

LOCTITE*Adhesives for more
reliable assemblies***APPLICATION CASE HISTORY****No. 130****PARTNERSHIP WITH LOCTITE HELPS GIVE
SIEMENS ELECTRIC THE COMPETITIVE ADVANTAGE*****Decrease in assembly times, increase in product quality***

*Engine Cooling
Motor. Loctite
Adhesive used for
bonding ferrites;
high speed
application
utilizing Loctite
dispensing
equipment.
Loctite 620 is
used for bonding
commutators.*



At the Siemens Electric plant in London, Ontario, Loctite Adhesives are used to bond components during the assembly of engine cooling, HVAC, and ABS motors. These motors are produced for the automotive market and shipped to manufacturers around the world. Currently, Loctite products are used to secure ferrites and commutators and for the sealing of assemblies. Additional studies are underway to expand the use of adhesives in order to further reduce assembly time and increase motor performance.

According to Graham Moss, Manager of Motor Engineering, it wasn't always this way. "Like most manufacturers, we used clips or welds to hold ferrites, and O-rings and clamps to seal and hold assemblies. But when we investigated adhesives, we found that they not only gave us design advantages, they significantly improved the way our products performed. Adhesives provided better sound dampening and vibration and corrosion resistance.

We also realized design advantages in space and weight. We lowered the cost with faster assembly times, reduced work in process, and increased the level of automation in our assembly process. Adhesives are now a part of our initial design reviews—as much as any mechanical fastening process. In fact, our design teams have recognized adhesive bonding as the solution most likely to produce the smallest package with the highest quality."

With Siemens, quality is critical. "When we started, we studied Loctite products along with other products and methods in order to establish a reliable process that would offer Siemens a cost-competitive alternative to more traditional assembly processes. Particular attention was paid to the support that is needed to exceed the quality levels demanded by the automotive industry. In all our applications, Loctite provided in-depth R&D activity and support to enhance our designs and assembly methods."

"With the use of Loctite Adhesives, we have cut our electric motor assembly time significantly, compared with traditional methods of assembly. We expect to achieve even more reductions as we expand the use of adhesives to bond and seal additional motor components."

**Graham Moss, Manager of Motor Engineering,
Siemens Electric**

*(Continued on reverse)***Loctite Americas**

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Siemens has worked with Loctite facilities in Canada, Germany, Ireland, the U.S., and the U.K. in replacing the hot bonding processes previously used in several bonding applications. With cold bonding, there is less use of energy, heat stress is eliminated, and, since cooling time is not needed, assembly time and work in process are reduced.

Moss is quick to point out that what is even more important than the productivity and quality gains they have made so far is the strategic partnership that has developed with Loctite. This partnership focuses on what Loctite can do to help Siemens become even more competitive in world markets. Siemens meets with Loctite product development and technical service personnel on a regular basis to discuss technology trends and discover new methods for reducing costs and time to market. New assembly processes being tested as a result of these meetings include the bonding of bearings and the balancing of armatures.

Another benefit of the partnership is that Loctite technical, sales and service personnel have become very knowledgeable about Siemens' design and assembly processes, and are able to offer immediate help when help is needed. Moss recalls calling Michel Bilodeau, an OEM application engineer for Loctite Canada at 4:00 am and discussing a problem for over an hour. During the time, there were periodic clicking sounds in the background. Finally, the Loctite representative blurted, "Can I get some clothes on? I'm freezing to death!"

"That", says Moss, "is bonding with the customer. And cold bonding at that!"

Some of the products used by Siemens include Loctite® 392 with 7380 activator. Loctite 392, used to bond ferrites, is a high strength, flexible, structural adhesive that demonstrates excellent resistance to thermal cycling and severe environments. Loctite 620, a retaining compound with high shear strength and temperature resistance, is used for bonding commutators.

Siemens uses Loctite application equipment to apply adhesives and sealants. They are also using Loctite dispensing equipment in non-adhesive applications such as in the application of solder paste.



HVAC Blower Motor. Ferrites bonded with Loctite 392 and 7380 Activator.



Antilock Braking Motor. Loctite RTV sealant is used.