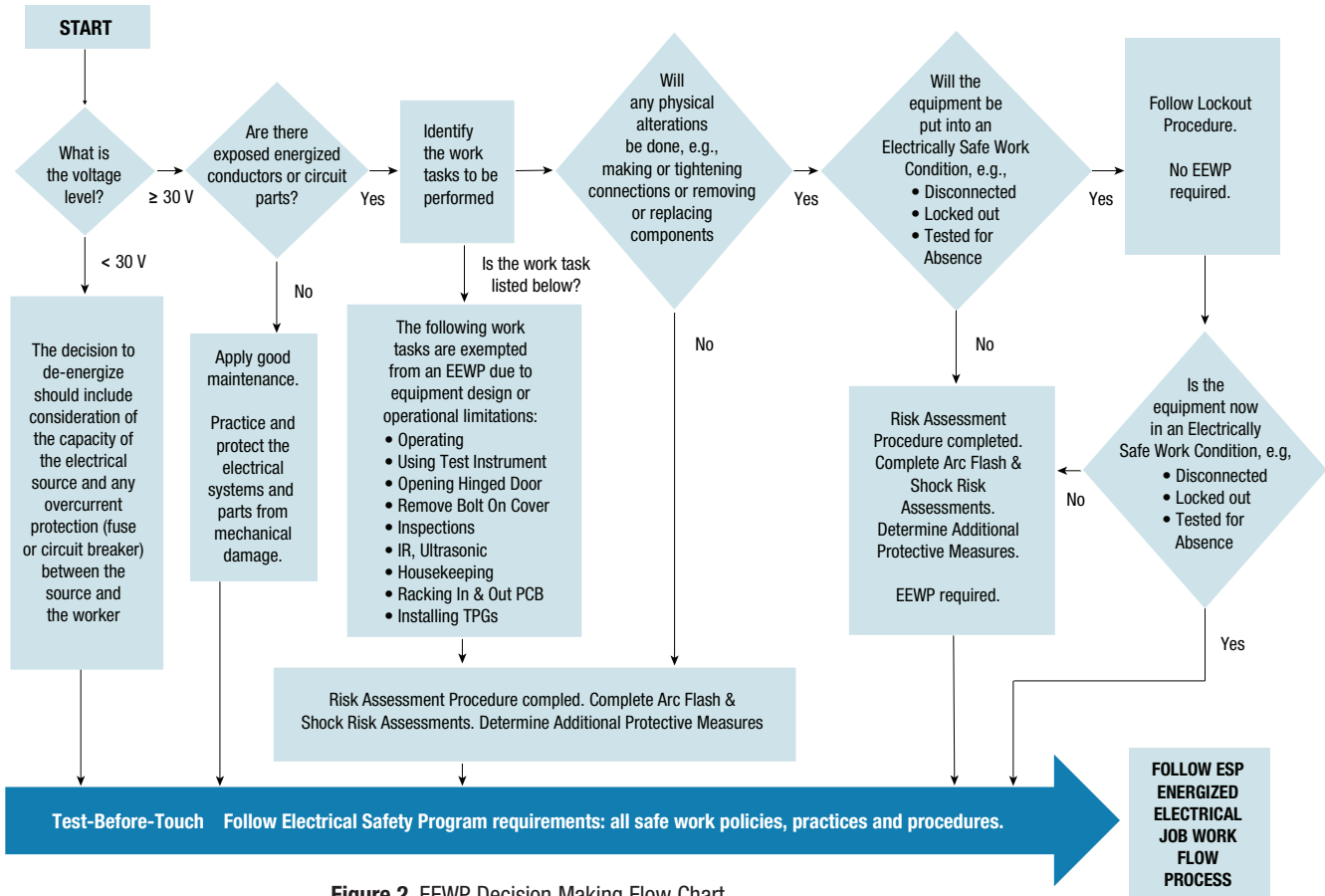


Figure 2. EEWP Decision Making Flow Chart

required. Clause 4.3.2.3.3 Exemptions to work permit, identifies the following exemptions as long as the Qualified Person is provided with and uses appropriate safe work practices and PPE in accordance with CSA Z462 Clause 4:

1. Testing, troubleshooting, or voltage measuring;
2. Thermography, ultrasound, or visual inspections if the restricted approach boundary is not crossed;
3. Access and egress to an area with energized electrical equipment if no electrical work is performed and the Restricted Approach Boundary is not crossed; and
4. General housekeeping and miscellaneous non-electrical work tasks if the Restricted Approach Boundary is not crossed.

What I find in industry across Canada when I work with employers to develop an Electrical Safety Program is there is a belief that an EEWP is required for all energized electrical equipment work tasks related to operating, switching or maintenance. Even to enter a defined electrical room an EEWP would be required. This

is not true. It is recommended that other specific work tasks should be reviewed by the employer and additional work task exemptions, that would not require an EEWP to be issued, are included in the employer’s Electrical Safety Program. This will add clarity with respect to operating energized electrical equipment and to ensure the EEWP doesn’t become a bureaucratic process when it shouldn’t be.

By adding exemptions for additional work tasks related to operating, switching and maintenance work tasks that are justified it clarifies for Management, Supervision and Qualified Persons when they DO NOT require an EEWP.

As an example, besides stating the exemptions, a decision making flow chart as illustrated in Figure 2 could be provided as a visual aid when communicating to staff and contractors when an EEWP would be required or not.

It is important that as we continue in industry across Canada to ensure shock and arc flash hazards are identified, risk assessments completed and additional protective measures implemented to reduce risk if we cannot eliminate exposure that we ensure we do not shutdown

industry with miss interpretation or conservative application of CSA Z462’s requirements. CSA Z462 has made a significant positive impact on elimination and risk reduction when energized electrical work tasks are justified and completed, but needs to be specifically interpreted and applied through an employer’s Electrical Safety Program.

Terry Becker, P.Eng, CESC, IEEE Senior Member is the first past Vice-Chair of the CSA Z462 Workplace electrical safety Standard Technical Committee and currently a Voting Member and Working Group Leader for Clause 4.1 and the Annexes. Terry is also a Voting Member on the CSA Z463 Maintenance of electrical systems Standard and a Voting Member of the IEEE 1584 Guide for Performing Arc-Flash Hazard Calculations. Terry has presented at Conferences and Workshops on electrical safety in Canada, the USA, India and Australia. Terry is a Professional Engineer in the Provinces of BC, AB, SK, MN and ON. Terry is an Electrical Safety Specialist, Management Consultant, and can be reached at 587.433.3777 or by email terry.becker@twbesc.ca.