



PROJECT FINAL REPORT-Annex

Grant Agreement number: 613622

Project acronym: NANOBAK2

Project title: Innovative and energy-efficient proofing/cooling technology based on ultrasonic humidification for high quality bakery products

Funding Scheme: Collaborative project

Period covered: from 01.11.2013 to 31.10.2015

Name of the scientific representative of the project's co-ordinator¹, Title and Organisation:

Mr. Frank Bakker

Managing Director

CONTRONICS

Tel: +31 (0)413 487000

Fax: +31 (0)413 473903

E-mail: info@contronics.nl

Project website address: <http://nanobak2.eu/>

¹ Usually the contact person of the coordinator as specified in Art. 8.1. of the Grant Agreement.

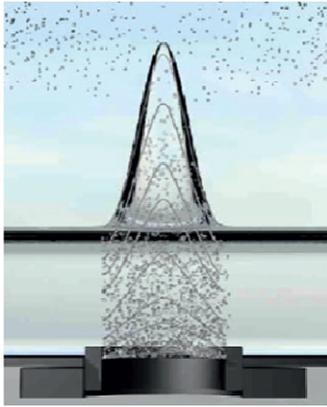


Figure 1: Generation of a water wave by the ultrasonic vibration of a transducer



Figure 2: NANOBAK2 Logo



Figure 3: Workshop at INTERSICOP (Madrid, April 2015) and IBA (Munich, September 2015) trade fairs.

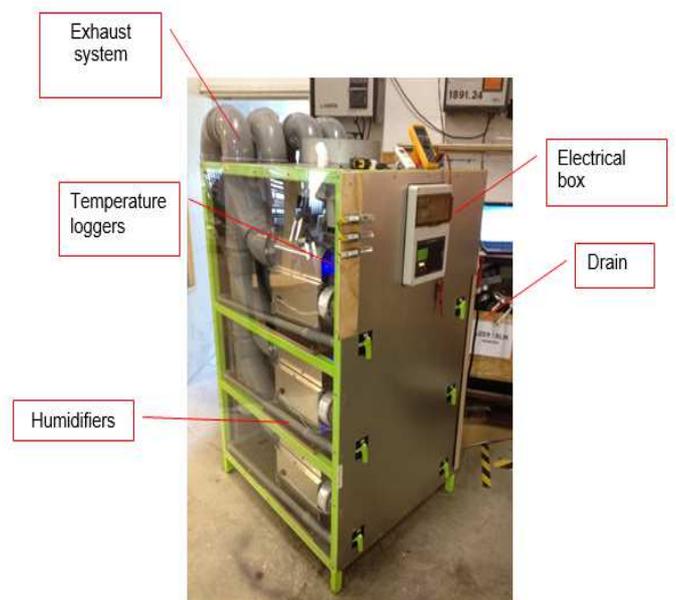


Figure 4: First realized humidifier



Figure 5 & 6: Test of different RO units

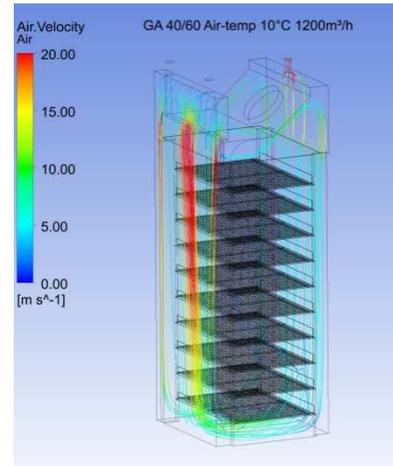


Figure 7: Exemplary drawing of the streamline air velocity for the prototype for one trolley



Figure 8: Tablet as base for GUI



Figure 9: Test unit with mounted panel holders



Figure 10: Tablet controller full view

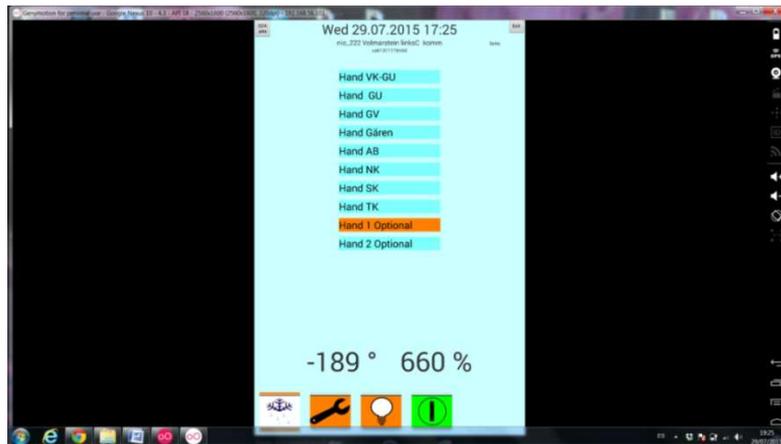


Figure 11: Screen of the virtual version of the control system (Genymotion) used by BIOAZUL

3.2. STARTING AN EXISTING PROGRAM

Wed 21.01.2015 12:21

Hand VK
Hand Gären
Automatik
Programm_3
Programm_4
Programm_5
Programm_6
Programm_7
Programm_8
Programm_9

+25 ° 85 %

HAND PROGRAM:
Simple program which resemble classic basic functions such as:
- Cool
- Retard
- Freeze
- Proof

AUTOMATIC PROGRAM:
This is an example of a more complex program

PROGRAM NR X:
Customers' programs are delivered by the factory or made by the customer himself.

NOTE: All program names appearing in this drawing can be modified.

FOR ENTERING INTO A PROGRAM, SELECT THE PROGRAM ON THE ENTRY SCREEN AND PRESS THE START BUTTON.

- INACTIVE – In this mode it is possible to edit the data
- ACTIVE – It is a non editing mode. Data cannot be changed.

EXAMPLE 1: HAND PROGRAM:

Wed 21.01.2015 12:31

Phase 0
Liftwater: 50
Liftwater: 60

Wed 9:12

+25 ° 85 %

PROGRAM OVERVIEW:
In this program the product is frozen first down to -4°C and afterwards down to -20°C.
After some storage at -20°C, the product is heated up to 17°C and proofed at that temperature.
After proofing, the product is frozen again at -20°C.

If the START BUTTON is pressed, the running mode will be activated.

Wed 21.01.2015 12:44

Phase 0
Liftwater: -4
Liftwater: -4

Mo 09:12

+25 ° 85 %

EXAMPLE 2: AUTOMATIK PROGRAM:

Sat 17.01.2015 18:11

Phase 0
Liftwater: 10
Liftwater: 10

Sat 17.01.2015 18:11

+25 ° 85 %

PROGRAM OVERVIEW:
This program has 8 phases:

- PHASE0: VK – Quick cooling
- PHASE1: GU – Interrupted fermentation
- PHASE2: GV1 – Cooling ramp. Cool down from +25°C to -5°C
- PHASE3: GV2 – Maintain at -5°C
- PHASE4: GA1 – Heating ramp. Heat from -5°C to +25°C
- PHASE5: GA2 – Maintain at +25°C
- PHASE6: AS1 – Cooling ramp. Cool down from +25°C to +15°C
- PHASE7: AS2 – Maintain at +15°C

By clicking on each phase of the graph, phase parameters will appear on the screen:

PHASE 0 PHASE 1 PHASE 2 PHASE 3

Sat 17.01.2015 18:22 Sat 17.01.2015 18:19 Sat 17.01.2015 18:20 Sat 17.01.2015 18:23

PHASE 4 PHASE 5 PHASE 6 PHASE 7

Sat 17.01.2015 18:24 Sat 17.01.2015 18:26 Sat 17.01.2015 18:27 Sat 17.01.2015 18:28

Each phase screen shows a graph and parameters: Phase, Liftwater, and Speed.

Figure 12: View of different screens of an existing program - Manual for the soft- and hardware control system

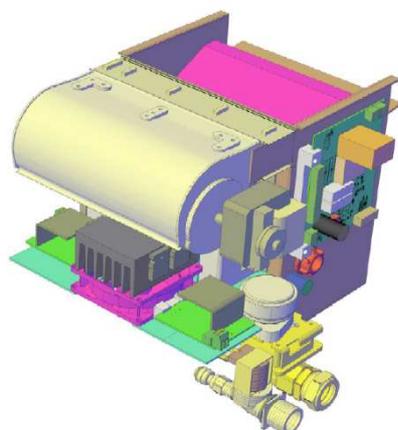


Figure 13: 3D drawing of the humidifier with heating unit for refitting Sikken's proofing chamber



Figure14: Pipe system and humidifier implemented in the cooling unit of BPA

In the following pictures, the 8 NanoBAK2 prototypes can be seen:



Figure 15: Shop-proofer at SIKKEN BIOAZUL



Figure 16: Shop-proofer at SIKKEN



Figure 17: Prototype SIKKEN & BIOAZUL



Figure 18: Mobile chamber at TTZ



Figure 19: Refitted chamber at BPA (Tunnel 3- Prototype for 20 trolleys)



Figure 20: Prototype for cooling chamber (Magnacool) at BPA Angers at SIKKEN



Figure 21: Prototype for proofing chamber

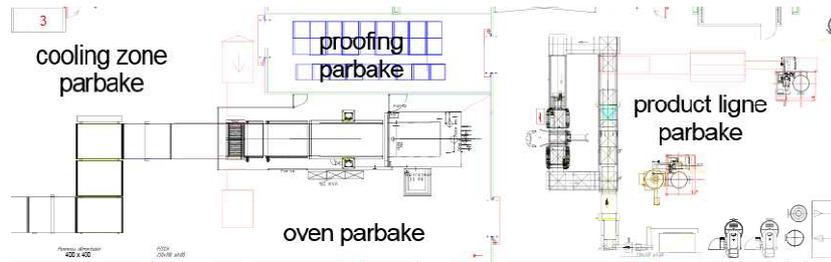


Figure 22: Prototype for the par-baked proofing chamber at BPA



Figure 23: Project partners evaluating the products during the workshop.



Figure 24: Tin bread and rolls prepared during the workshop at TTZ Bremerhaven.



Figure 25: Tin bread and ensaimadas (typical Spanish pastry) produced by the Spanish industrial bread and pastry producer.

Figure 26: View of the mist inside the refitted proofing chamber of the Spanish industrial bread and pastry producer.



Figure 27: Humidifier and osmosis units



Figure 28: Piping installation for the mist distribution.



Figure 29: VolScan evaluation of volume (rolls).



Figure 30: Texture analyser used for product characterisation.

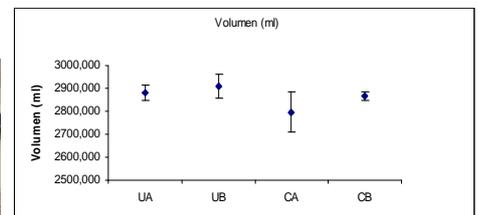


Figure 31: Proofed and baked tin bread and volume measurements of UltraBAK (UA and UB) versus conventional (CA and CB).



Figure 32: Installation of the ultrasonic humidification system in the proofing chamber of BPA (prototype 5).

Figure 33: First (left) and second prototype (right) in the proofing chamber of Sikken (prototype 7).



Figure 34: Installation of the mist distribution system inside the proofing chamber, Granada, Spain.



Figure 35: Prototype 1 – Shop system at Sikken’s Bakery at Emden.



Figure 36: Prototype 2 full of product.

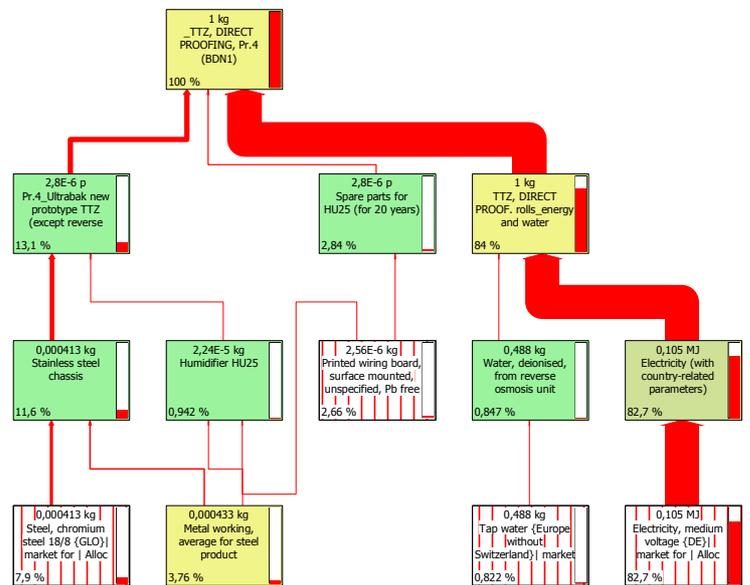


Figure 37: Example of network representation of a life cycle inventory model. D 7.2.

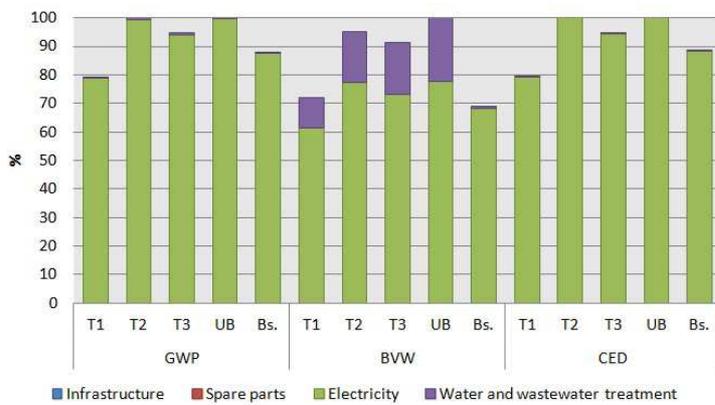


Figure 38: Example of impact assessment results D 7.3.



Figure 39: Project Flyer (English version – left) and Flyer in Spanish for Interscop (right).

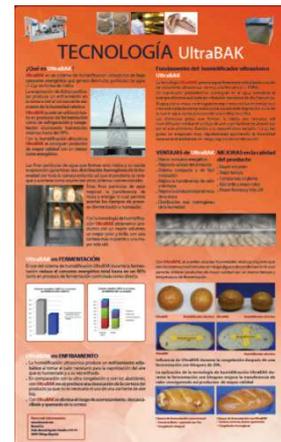


Figure 40: Technical poster for the INTERSICOP'15 prepared by BIOAZUL.



Figure 41: ULTRABA K TECHNOLOGY stand at INTERSICOP'15, Madrid, Spain (left and centre). Introducing the UltraBAK technology to the famous Spanish baker Jordi Morera (right).



Figure 42: USK stand at INTERNOGA 2015 (left), Hamburg, Germany and at the IBA 2015, Munich, Germany (right).



Figure 43: Screen of the NANOBAK2 project video.



Figure 44: Project article at BakeryandSnacks.com, Julie 2015. 2015.



Figure 45: Project article at Baking Europe, Autumn 2015.



Figure 46: Project article at 'BÄKO-Magazin'.

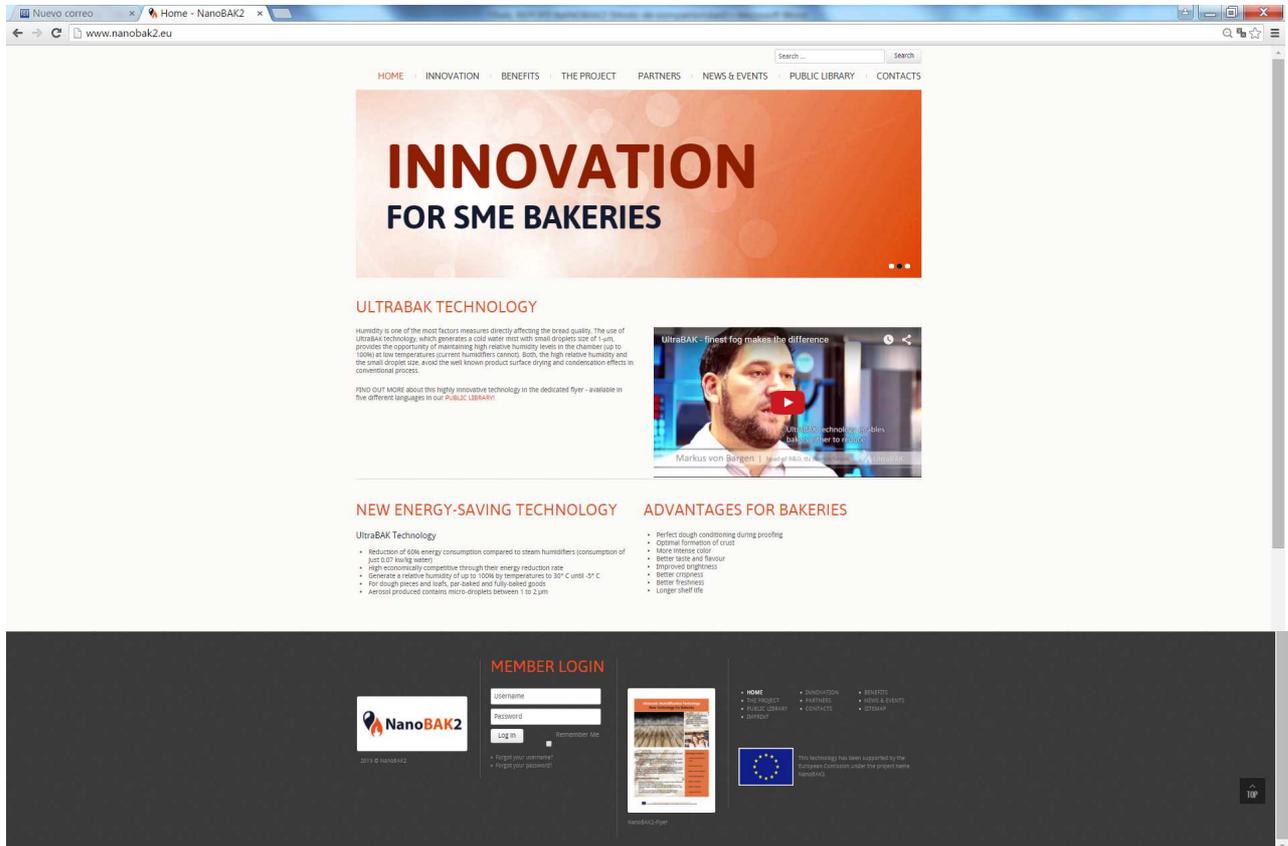


Figure 47: Project article at online portal 'Allgemeine Bäckerzeitung'.

Project web site address

The address of the Project public web site is as follows:

www.nanobak2.eu



Relevant coordinator contact details:

CONTACTS
CONTRONICS ENGINEERING B.V.

Frank Bakker

ADDRESS:
 Ambachtsweg 8
 Sint-Cedreerde
 5492
 Netherlands

PHONES:
 +31 413 487 000
 +31 413 473 903
<http://www.contronics.nl>

E-MAIL:
info@nanobak2.eu

CONTACT FORM:

If you are interested in the ultrasonic humidification technology, work in a related field or have comments or suggestions, feel free to contact us through the form below.

Send an Email. All fields with an asterisk (*) are required.

Name * Email * Subject *

Message *

NanoBAK2 Contact details

Nº	Partner short name	Contact person	E-mail
1	CEN	Mr. Frank Bakker	frank@contronics.nl
		Mr. Max Albertus	max@contronics.nl
		Mr. Eric Bakker	eric@contronics.nl
		Mr. Alfred Bos	Alfred@contronics.nl
2	RFT	Mrs. Gabriele Niedermeier	niedermeier@rft.net
3	TTZ	Mrs. Sonja Guttman	sguttman@ttz-bremerhaven.de
		Mr. Mirko Hänel	mhaenel@ttz-bremerhaven.de
4	USK	Mr. Wolfran Ungermann	info@ungermann.de
		Mr. Jorg Ungermann	joerg@ungermann.de
		Mr. Kai Ungermann	kai@ungermann.de
5	BIOAZUL	Ms. Antonia Lorenzo	alorenzo@bioazul.com
		Ms. Angela Magno	amagno@bioazul.com
		Mr. Jose Luis Bribian Fisac	jlbrilian@bioazul.com
		Ms. Ester Navarro	enavarro@bioazul.com
6	BPA	Mr. Pascal Gouvrión	p.gouvrión@bpa.fr
		Mr. Jérôme Meillouin	j.meillouin@bpa.fr
		Mr. Dominique Sockeel	d.sockeel@bpa.fr
7	2B	Mr. Leo Breedveld	breedveld@to-be.it
		Ms. Beatrice Bortolozzo	bortolozzo@to-be.it
		Ms. Silvia Fontana	fontana@to-be.it
8	SIKKEN	Mr. Dirk Sikken	dirksikken@yahoo.de
		Mr. Bart Sikken	info@sikken.de
9	AIBI	Mrs. Susanne Döring	sd@aibi.eu