

Application story



Methylene Diphenyl Diisocyanate (MDI) Metering in Soft Foam Production

Location	Netherlands	Hydra-Cell model	G15XDSGHFEHB / G25XKSGHFEHB
Type of application	Methylene Diphenyl Diisocyanate (MDI) Metering in Soft Foam Production	Flow rate	16.5 - 48 l/min (4.3 - 12.6 gpm)
Liquid	Methylene Diphenyl Diisocyanate (MDI)	Pressure	80 - 120 bar (1160 - 1740 psi)
Application details	A Dutch manufacturer of soft foam, as used in furniture upholstery and for sound insulation, relies on Hydra-Cell pumps to inject MDI liquid into polyol - triggering a chemical reaction that produces the characteristic massive increase in volume. The process involves pumping the isocyanate into a holding tank at 50 bar pressure, and subsequently injecting the liquid, via a long discharge line, into a mixing head at up to 120 bar. As MDI crystallises if exposed to air, no pump vulnerable to seal wear could sensibly handle it in this production application. Seal-less Hydra-Cell units do all the pumping - a G25 feeding the holding tank and two G15 pumps working in parallel, delivering their combined volume to the mixing head at injection pressures. For consistent foam quality, and to avoid risk of spontaneous combustion, mixing proportions must be exact over a wide range of production circumstances. In effect, the output of the G15 units must precisely follow varying system requirements as indicated by controlling flowmeter. (The pump can do this accurately and rapidly. Flow is always proportional to motor speed, regardless of pressure, and is altered instantly in response to external signal). Digital signals from the flowmeter are converted by system computer and frequency inverter to adjust motor speed. The control system on this installation is similar to that used on other Hydra-Cell metering applications where high accuracy is important. They include spraying water and salts in correct ratio on cocoa mass, adding dye to fuels and the precise dosing of water and oil in dough production.		
Advantages of Hydra-Cell pump on this application	Seal-less design, compatible with handling iso cyanates. High pressure capability. Ability to match the accuracy of flowmeter readings. Fast response to signal. Repeatability. Linear relationship between motor speed and pump flow. Low pulsation.		

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