Challenges in Jaffa cakes production: raw material quality and process parameters (experiential)

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Biscuit Conference People, Pula

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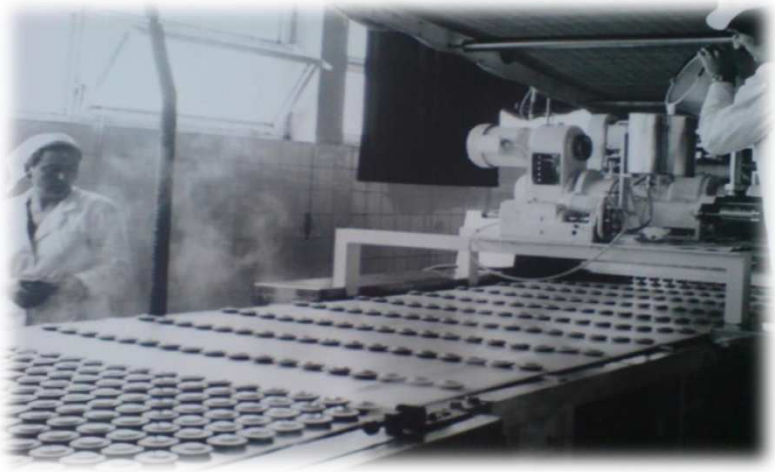
Agenda

- About company
- Interesting information
- Lubrication of still belt with fat and potentional problems
- Jelly depositing and corrections
- Conclusions

History



Jaffa Crvenka company was established in 1975.

1976. – started first production of Jaffa cakes®
43 years tradition of Jaffa cakes® brand

1981. – started first production of Munchmallow
37 years tradition of Munchmallow brands

2006….2019 – New categories of product

- wholegrain biscuits : O'cake brands
- salty crackers: Tak
- wafel products: Napolitanke

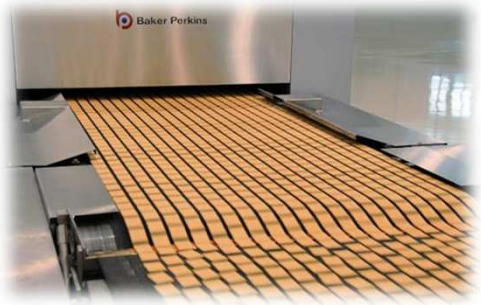
2017.- aqusition with Banini company

Company

Jaffa is equpped with 9 production lines:

Location Crvenka:

- **Production line for Jaffa cakes**
- **Production line for Munchmallow**
- **Production line for wafer products**
- **Production line for hard biscuits**



Company

Banini

Location Kikinda:

- Sendvich biscuit production line
- Formed biscuit production line
- Salty sticks production line
- Salty crackers production line

Interesting information...

- **When we sort one by another all biscuits which we are produce per year we would get a length corresponding to the length of the Chinese wall (7612 km)**
- **Daily production: 40.000 eggs**

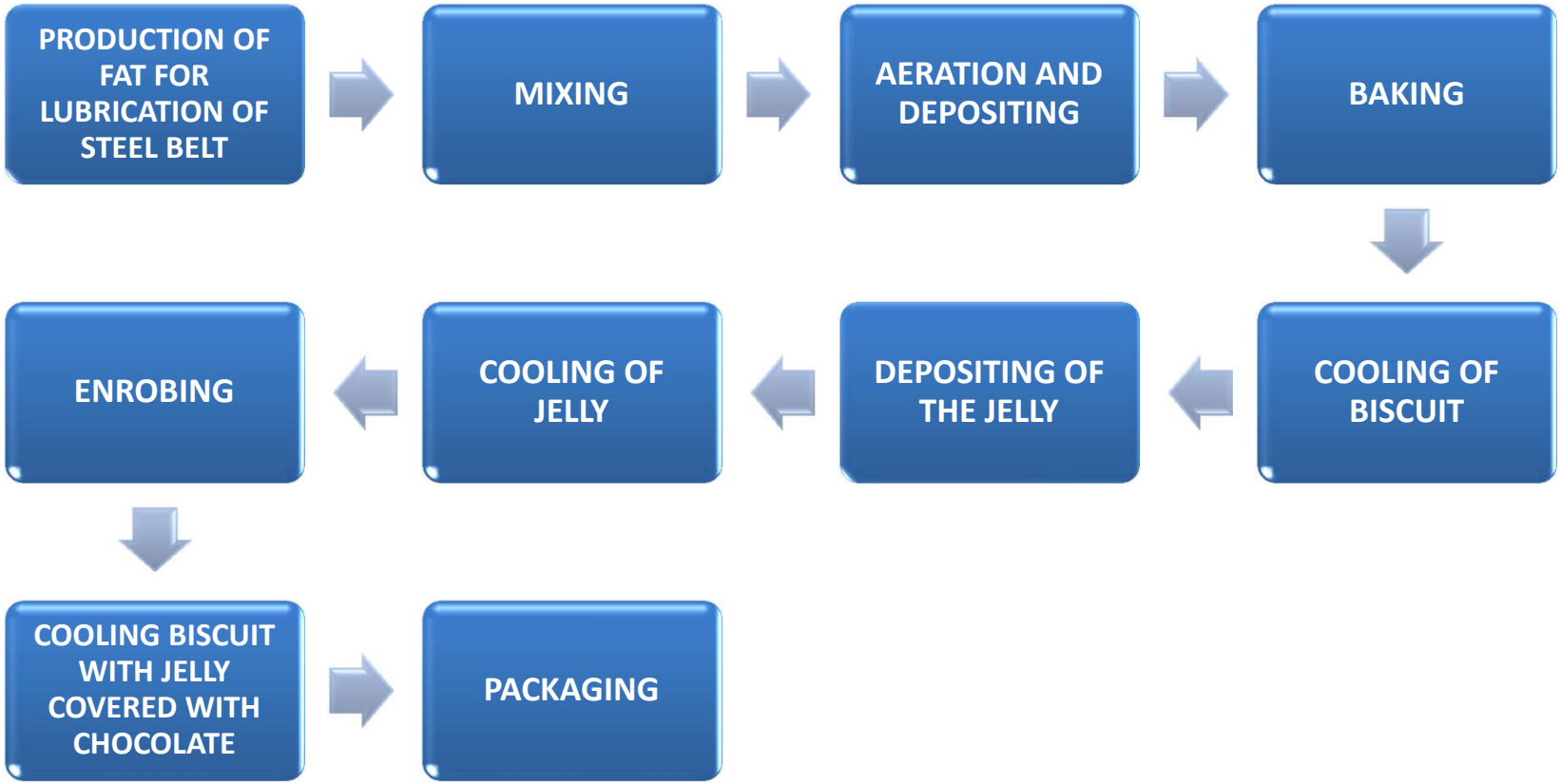
- **Ginis's record in consuming Jaffa cakes:**

17 pieces /minute

Structure of Jaffa cakes

soft aerated biscuit + jelly + chocolate

JAFFA CAKES PROCESS PRODUCTION



JAFFA CAKES PROCESS PRODUCTION

MIXING

- DOSING OF RAW MATERIALS IS NOT RIGHT
- QUALITY OF RAW MATERIALS

JAFFA CAKES PROCESS PRODUCTION

BATTER AERATION AND DEPOSITING

- QUALITY OF FLOUR
- TEHNICAL PROBLEMS: COMPRESSED AIR PUMP AND TIME OPENING OF NOZZLES

JAFFA CAKES PROCESS PRODUCTION

BAKING

- PROBLEMS WITH TEMPERATURE IN THE OVEN
- HUMIDITY OF BISCUIT

JAFFA CAKES PROCESS PRODUCTION

ENROBING

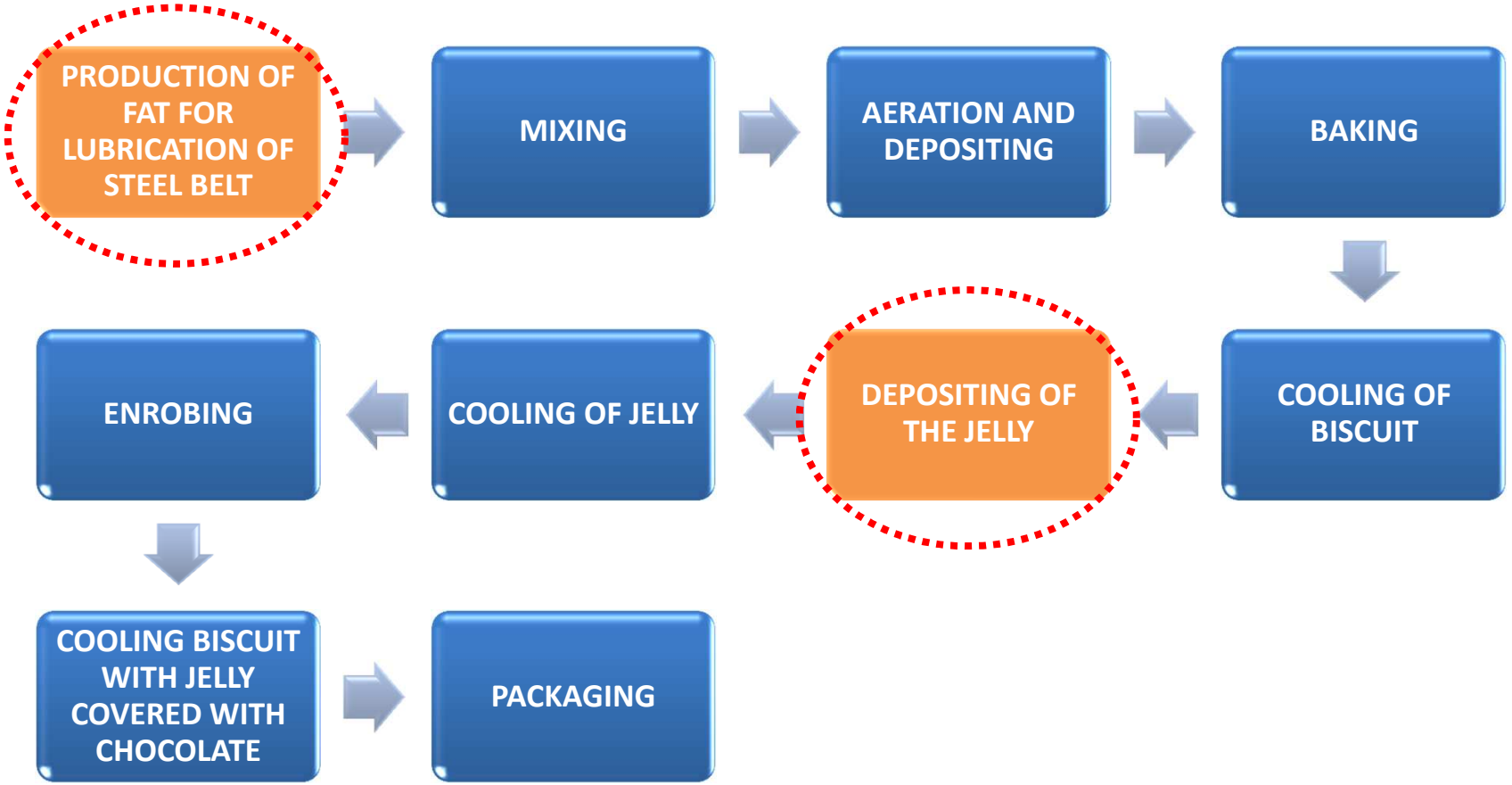
- TEMPERATING OF CHOCOLATE
- LOW % OF CHOCOLATE

JAFFA CAKES PROCESS PRODUCTION

PACKAGING

- PROBLEM WITH PACKAGES LENGHT
- NET WEIGHT

JAFFA CAKES PROCESS PRODUCTION



Quality parameters of Jaffa cakes

- humidity: 10-12%
- shape of biscuit: circle
- diameter of biscuit
- height of biscuit

Fat for the lubrication of steel belt...

- min. 12h
- μ= 1.5-3.0 Pas (27°C)
- uniform particle size

The lubrication process of the steel belt and potencional problems

Potencional problems:

too much grease on the steel belt

too little grease on the steel belt

Too much grease on the steel belt...

Characteristics of biscuit:

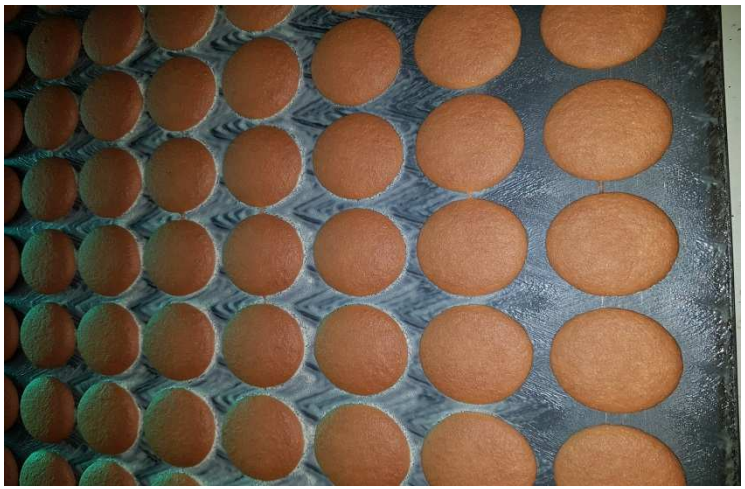
- **bigger and unequal diameter**
- **linking up of biscuit rows in the baking process**

Too much grease on the steel strip...

Characteristics of biscuit:

- **edge of biscuit is sharp and discolorated**
- **smudged with a particles of grease**

Too much grease on the steel belt...



Characteristics of biscuit:

- **diameter of biscuit is steel in range (55-58mm)**
- **lower hight of aerated biscuit**

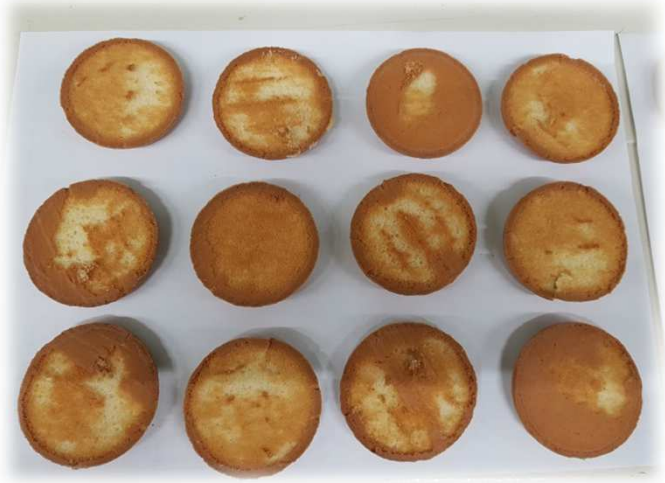
corrections in the process of jelly depositing

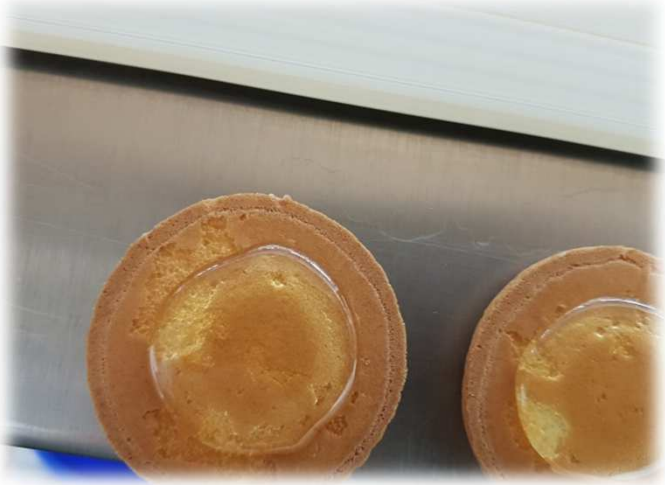
Too little grease in the steel belt...

Characteristics of biscuit:

- **biscuit with smaller diameter**
- **biscuit is higher**

Too low grease in the steel strip...

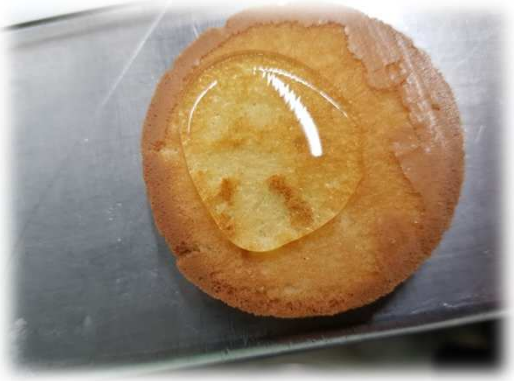




Characteristics of biscuit:

- **bottom site of biscuit will be damaged**
- **shape of jelly will not be circle and will not covered all damaged surface of bisciut**

Too low grease in the steel belt...

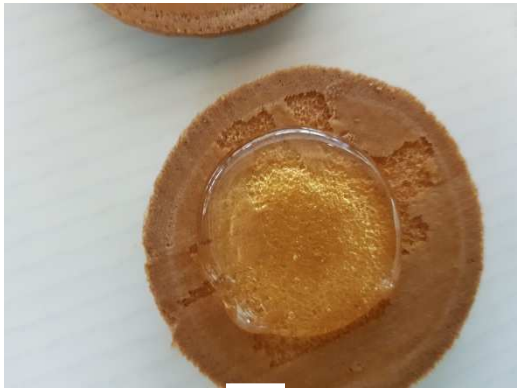


Jelly depositing and corrections in a process

Depositing of jelly

- T= 60-61 °C
- DB= 74.5-76.5%
- pH1= 4.0-5.0
- pH2= 2.5-3.5
- pump of acid: 30-31%

Corrections in the process



1. T= 60-61 °C
- T_1= 62-63°C
- jelly will covered all damaged surface

2. decrease citric acid in the jelly
(reduce the pump of acid from 31% to 29%)

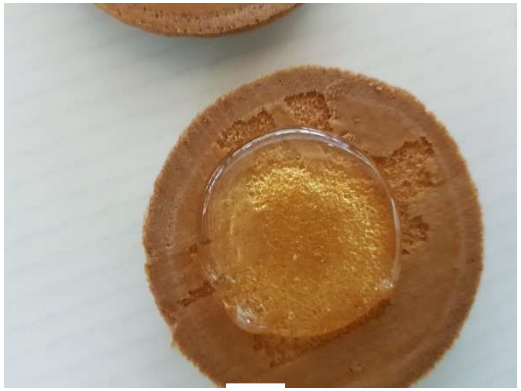
! Be careful with this kind of correction because damage of jelly structure can occur and the jelly should be hard enough before enrobing process.

Quality test for jelly struture...

First indicator of jelly structure after cooling (pH= 2.5-3.5):

- ✓ easy separation from the surface of biscuit
- ✓ the intersection of jelly by cleaveage is sharp

Corrections in the process



1. T= 60-61 °C

T1= 58.5-59.5°C

jelly will be colder and higher

2. increase citric acid in the jelly

(increase the pump of acid from 31% to 32.5%)

! Be careful with corrections: if amount of citric acid are too high, jelly will stuck in the nozzles of depositor and we will need to stop the production

Conclusions:

- The reason for using of roll off fat for lubrication process of steel belt in Jaffa cakes production is finacial:
  it is chepear than other lubrication grease;

- For stabilized baking process it is necessary too have a proper viscosity of roll off fat and uniform particle size

- Problem with quantity of grease for lubrication can be solved in process of jelly depositing with changes of jelly temperature and amount of citric acid in the situation when the diameter of biscuit after baking is in the appropiate range

Thank you for your attention!

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