

Utilization of shrimp shells – sustainable and delicious

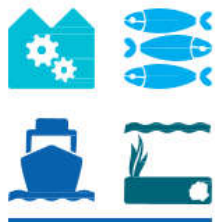


ICWPF19
Industry meeting

St John's,
November 15, 2019

Kasper Teilmann,
GEMBA Seafood Consulting

HAV & FISK



Den Europæiske Union



Miljø- og Fødevareministeriet
Landbrugs- og Fiskeristyrelsen

Flavour enhancer based on shrimp shell



Project is financed by:

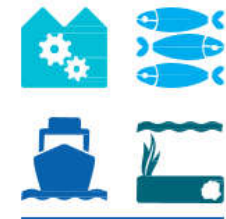
Fællesindsatser fiskeri – innovation under Den Europæiske Hav- og Fiskerifond, Landbrugs- og Fiskeristyrelsen, Miljø- og Fødevarerministeriet.

The project will be concluded in March 2020.






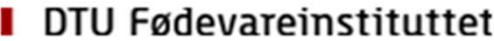




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Landbrugs- og Fiskeristyrelsen

 <p>Danish Seafood Association</p>	<p><i>Lead beneficiary</i></p>
 <p>COLDWATER UNITED SEAFOOD</p>	<p>Project partner</p>
 <p>GULDBORG PILLERI</p>	<p>Project partner</p>
 <p>Launis SIDEN 1958</p>	<p>Project partner</p>
 <p>OCEANSEAFOOD</p>	<p>Project partner</p>
 <p>DTU Fødevareinstituttet</p>	<p>Project partner</p>
 <p>GEMBA SEAFOOD CONSULTING</p>	<p>Project partner</p>
 <p>Højmarklaboratoriet a.s</p>	<p>Project partner</p>

Project partners



Flavour enhancer based on shrimp shell



Objective:

Develop marine taste enhancers based on shrimp shell from danish shrimp production



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Four process flows

Species	Off-shore catch and process	On shore process	Peeling method
<i>Palaemon adspersus</i>	Small day fishery	Cooked	Hand peeling
<i>Pandalus borealis</i>	caught and kept on ice on fishing vessels	Cooked	Machine peeling
<i>Pandalus borealis</i>	Industry vessels – cooked and frozen	Defrozen	Hand peeling

Shell samples from the three process flows are collected and send for analyses and testing

Analyses and testing

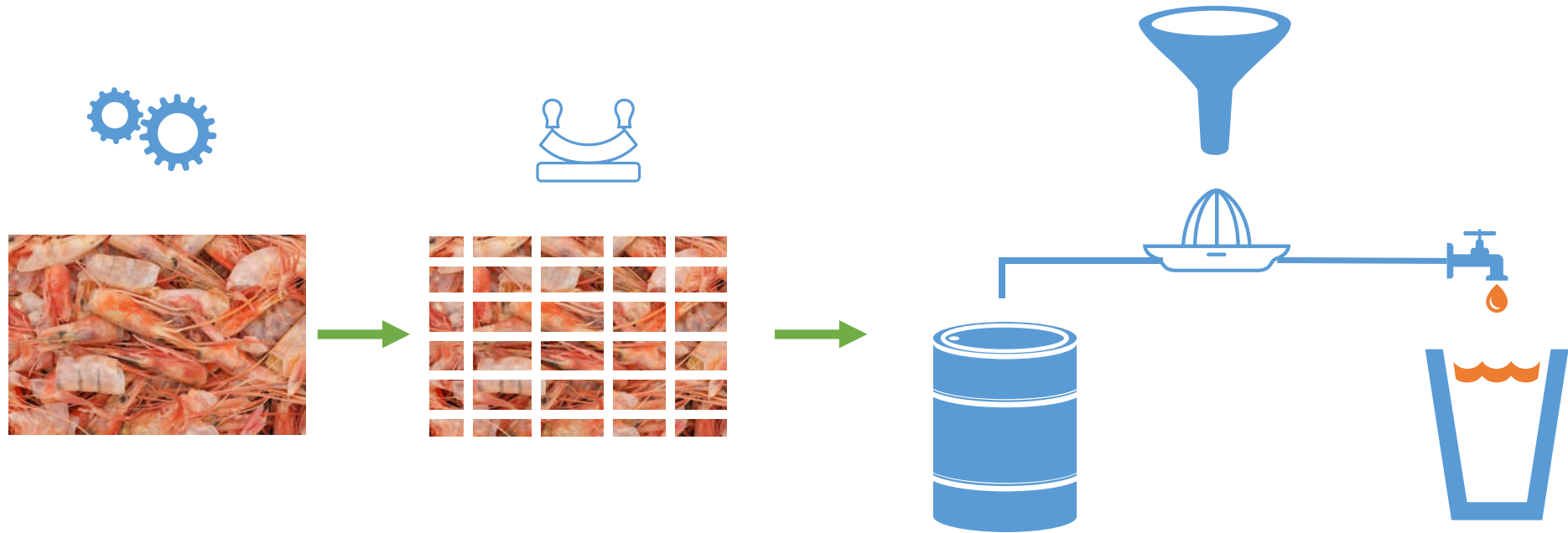
Analysed for:

- Protein, ash, phosphate, TVN, NaCl, lipids, dry matter and more...

Tests:

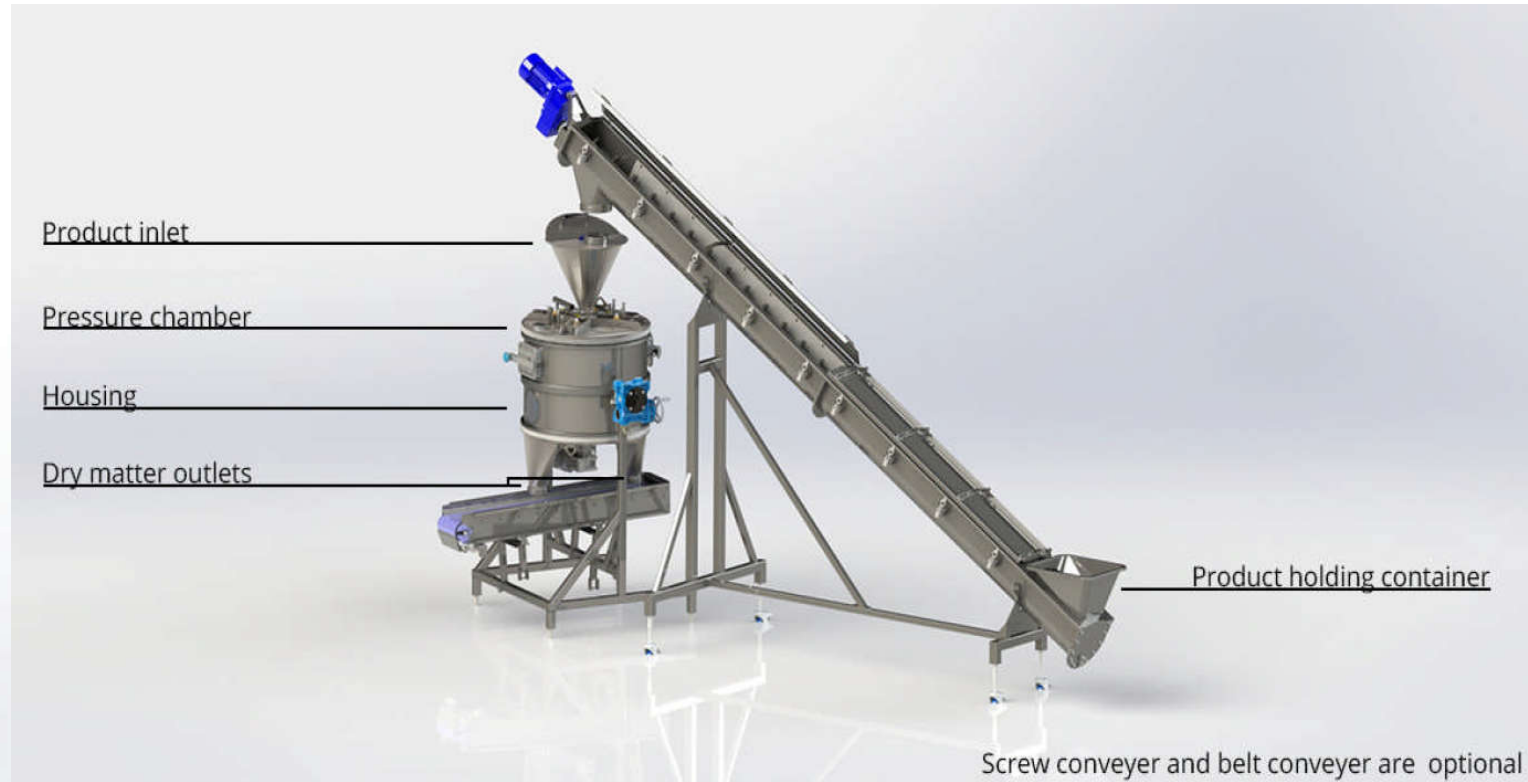
- **Extracts:** Cooked and enzymatic extraction, and concentrated
- **Powder:** Cooking, drying and milling
- **Process flavours:** browning (Maillard reaction - reaction between protein and sucre) and concentrated
- **Shrimp juice:** Rotary dewatering press

Shrimp juice: Rotary dewatering press



<p>Input: 100 kg shrimp</p> <p>33 kg shrimp meat</p> <p>66 kg shell</p>	<p>66 kg shells are chopped</p>	<p>33 kg dry matter</p>	<p>33 kg shrimp juice</p>
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Prototype mockups





Shrimp juice: Rotary dewatering press

- Equipment is developed in collaboration between DTU (Danish Technological University) and Larsson Starch (Swedish)
 - Prototype exists



- Potential end product/end use:
 - Used in brine products as it is
 - Heated, stabilised and canned
 - Condensed to a thick creamy shrimp juice
 - Spray drying to powder

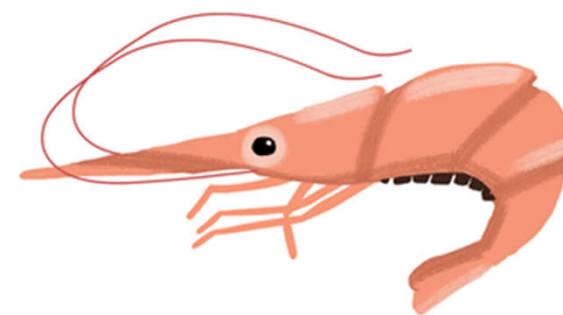


Costs and benefits

Costs	
Investment costs total (€)	235.000
Maintenance and operation (€/yr)	52.000
Total costs year 1	287.000
Total costs year 2...	52.000

Production costs	Year 1	Year 2...
Juice (€)	1.10	0.20
Shrimp cream (€)	2.16	0.40
Powder (€)	22.10	4.00

Production capacity	
Shrimp (tonnes)	2.000
Meat (tonnes)	667
Shell (tonnes)	1.333
Juice (tonnes)	267
Drymatter (tonnes)	267
Shrimp cream (tonnes)	133
Powder (tonnes)	13



Thanks

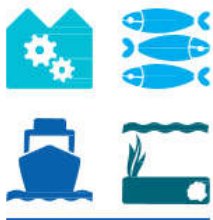


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