

CASE STUDY

## Food Industry

Component: JIF Squeezy Lemon

Performance: Open side uppermost all one way at 100 lemons per minute total

### Introduction

**'Shrove Tuesday don't forget the pancakes'**

When RNA were contacted with a request to handle JIF Lemons, it was both a interesting and challenging project to tackle. The request came from Unilever, a manufacturer of leading brands in the food industry, homecare and personal care.

### The Challenge

One of the reasons why this particular application has been difficult to automate is due to the shape of component. JIF lemon juice comes in a squeezable yellow lemon shaped plastic container. The request from Unilever was to feed 50 components per minute from two outlets and present the component axis vertical open side uppermost two at a time for collection by a handling unit. A vision system solution was considered during development - using a camera to orientate and feed to a position for pick up and placement onto the customer's machine. The unstable nature of the components in front of the camera was the main reason for not using this method. Thus, the opportunity to use a previous solution using pucks for carrying the component became a possibility.

### Chosen Solution - Functional description

Two opposite handed bowl feeders feed the lemons at random into pucks which are held in place under the bowl outlet.

Each bowl releases a lemon on demand via a Tic Toc type escapement, the lemon sits in the puck either way up. The puck is released to a further station where a sensor checks for the presence of the open end of the lemon.

Open side up lemons are released onto an accumulation conveyor and the open side below lemons are blow up out of the puck into a tube which is fitted to a vacuum generator. This tube inverts the Lemon through 180 degrees and drops the Lemon into a waiting puck resulting in the correct orientation.

The pucks are then merged into a single lane and fed under an inverted linear which has special tooling that "grabs" the neck of the Lemon mouth under its flange.

The Lemon is now held on the linear tooling by its neck flange and transported along the linear; the puck is fed down a gravity track which releases the Lemon from the Puck and recycled back into the system ready to be loaded with another Lemon.

Finally a Tic Toc escapement releases one Lemon at a time from the linear ready for collection by the customer handling unit.

### Key features & benefits

#### 'Puck' System

- Repeatable positioning
- Inverted 'JIF Lemon' can be re-oriented so that all product fed are used in system, i.e. no rejects
- Consistent output rate
- Consistent conveyor accumulation
- The 'pucks' allow reliable and robust movement around the system

