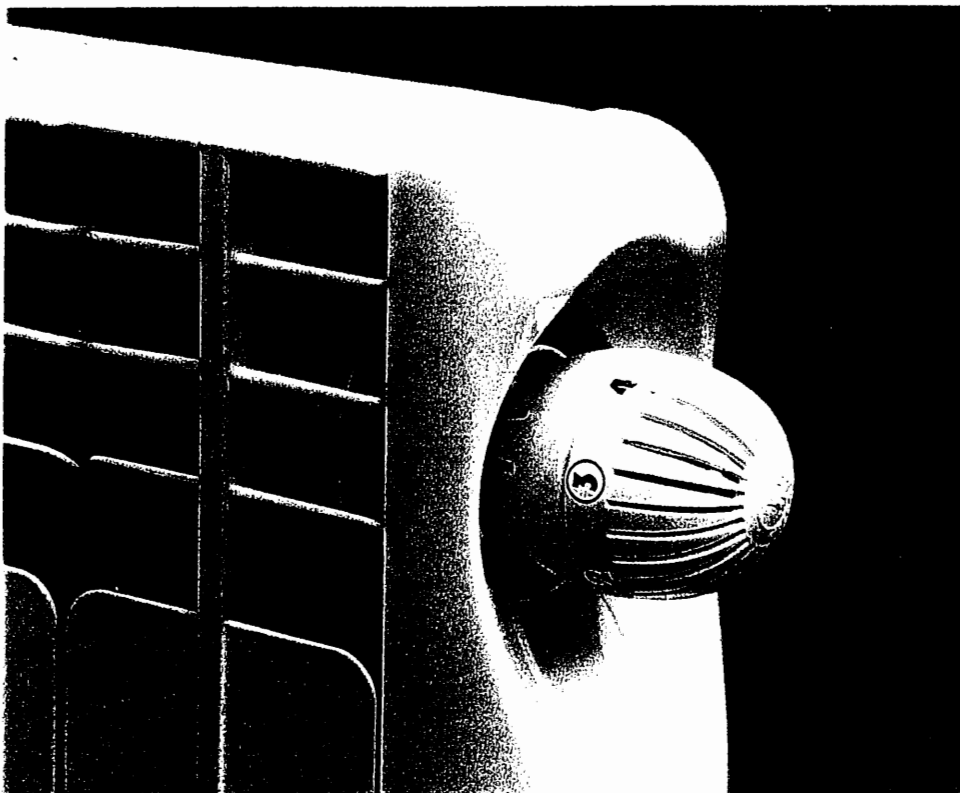




Shell Chemicals

## CARILON POLYMERS CASE HISTORY

### Giacomini Thermostatic Radiator Components



By selecting CARILON™ Polymers for their resilience, heat tolerance and impact resistance, Giacomini now has a simpler inventory and a more attractive end product. In addition, overall product cost is lower due to CARILON Polymers' good processability and shorter cycle times. Prior to using PK, Giacomini used three materials for its R470 thermostatic head shown here. For more information about CARILON Polymers, call 1-888-CARILON (888-227-4566).



**Shell Chemicals**

## **PRESS INFORMATION**

### **CARILON Polymers from Shell Chemicals Improve Productivity and Performance of Thermohydraulic Elements**

#### **Giacomini S.p.A. Case History**

Introduction to Shell Chemicals<sup>1</sup> CARILON<sup>2</sup> Polymers has allowed Italy-based Giacomini S.p.A. to manufacture two of its newest products using a single material instead of three. By choosing CARILON Polymers for use in its R470 radiator head and its R66A manual air valve for radiators, Giacomini, a major producer of components for the thermohydraulic sector, now enjoys easier production, cost-savings and a more attractive end-product.

Giacomini recently introduced the R470, a new concept thermostatic head for heating radiators, made entirely from CARILON Polymers. These polymers, known as aliphatic polyketones, offer a unique combination of performance properties, such as stiffness, impact resistance, hydrolytic and chemical resistance, resilience and low friction coefficient, together with high productivity in molding.

According to Giacomini, the R470 thermostatic head allows the radiator temperature to be adjusted by means of a fluid-cell sensor fitted inside the radiator itself. The temperature of each room can be adjusted locally, thus leading to considerable energy savings. The R470 is composed of three elements, all molded from CARILON Polymers: the handwheel, the base and a locknut. The external handwheel is characterized by a unique "cage" structure, instead of a solid one, which allows a better grip and is not dirt- and dust-retaining. It's complex shape is easy to mold thanks to CARILON Polymers' high molding definition characteristics.

Since the thermostatic head is fastened to a metallic element, it must guarantee high mechanical strength at temperatures up to 90 °C. Furthermore, for adjustment purposes, the handwheel and the body are opened and closed frequently, and these operations must be carried out without giving rise to deformation, loosening and breakages.

/more . . .

---

<sup>1</sup> The expression 'Shell Chemicals' refers to the companies of the Royal Dutch/Shell Group which are engaged in the chemicals business. Each of the companies which make up the Royal Dutch/Shell Group of companies is an independent entity and has its own separate identity.

<sup>2</sup> CARILON is a Shell trademark.

In the past, Giacomini said they employed three different materials for a similar product: polyacetals, ABSs and SANs. The use of CARILON Polymers has eliminated a series of technical and aesthetic problems associated with these materials.

The UNI 215/1 Italian standard imposes a series of very strict requirements for thermostatic valves under a static pressure of 100 kPa. After 20 minutes, the time needed to reach thermal stability, a force of 25 kg is applied for 30 seconds. The product must show no damage, such as permanent deformation, breaks or cracks.

Luca Giacomini, technical manager of Giacomini, comments, "We are very satisfied with the performance levels offered by CARILON Polymers because, compared with the materials we used in the past, they allow us to better comply with the current standards." Furthermore, he notes that the CARILON Polymers locknut offers optimum resistance to notching as well as the elasticity needed to ensure adaptation to the shape of the brass part on which it is fitted.

CARILON Polymers also offer a number of important aesthetic advantages. According to Giacomini, the use of a single material for all three components provides improved color matching and stability.

Giacomini has also adopted CARILON Polymers for another product, the R66A manual air valve for radiators, composed of two parts: a brass body and a CARILON Polymers handwheel. The handwheel benefits from the polymers' low thermal conductivity and good dimensional stability in order to maintain operability at different working temperatures. Compared with polyacetal resins, there is an improvement in performance especially with regard to the thread which, according to Giacomini, tended to break under high stress.

An important advantage offered by CARILON Polymers is its higher yield and productivity, which reduces the overall cost of the end product compared with polyacetal resins. In fact, the quick solidification in the mold, typical of polyketones, allows for faster cycles.

CARILON Polymers are engineering thermoplastics with a unique combination of physical properties compared to traditional materials such as polyamides and polyacetals. These properties include strength, stiffness, performance over a broad temperature range, toughness, superior wear and friction characteristics, low hydrocarbon permeability and resistance to a variety of aggressive chemicals.

CARILON Polymers are available in extrusion grades and a variety of injection

/more . . .

molding grades, including glass reinforced, flame retardant, mineral filled and lubricated compounds. The polymers can be easily processed on conventional molding and extrusion equipment, and their fast set-up can lead to significantly reduced cycle times in injection molding applications.

For more information on CARILON Polymers, visit the Shell Chemicals Web site at [www.shellchemicals.com](http://www.shellchemicals.com). In the United States, customers can write to Shell Chemical Company, P.O. Box 2463, Houston, Texas 77252-2463 or call toll free at 1-888-CARILON (1-888-227-4566). In Europe, customers can write to Shell Chemicals Ltd., Shell Centre, SEI 7NA or call +44 171 934 3300.

###

**MEDIA CONTACTS:**

Nicole Cloutier/Pat Frank, Vollmer Public Relations (phone: 713-546-2230)  
808 Travis, Suite 501, Houston, TX 77002 (fax: 713-546-2231)  
E-mail: [nicole@vollmerpr.com](mailto:nicole@vollmerpr.com) or [pat@vollmerpr.com](mailto:pat@vollmerpr.com)