



SUCCESS STORY

Arc-Flash Relay Increases Electrical Safety in Machine Tool Manufacturing

Pietro Carnaghi Company Finds Success with Littelfuse AF0500 Arc-Flash Relay

Quick Facts:

Industry:
Machine tool manufacturer (industrial OEM)

Application:
Machine manufacturing for a variety of uses: defense, energy (machining of gas, steam and hydro-electrical turbines, nuclear energy and renewable energy), jet engines, aerospace, mining equipment and earthmoving, bearings and general mechanics

Introduction

Pietro Carnaghi SpA, an Italian company, has been designing and manufacturing machine tools for over 100 years. With around 1,500 machines installed globally, they are an industry leader in the production of high-precision, heavy-duty hydrostatic vertical turning and milling centers, movable portal milling machines (gantry), flexible manufacturing cell systems, and multi-tasking machines (Flexturn) that provide innovative, high-performance, and customized solutions.

Pietro Carnaghi's machines are used in the fields of defense, energy (machining of gas, steam and hydro-electrical turbines, nuclear energy and renewable energy), jet engines, aerospace, mining equipment and earthmoving, bearings and general mechanics.

Application

For one of the company's recent projects for a U.S. customer, Pietro Carnaghi asked its consultant firm, AC&E, to certify that a machine was in compliance with a new NFPA 70 rule. Recent updates to NFPA 70 National Electrical Code (NEC) 240.87 include a requirement for an arc-energy reduction system where the overcurrent protection device installed in a circuit breaker is rated at 1,200 A or higher.

There are different methods allowed by NEC to meet this requirement for reducing arc energy — one of these is the use of an energy-reducing active arc-flash mitigation system.

In order to be fully compliant with this new requirement, Pietro Carnaghi contacted Littelfuse to inquire about an arc-flash relay as a possible solution.

Upon inspection at the production facility, the electrical cabinet that equipped the machine was two-sided: 6 m in length on each side, with the power system on the front side, with a main breaker of 1,200 A, and all the variable speed drive systems to control the motors on the back side.



Quick Facts:

Specific Use:

Provide arc-flash detection for machine tool manufacturing

End Customer:

Pietro Carnaghi SpA

Benefits of Product:

Fast response to arc-flashes, uses both point and fiber sensors, compliance with NEC requirements

The team agreed that the Littelfuse AF0500 arc-flash relay, with its superior arc-fault detection technology and fast opening time, would be the best option to comply with the NEC requirements. They decided to use one AF0500 relay with 3 light sensors (PGA-LS10) to protect the front side of the electrical cabinet and one fiber-optic sensor (PGA-LS20), 8 m in length, to protect the dc bus powering the variable speed drive system.

Outcome

Pietro Carnaghi and AC&E were very impressed with the fast reaction time of the AF0500, which in combination with the circuit breaker, have been able to clear an arc-fault (simulated with a professional flash lamp) in less than 10 ms. They also expressed their satisfaction for having the electrical cabinet fully compliant with the NPFA 70 rule for arc-energy reduction.

“The Littelfuse AF0500 met our needs for arc-flash control of the UL electrical panel,” stated Roberto Porro, Electrical Engineering Manager. “We are very satisfied with the outcome of the test carried out by the certifying body, which had a positive result and guarantees that we will have a satisfied end-customer.”

Porro went on to say that the “manual was easy to understand for use of the control unit and the sensors.”

In conclusion, he stated that they would like to stay updated on new Littelfuse products in order to integrate them into their applications.

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