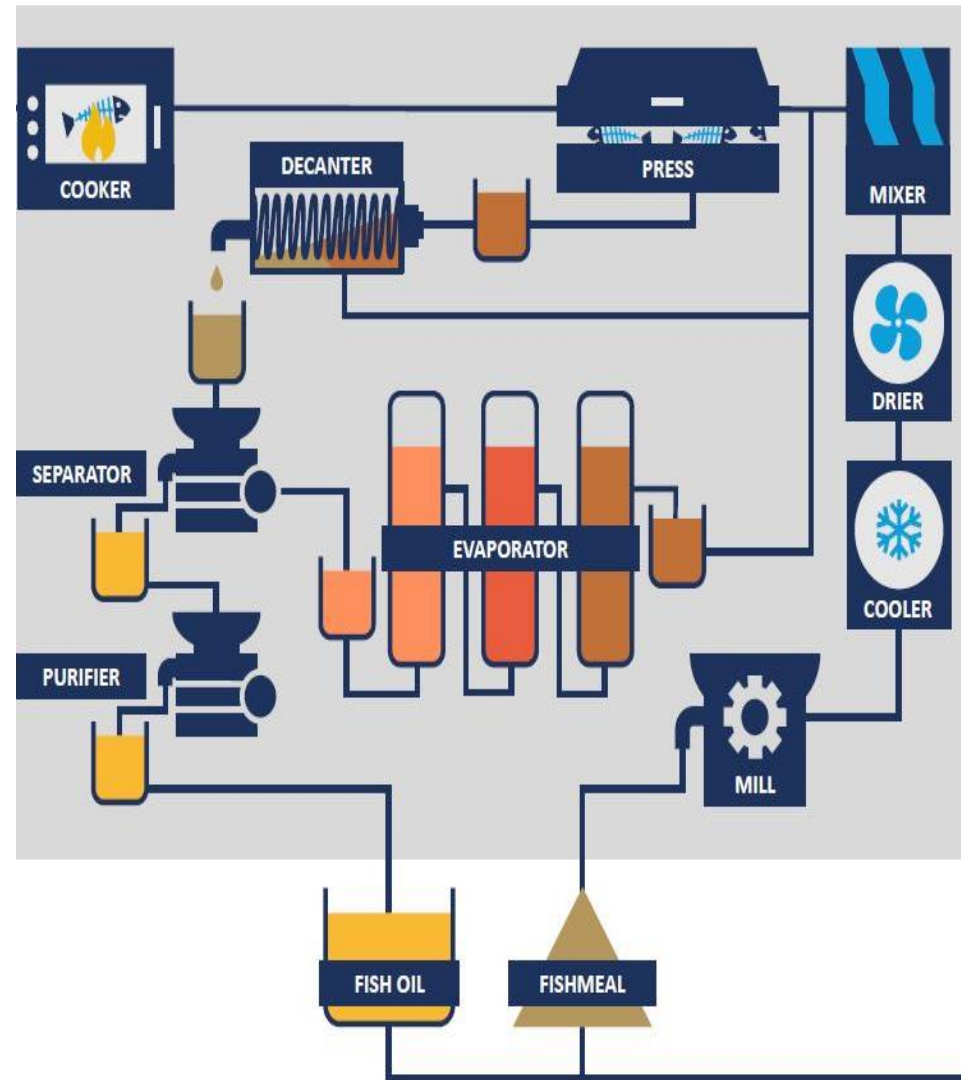


# Quality control and assurance at FF Skagen A/S

14. November 2018

# Me?

- Klaus Henry Kristoffersen, 44 Y, Married and 3 boys
- I have worked with FF Skagen A/S (FF) since July 2003.
- Had different responsibilities during the years: Lab, Production, R&D, environment and Quality
- Cand. Polyt Biochemistry & MBA
- Today I am responsible for the R&D, environment and Quality.
  
- Give you a short information on quality parameters in relation of fishmeal and oil production



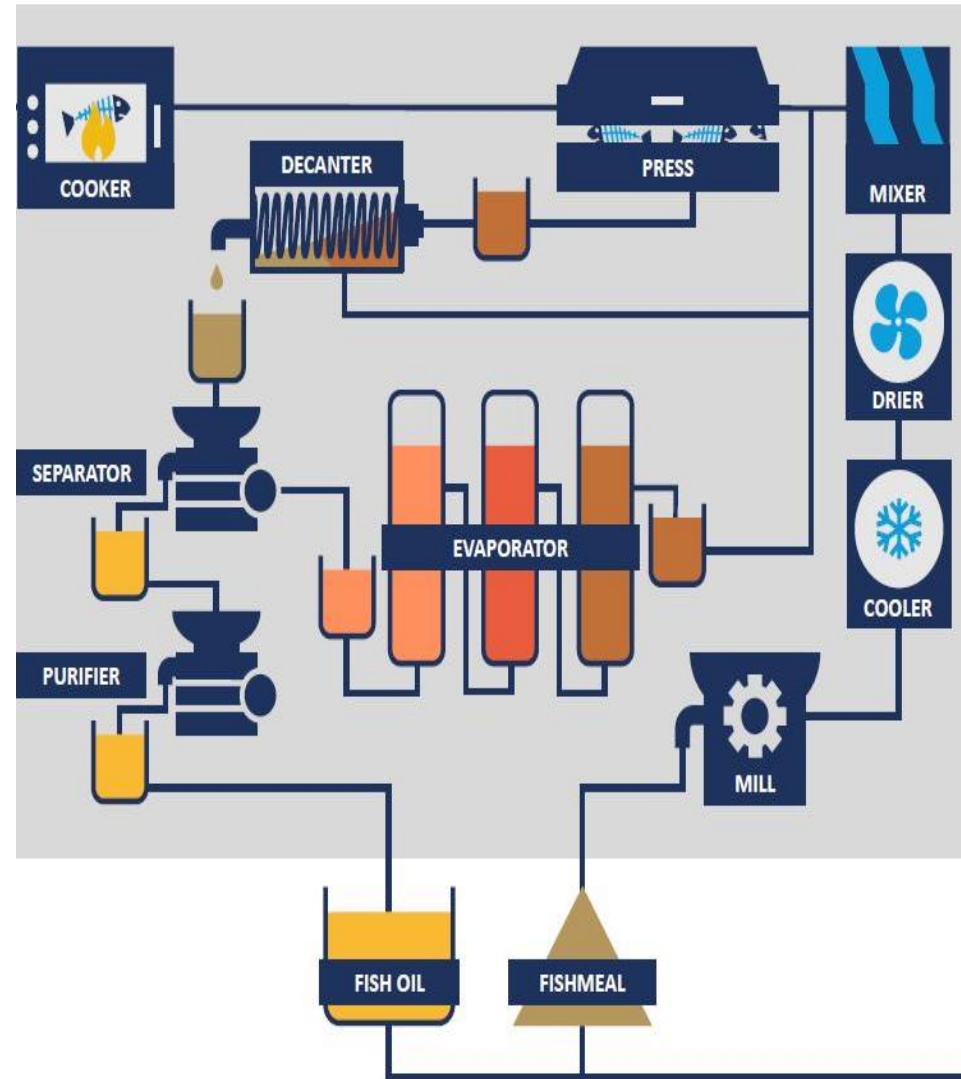


## Rawmaterial

- Date
- Art/spices and certifications
- Fangstområde/catch area
- Hel fisk eller afskær/whole fish or trimmings
- Temperatur
- TVN (mg N/100 g sample)
- Tørstof / Dry matter
- Fedt / Fat
- Salt (i visse partier)

....some of the informations are used for pricing the rawmaterial others for tracebility.

Yearly TVN average until today is 34 mg N/100 g sample at FF Skagen A/S



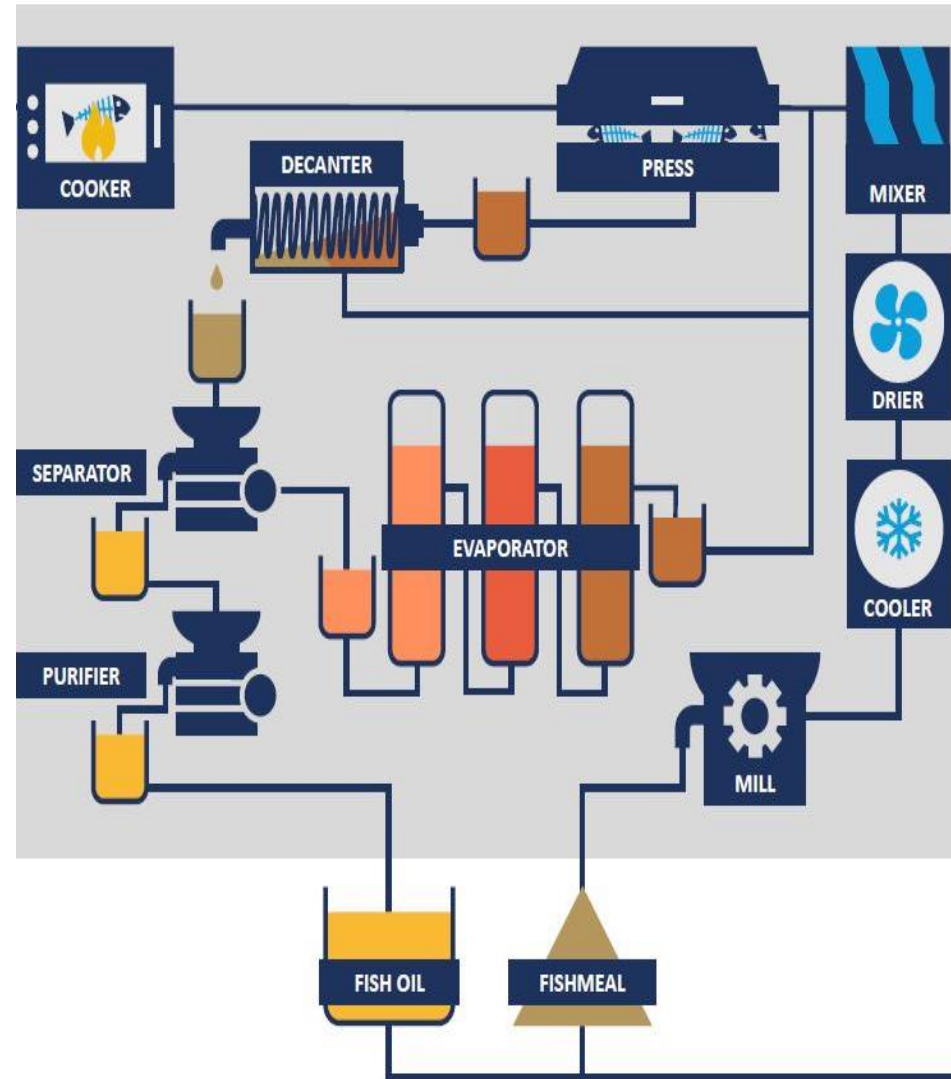


## Under production

- Protein [NIR]
- Dry matter/moisture [NIR]
- Fat [NIR]
- Ash (certain partier) [NIR]
- Ammonia (certain partier) [NIR]
- FFA in the oil [Titrering]

Done each hour under production

- We are implementing NIR on all driers (8 pieces) and after the meal cooler to get online control of the proces

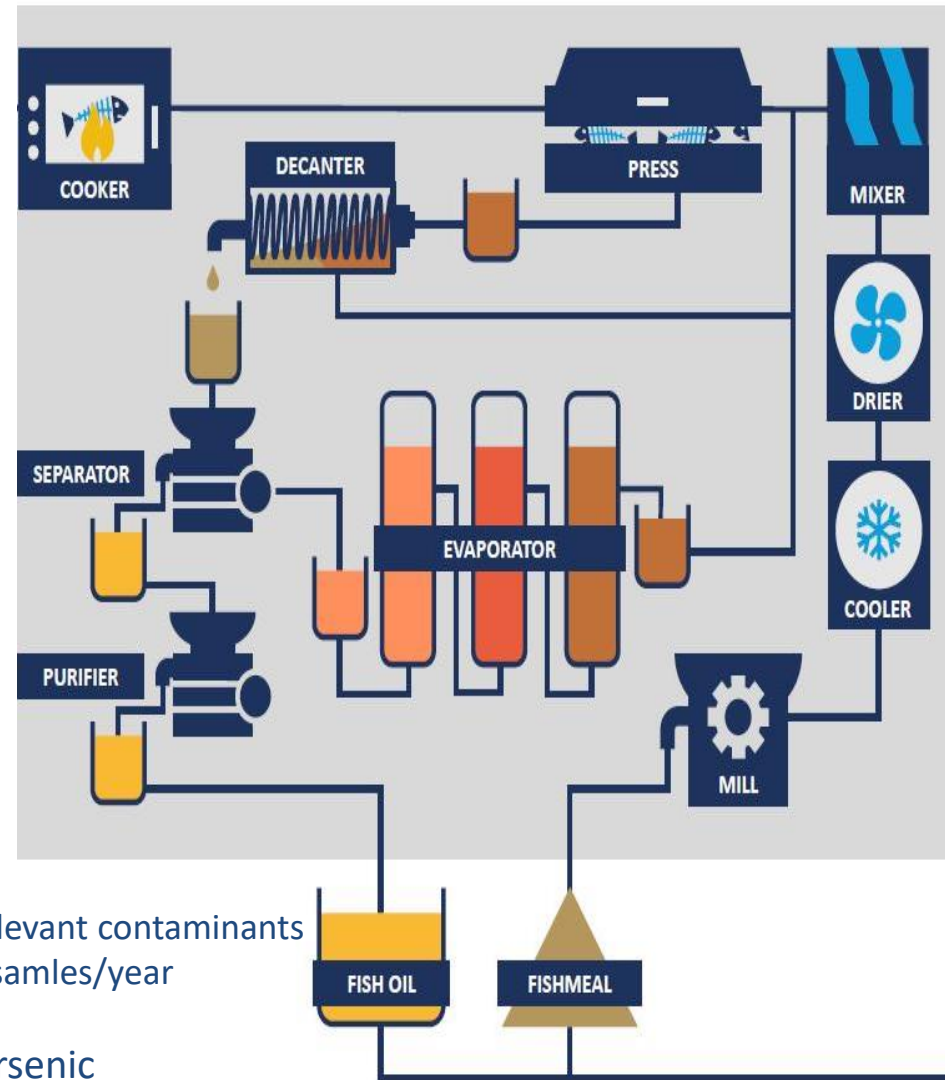






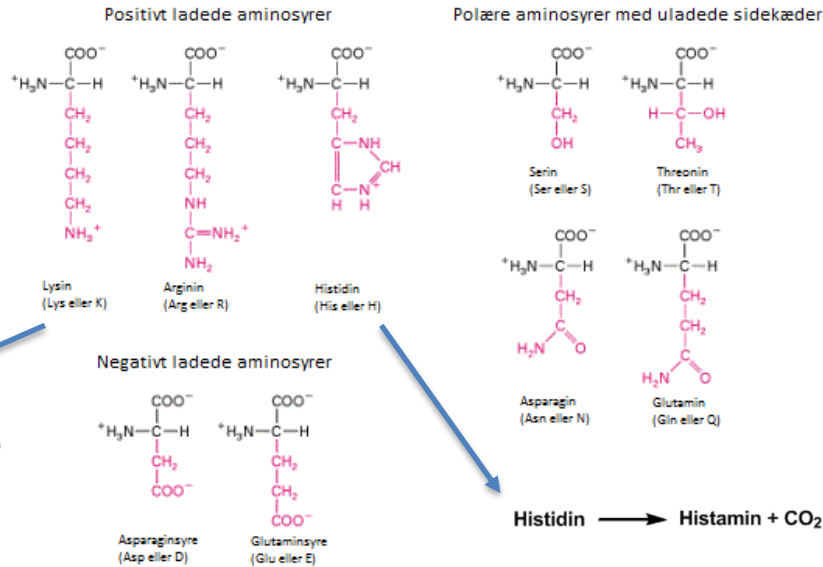
# Fish meal

- Protein
  - Tørstof/DM
  - Fedt/Fat
  - Aske/Ash
  - Ammoniak/Ammonia
  - Salt
  - Histamin
  - Cadaverin
  - Putrazine
  - Amminoacids
  - Dioxin
  - DL-PCB (certain partier)
  - NON-DL-PCB
  - Pesticides
  - Metals
  - Salmonella
  - Enterobakterier
  - Totalkim
- Traditional
- Biogenic aminer
- Moving from selling proteins to selling AA
- Full control of relevant contaminants > 2000 samles/year
- Marked demand – specially Arsenic
- Regulation
- Control af hygiene



Aminoacids are the basic Building Stones in proteins – different animals different needs.....

HYDROFILE AMINOSYRER

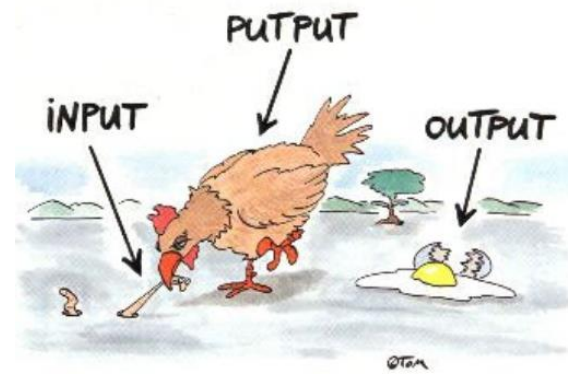


In focus:  
 Histidin  
 Lysin (Petfood)  
 Methionin (Methionin)  
 Valin  
 Threonin  
 More is coming...

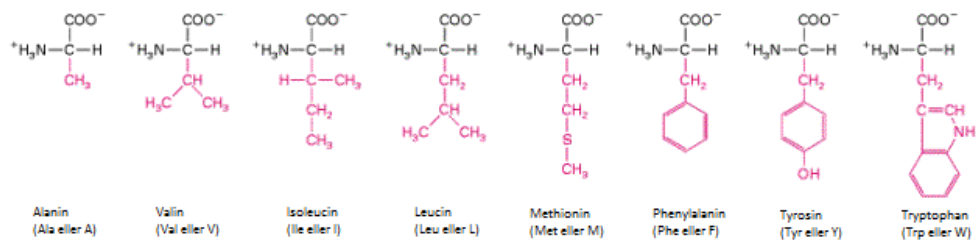
Lysin to Cadaverin – also decarboxylation



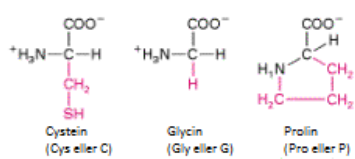
Its all about processes



HYDROFOBE AMINOSYRER



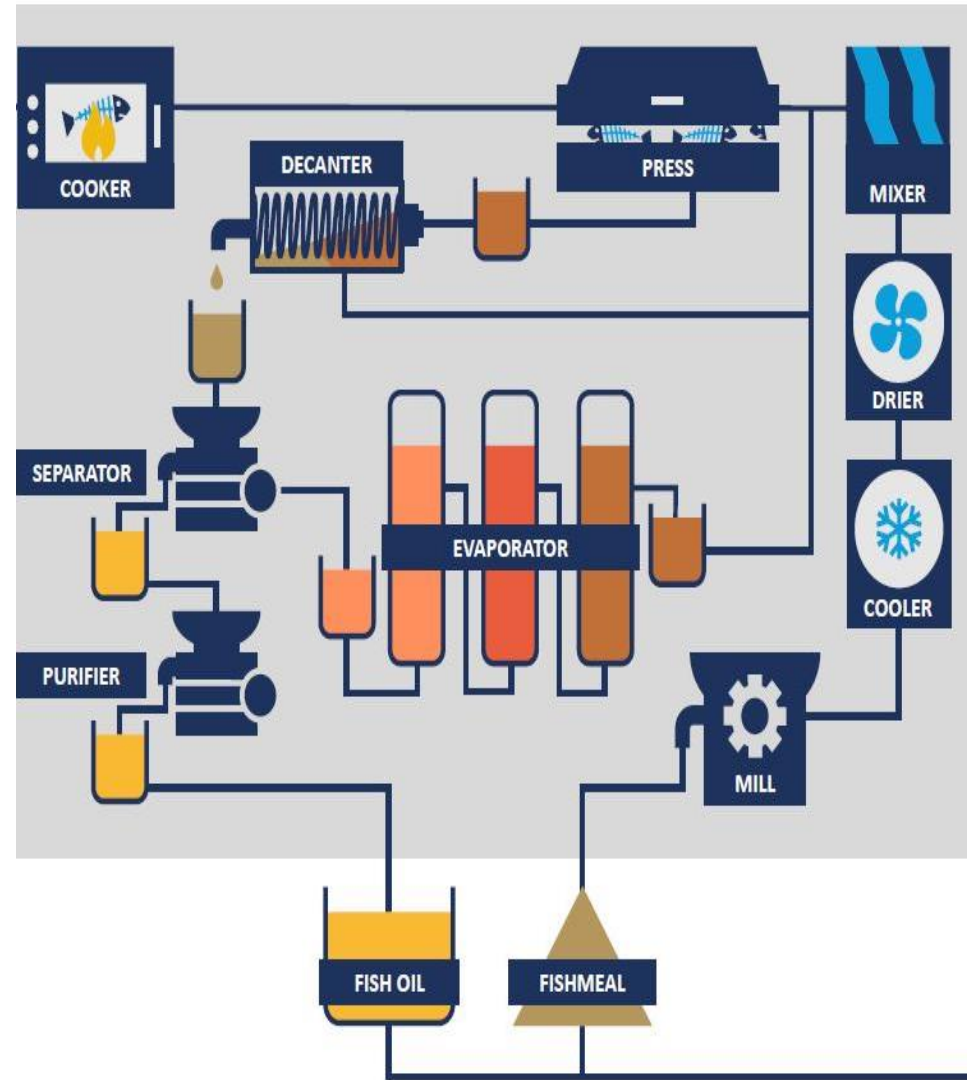
SPECIELLE AMINOSYRER





## Fish oil

- FFA
- Peroxid (certain parties)
- Anisidin (certain parties)
- Karl-Fisher (Moisture)
- Dioxin (certain parties)
- DL-PCB (certain parties)
- NON-DL-PCB
- Pesticides
- Fatty acid profile
- EPA (certain parties)
- DHA (certain parties)
- Lipid classes



**Questions?**

**Thanks ;-)**



Next...

