

# CAPABILITY PROFILE

## KINETIX GUARDMOTION™ SAFETY SOLUTIONS

DELIVERING A GREATER RETURN  
ON YOUR INVESTMENT

Safety on the manufacturing floor is an important concern. Safeguarding personnel not only prevents injuries, it can also lower insurance, maintenance and other related costs. But Machine productivity is crucial, too. You're facing constant pressure to produce more and to produce it faster.

In the past, bringing safety and productivity together was a challenge. Safety precautions were often cumbersome, expensive and resulted in a great deal of downtime. Now with Rockwell Automation GuardMotion products, you can take advantage of a safety drive that helps to provide overall machine safety while increasing overall productivity.

The safe-off function (also known as safe torque off) in the Kinetix 6000 and Kinetix 7000 is certified by TUV and meets the requirements of EN-954-1 Category 3 and IEC-61508 SIL 3 for safe-off and reduced risk of unexpected restart applications.

Refer to the back of this Capability Profile to learn more about safety certifications and how to make the most out of your machine safety with GuardMotion.

### GUARDMOTION BENEFITS

- Helps to improve personnel safety
- Reduced number of components - input contactors and other components can be eliminated
- Smaller panels - fewer components reduces panel size and simplifies installation
- Greater machine availability due to less downtime and faster restart
- Lower total cost of ownership



*GuardMotion is designed to make implementing safety on your machine simpler through high level certification and easy-to-use features.*



# UNDERSTANDING GUARDMOTION SAFETY CERTIFICATIONS

KINETIX PRODUCTS WITH GUARDMOTION MEET THESE STANDARDS FOR SAFE-OFF (ALSO KNOWN AS SAFE TORQUE-OFF)



**EN-954-1** – This standard defines the safety performance level or resistance to faults of a safety circuit or components. There are five categories defined in this standard.

**Category B** – The occurrence of a fault can lead to the loss of the safety function.

**Category 1** – The occurrence of a fault can lead to the loss of the safety function but the probability of occurrence is lower than for Cat B.

**Category 2** – The occurrence of a fault can lead to the loss of the safety function between check. The loss of the safety function is detected by the check.

**Category 3** – When the single fault occurs the safety function is always performed. Some but not all faults can be detected, undetected faults can lead to a loss of the safety function. GuardMotion meets Category 3.

**Category 4** – When the faults occur the safety function is always performed. Faults will be detected in time to prevent loss of the safety function.

GuardMotion-enabled servo drives provide a high level of safety performance. These certified devices provide the foundation for the implementation of machine safety functions according to recognized machine safety standards.

**IEC 61508** - This standard defines the integrity level (reliability) and overall probability of failure of the safety circuit or component. The Kinetix safe-off solution is certified by TUV and meets the requirement of SIL 3 (Safety Integrity Level 3). The higher the SIL rating, the lower probability of failure. Levels are SIL 1, 2, 3 and 4. (SIL 4 is not typically found in discrete applications and is more likely found in process safety functions.)



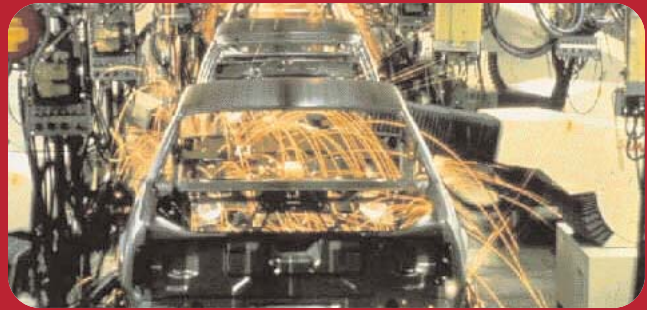
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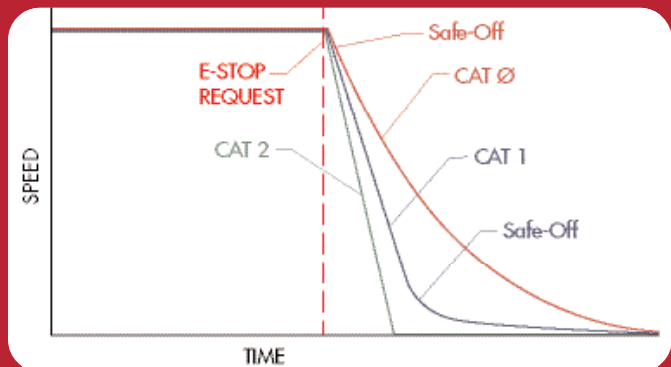
GUARDMOTION ENABLED PRODUCTS PROVIDE THE FOUNDATION FOR INTEGRATION OF MANY MACHINE SAFETY FUNCTIONS



**NFPA-79** – Basically defines the guidelines for design of machine safety systems.

**IEC 60204** – International standard that covers similar requirements as NFPA-79.

Both NFPA-79 and IEC 60204 recognize the safe-off capability for E-stop applications and prevention against unexpected re-start. Both standards also define machine stop categories. Do not confuse stop categories with the EN954-1 safety performance categories. The 3 types of stop categories defined in IEC-60204 and NFPA-79 are described below.



**Cat 0** – Coast to stop and then remove power to the machine actuator.

**Cat 1** – Decelerate to stop and then remove power to the machine actuator.

GuardMotion-enabled products can be applied to Cat 0 and Cat 1 stop applications.

**Cat 2** – Stop as quick as possible and then maintain power to the machine actuator.

As always, the appropriate type of stop category or safety performance for the machine needs to be determined by the risk assessment. Please contact Rockwell Automation to learn more about safety consulting services that can result in greater operator safety while enhancing machine productivity.