

Always staying cool

- Whirlpool India uses KraussMaffei RimStar technology in manufacturing polyurethane insulating layers in refrigerators
- Mixing and metering systems prove their value with stable production processes and high mixing quality

(Munich, August 12th, 2015) Refrigerators have to be well insulated in order for their cooling capacity and energy efficiency to meet required levels. This is particularly true for tropical climatic conditions in southern latitudes. In India, Whirlpool India—a subsidiary of US-based global conglomerate Whirlpool—is the market leader in manufacturing refrigerators and cooling systems. For producing the critical insulating layer made of foamed polyurethane (PUR) in the housings and doors, the company insists on KraussMaffei's RimStar mixing and metering technology.

Every day, about 6,800 refrigerators leave the Whirlpool plant in Faridabad in North India to be sold throughout India and neighboring countries. The KraussMaffei RimStar machines, five in total, provide perfect insulation of the housings and doors, contributing to the refrigerators' exceptional energy balance. Pentamix systems providing optimum premixing of the pentane component were also part of the order.

Whirlpool is not a new customer for KraussMaffei. The collaboration started back in 2012. The first wet side equipment, a RimStar 80/80, was sent to Brazil and has been successfully producing refrigerators in South America ever since. "The RimStar system in Brazil has impressed us in recent years with its reliability and production consistency," explains Rohit Dhiman, Director Projects at Whirlpool Faridabad. "It was only logical for us to again choose KraussMaffei when making the new investment." Dhiman also praises the technical expertise of their contact persons as well as the good and close cooperation with the team of KraussMaffei and their representation Goodies International: "They have impressed us with their flexibility of timings and deep knowledge of project execution during the

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whole project planning and final commissioning. In total, a perfect sync with the Whirlpool team on site.”

Stable process control and high product quality

The primary strengths of the RimStar systems include stable process control and high product quality. The definitive reason for this is the KraussMaffei mixing head technology. Depending on the application, the five new RimStar systems at Whirlpool are equipped with up to 10 mixing heads. For the polyurethane foaming of the refrigerator housings and doors, linear and transfer mixing heads from KraussMaffei are used in this case. The main characteristic of these transfer mixing heads is laminar and splash-free pouring of the mixture into open and closed molds. They are particularly designed for processing hard-to-mix systems. Their other advantages include long service lives and low maintenance costs.

Another outstanding feature of the KraussMaffei RimStar machines is the particularly precise temperature control of the components, which guarantees a constant temperature at all times. In this application, pentane is employed as the blowing agent to avoid using chlorofluorocarbons. The entire equipment configuration was manufactured in accordance with German TÜV specifications, with a successful acceptance carried out onsite by TÜV-Süd.

Pentamix systems feature outstanding premixing performance

Optimum premixing of the pentane component in the production line for refrigerator housings and doors is provided by the fully enclosed Pentamix 40 premix stations from KraussMaffei. The pentane is safely introduced into the polyol component. For this purpose, a 40l high-pressure pump developed in-house is used (on the polyol side), along with a 5l plunger metering pump. High metering accuracy is achieved even at very low feed rates. The proportion is monitored by means of flowmeters for polyol and pentane. The housing is completely suction-cleaned and monitored for leaking material.

About Whirlpool

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Whirlpool Corporation (NYSE: WHR) is a US-based manufacturer of major home appliances headquartered in Benton Harbor, Michigan. With annual sales of over 18 billion US dollars, 71,000 employees and 67 production and technology research centers worldwide, Whirlpool sells its products under the brands Whirlpool, Maytag, KitchenAid, Jenn-Air, Amana, Bauknecht, Brastemp, Gladiator GarageWorks, Privileg and other brand names.

Whirlpool Corporation is a global enterprise. However, that was not always the case. Many of its subsidiaries started off as small-town, family-owned companies. With the purchase of the Maytag Corporation on March 31, 2006, Whirlpool Corporation became the world's largest household appliance manufacturer.

www.whirlpoolcorp.com

PM_RPM_2015_08_Whirlpool_Team.jpg

Good teamwork in India: Ravi Madan, Project Lead / Goodie International (KraussMaffei), and Rohit Dhiman, Director Projects Whirlpool Faridabad (from left to right) in front of the KraussMaffei Pentamix mixing station

PM_RPM_2015_08_Whirlpool_Faridabad.jpg

Every day, about 6,800 refrigerators are produced at Whirlpool Faridabad to be sold throughout India and neighboring countries.

PM_RPM_2015_08_Whirlpool_RimStar.jpg

The KraussMaffei RimStar machines provide perfect insulation of the housings and doors, contributing to the refrigerators' exceptional energy balance.

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(NumWords: 653/ NumChars: 4.502)

About KraussMaffei

The KraussMaffei product brand is internationally recognized for its groundbreaking, multitechnology system and process solutions for injection and reaction molding technology and factory automation. With its standalone, modular or standardized machinery and systems, and a wide, customizable service offering, KraussMaffei is a full-system partner for customers in many industry sectors. KraussMaffei bundles many decades of engineering expertise in plastics machinery and is headquartered in Munich, Germany. For more information: www.kraussmaffe.com

About KraussMaffei Group

The KraussMaffei Group is among the world's leading suppliers of machinery and systems for producing and processing plastics and rubber. Its products and services cover the whole spectrum of injection and reaction molding and extrusion technology, giving the company a unique position in the industry. The KraussMaffei Group is innovation-powered, supplying its products, processes and services as standard or custom solutions which deliver sustained added value along the customer's value-adding chain. The company markets its offering under the KraussMaffei, KraussMaffeiBerstorff and Netstal brands to customers in the automotive, packaging, medical, construction, electrical, electronics and home appliance industries. Continuing a long tradition of engineering excellence, the international KraussMaffei Group currently employs around 4,000 people. With a global network of more than 30 subsidiaries and more than 10 production plants, supported by around 570 sales and service partners, the company is close to customers around the world. KraussMaffei has been headquartered in Munich since 1838. For more information: www.kraussmaffeigroup.com

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