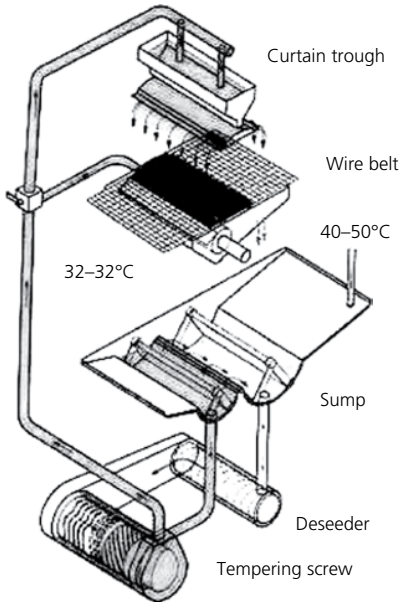

Figure 14.17 Enrober with inbuilt temperer. Source: Sollich. Reproduced with permission of Sollich Germany.

A mass temperature of 45 °C (123 °F) is required for de-tempering, but as the cylinder surrounding the de-tempering worm and the worm itself wear, the rate of heat transfer reduces and de-tempering becomes more difficult. Typically in a Sollich unit, the cylinder and worm each have a nominal diameter of 198 mm (8 in) with a tolerance measured at the centrepoint of +0.15 to +0.2 mm (0.006–0.008 in) for the cylinder and –0.15 to –0.2 mm (–0.006 to –0.008 in) for the worm: the gap is thus 0.3–0.4 mm (0.012–0.016 in). If this gap reaches 1 mm (0.04 in), replacement is necessary.

14.3.4 Enrobers with external temperers

In these machines the chocolate supply from the temperer is pumped directly into the sump, where it mixes with the masse already there and with returns from the curtain (Figure 14.18). It is then pumped up to the curtain trough, generally mixed at a ratio of between 1:4 and 1:6 with recirculated mass. To control the temper in the sump, a proportion of the masse is returned via a de-seeder to the temperer feed tank. A sieve should be included in the circuit so that any broken pieces of the product centre can be eliminated. Such small pieces can otherwise build up inside the enrober, leading to a discontinuous curtain and to poor visual quality of the coating.

14.3.5 Chocolate recirculation

An amount of 1 kg/h (2.2 lb/h) of chocolate is needed per 1 mm (0.04 in) belt width for one curtain, 1.5 kg (3.3 lb/h) for double curtains. The contents of the enrober should be exchanged every 6–10 min to avoid build-up, to keep a

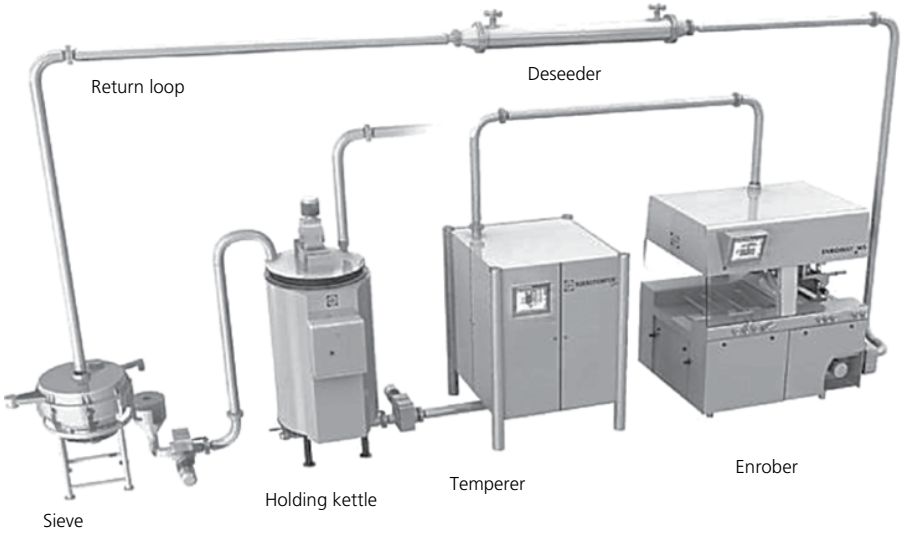

Figure 14.18 Pipe circuit for an enrober with an external temperer. Source: Sollich. Reproduced with permission of Sollich Germany.

constant temper, to avoid air bubbles in the curtain and to reduce changes in colour and density due to air incorporation. Since a 1000 mm (40 in) wide enrober has an internal capacity of about 150 kg (330 lb), changing the contents every 10 min will necessitate a feed of 1000 kg/h (2200 lb/h).

The recirculation pump is a pawl type (Chapter 12), chosen for gentle handling and minimal temperature increase. It also has good suction characteristics and will handle nuts and so on, without much breakage.

For modern Sollich enrobers running on milk chocolate, the recommended water temperature for the sump is ~0.5 °C (1 °F) lower than the required masse circulation temperature, as some heat is added by the recirculation pump. Recommended water temperature for the table is 3 °C (5.5 °F) above the water temperature of the sump. For best operation, ambient temperatures of 24–27 °C (75–81 °F) are considered the optimum for the enrobing area. The temperature inside the enrober hood should be 24–30 °C (75–86 °F); lower temperatures will only cause a build of chocolate on the internal surfaces. The temperature of the item to be coated should be in the range 22–24 °C (72–75 °F); a higher initial temperature needs a longer cooling time.

When enrobers are dedicated to compounds that do not require tempering the handling system can be much simpler. The temperature of the masse, water jackets and enrober hood area will all need to be adjusted to the quality and crystallisation properties of the fat used. A fast setting fat such as a lauric fat needs operating temperatures inside the hood as high as 40–45 °C (104–113 °F) to prevent build up.