



**Figure 14.22** Picture showing extendable belt running through the first enrober (in white) which is bypassed. Source: Sollich. Reproduced with permission of Sollich Germany.

### 14.3.9 Changeovers

Enrobers designed for rapid changeover are also available, some of which are on wheels, and push in and out of the line as required with rotary joints on all feed lines. Changeover time is around 10 min.

An alternative is two enrobers in line, one after the other, with an extendable belt that allows the product to be run through one of the enrobers and so avoiding contamination of either product or enrober (Figure 14.22).

Enrobers are manufactured that are suitable for wet cleaning, which can be useful when changing between incompatible masses or those containing difficult to remove flavours (or allergens).

### 14.3.10 Avoidance of air bubbles

Generally bubbles are not a major problem on enrobed items, as the coating is fluid enough for them to be displaced or burst by the blower. However with thicker masses or some more difficult products, bubbles can be a problem and action may be needed to minimise them. Certain basic precautions should be taken anyway, even if bubbles are not an obvious problem.

Each feed pipe to the curtain trough should have its outlet under the chocolate surface to avoid incorporating air. The correct rate of replacement of masse in the enrober by freshly tempered masse will also help prevent the build-up of bubbles due to recirculation. Holding tanks should be filled under the product surface, or using an angled pipe end which directs the flow down the wall of the tank. The tempered feed to the enrober should either have an extended feed pipe terminating under the surface or have a “cup” under the pipe end to eliminate air incorporation. Opportunities for the chocolate to fall any distance inside the enrober should also be eliminated.

### 14.3.11 Avoidance of chocolate build-up inside an enrober

One of the major reasons for having to stop and clean or reheat an enrober is a build-up of chocolate on the internal surfaces that can increase the temper and, hence, the viscosity of the mass and can also endanger the belt.

Some simple precautions will help:

- Always keep the cabinet windows closed.
- Cooling water must be  $>10^{\circ}\text{C}$  ( $50^{\circ}\text{F}$ ), use a higher volume if necessary.

Further modifications can be made to reduce chocolate build up:

- Side heating can be retrofitted using the  $45^{\circ}\text{C}$  ( $113^{\circ}\text{F}$ ) water circuit to supply it. Three shift heating packages are also available, consisting of wire heaters for the nose rollers at infeed and discharge, plus cross members and the bottoming pan.
- The square structural beams can also be trace heated by buying exchange units with a suitable groove.
- An agitator in the feed trough can also help prevent build-up.

### **14.3.12 Downstream processes**

In addition to the details below, please consult Schremmer (1988).

#### **14.3.12.1 Engrossment**

It may be necessary to add a layer of particulates onto the centre either after enrobing, or between two coatings. Cereals, nuts, kibbled high boiled candies and “hundreds and thousands” are typical of the kind of addition that is made.

The article to be coated is conveyed with its coating still soft onto a layer of the engrossing material. More is dropped onto the bars via a curtain to ensure an overall coating. The bars pass on to a wire mesh belt that allows excess pieces to fall through and be recycled. Finally, they will usually go through a second enrober to receive a protective second coating before passing into the cooler.

#### **14.3.12.2 Decorating**

A wide variety of patterns can be applied, using the same or different colour chocolates; and then, by using a comb, these patterns can be dragged and modified. A decorator (Figure 14.23) may be placed immediately after the enrober; or alternatively, further down the line to let the wet coating masse partially set and so be less messy. A combination of applied decorations and combs can be used to produce distinctive patterns even with the same colour chocolate.

The most common units are made either by Sollich (Decormatic) or by Woody Stringer in the USA. The original Stringer, first produced in 1956, was capable of making zigzag decorations in thick or thin patterns on candies and baked goods. Over the years, various features were added beginning with a single loop attachment for producing circles, ovals and slanted zigzags. Later, the double loop attachment was developed, allowing the decorator to produce more complex designs, such as the figure of eight (8), tree bark and cross-hatching. Heaters were added to ensure an even temperature across all the nozzles. The Stringer can be custom-designed to produce zigzag, single-loop, double-loop and cross-hatching designs. Likewise, the Decormatic is a very versatile unit capable of applying many designs.