 Fiskeriforskning

**sonac**  
a Sobel company



## High value ingredients from animal by products

Presentation at Biomarint Industriseminar 2007, 4 December 2007, Bergen

Geert van der Velden  
Sales and Marketing Manager aqua feed products

[www.sonac.biz](http://www.sonac.biz)



**STOP!**



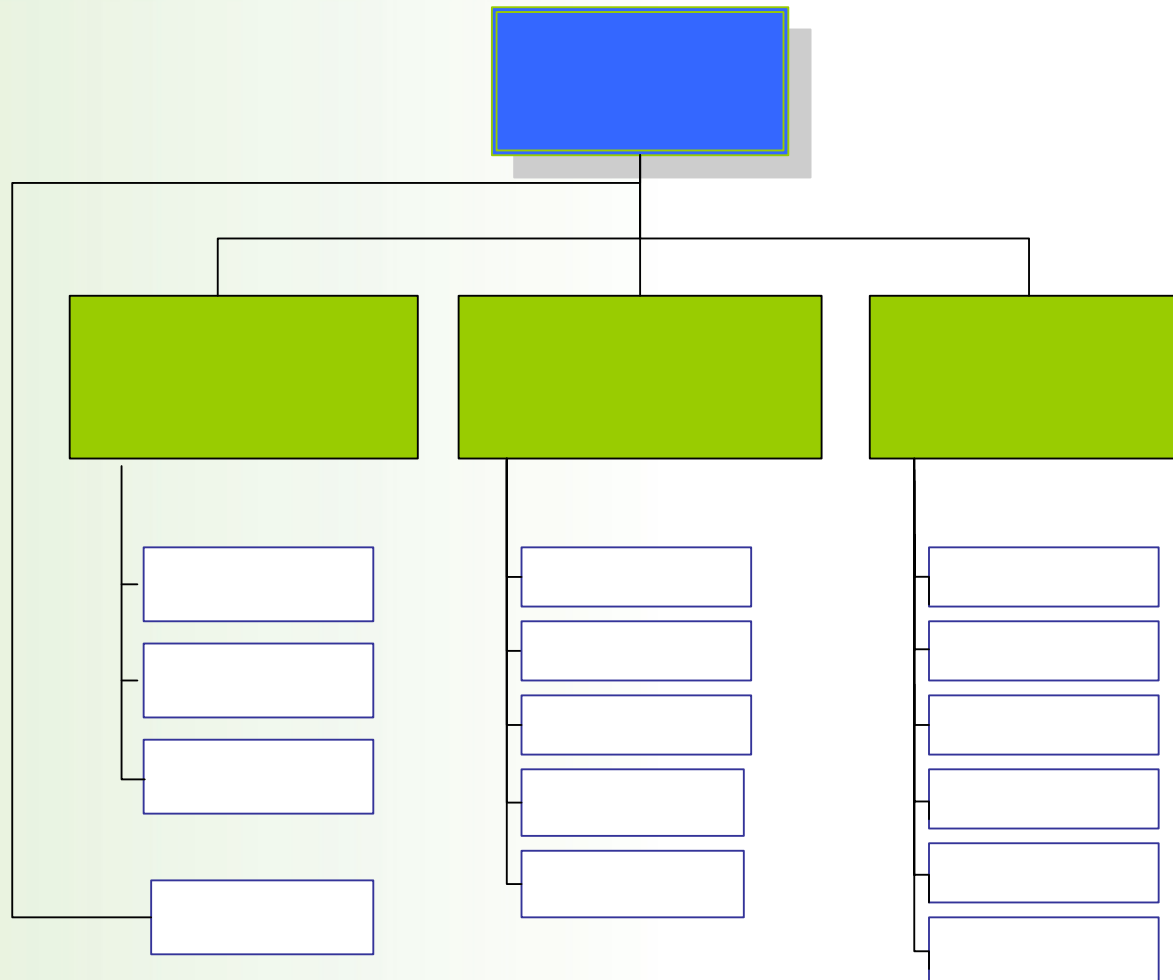


## Content Presentation

- Sonac within the Vion Food Group
- Sonac sales markets
- EU legislation
- Aqua feed applications of animal by products
- Conclusions



# Sonac within the Vion Food Group

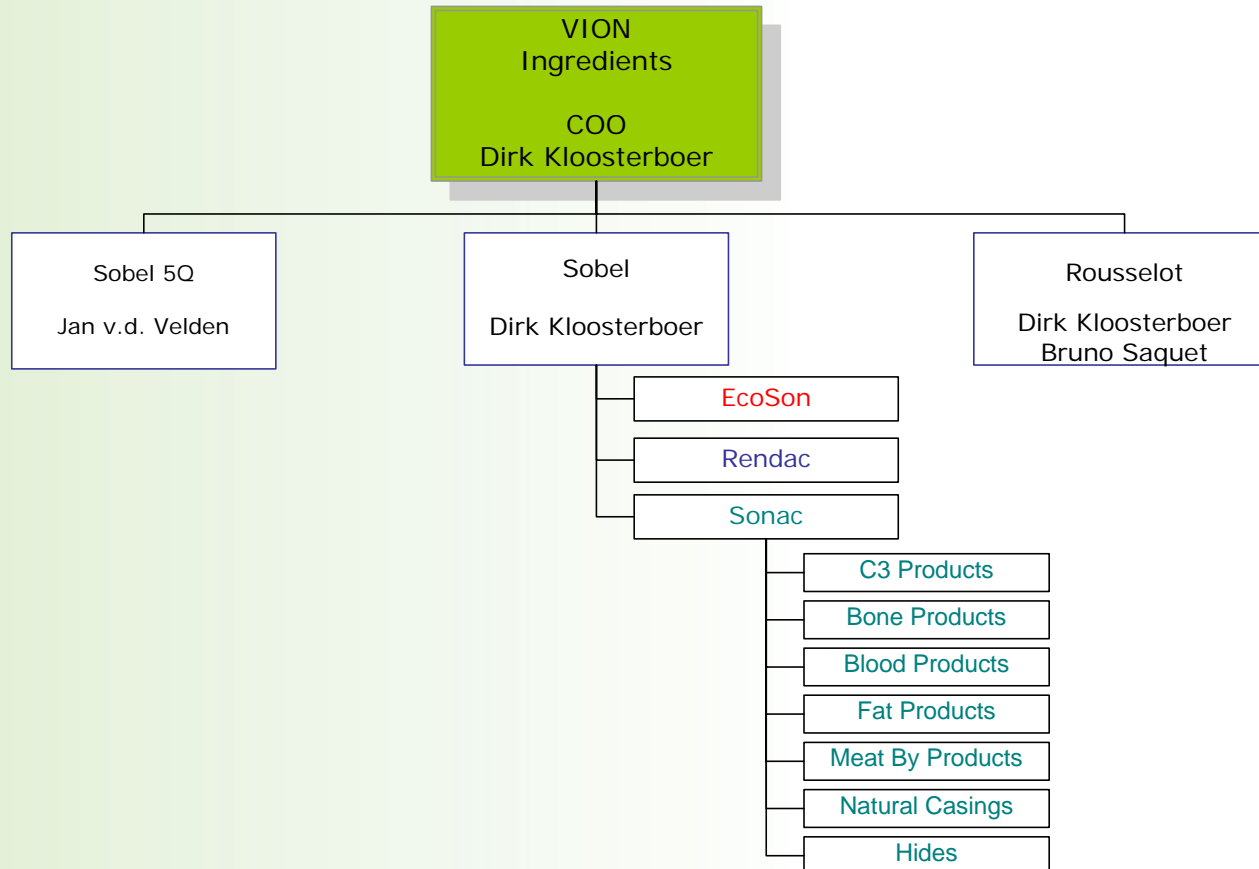


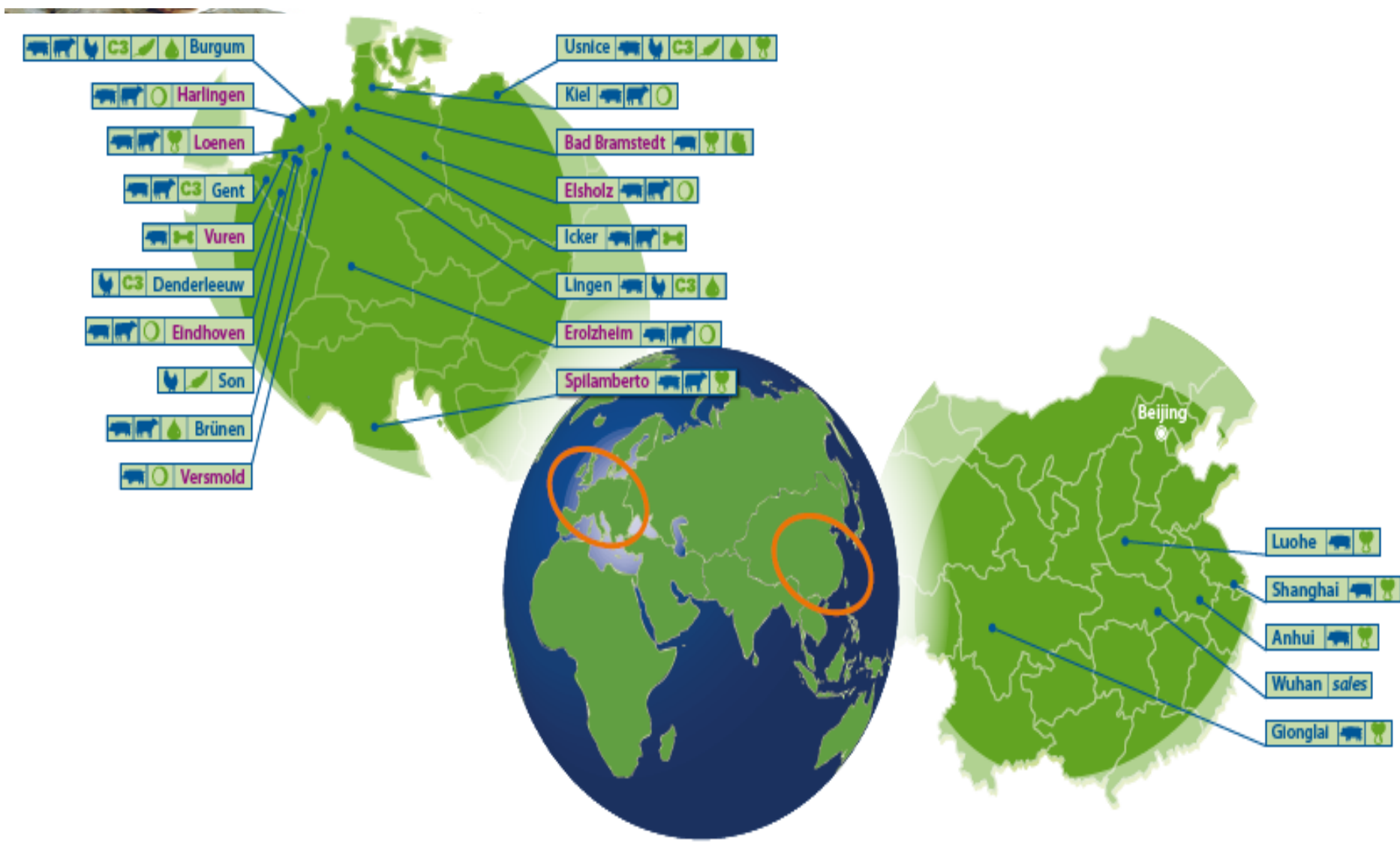




# Sonac within the Vion Food Group

## Division VION Ingredients



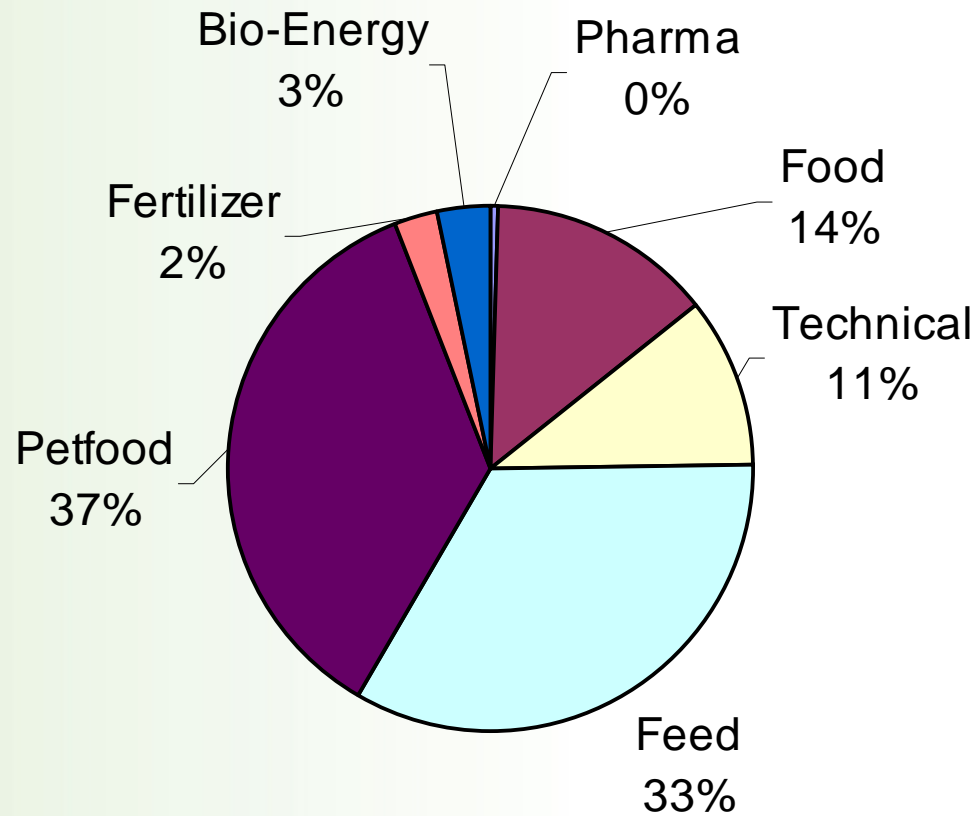


Species		Product lines		Grade	
	POULTRY	<b>C3</b>	C3-LINE		FEATHERS
	PORCINE		BLOOD		FAT
	BOVINE		BLOOD-PRODUCTS		MEAT&B-PRODUCTS
			BONES		
		<b>C3</b>	CITY	<b>FOOD</b>	CITY



## Sonac sales markets

### Sales YTD 2007





## Relevant EU Legislation

- TSE regulation: 999/2001
  - In annex IV of 999/2001 amendments are made in order re-introduce animal proteins to the feed chain (e.g. 1234/2003 or 1292/2005)
  - In annex IV also the definition of Processes Animal Proteins are determined
- Animal by-products not intended for human consumption: 1774/2002
  - Processing requirements





## EU Legislation: 1292/2005

COMMISSION REGULATION (EC) No 1292/2005  
of 5 August 2005  
amending Annex IV to Regulation (EC) No 999/2001 of the European Parliament and of the Council  
as regards animal nutrition  
(Text with EEA relevance)

- Legally approved products for (EU) aqua feed:
  - Animal fat
  - Blood meal (non ruminant)
  - Blood products (non ruminant): plasma, (hemo) globin
  - Gelatin (non ruminant): pellet binder
  - Hydrolisates (all species): mucosa, feather, etc.
  - Di- and tri calcium phosphates



## Aqua feed applications of animal by products

10

- **Animal fat**
- Blood meal
- Blood products (porcine)
- Gelatins (porcine)
- Hydrolisates (non ruminant)
- Di and tri calcium phosphates



## Issues on animal fat

- Availability (short and long term)
- Fatty acid profile
- Melting point
- Investment ....

fatty acid %	Oil	Fat	Difference	Relative difference oil vs fat %
meltingpoint °C	9	39,5	-30,5	
C 12:0	1,55	1,09	0,5	42
C 14:0	1,33	1,34	0,0	-1
C 14:1	0,26	0,15	0,1	73
C 15:0	0,11	0,11	0,0	0
C 16:0	19,60	26,50	-6,9	-26
C 16:1	4,93	3,54	1,4	39
C 17:0	0,10	0,17	-0,1	-41
C 18:0	4,38	7,37	-3,0	-41
C 18:1 w9	35,00	29,90		
C 18:1 w7	1,67	0,05		
<b>Sum C 18:1</b>	<b>36,67</b>	<b>29,95</b>	<b>6,7</b>	<b>22</b>
C 18:2 w6	20,70	15,80	4,9	31
C 18:3 w3	1,85	1,48	0,4	25
C 20:0	0,15	0,09	0,1	67
<b>ELU cor</b>	<b>94,30</b>	<b>90,10</b>	<b>4,2</b>	<b>5</b>

Conclusion: The oil is more insaturated (:1,:2 and :3); Less palmitic acid C16:0 and stearic acid C18:0. The degree of elution (a guide for the digestibility) is somewhat improved, but this was already high.



## Aqua feed applications of animal by products

12

- Animal fat
- **Blood meal**
- Blood products (porcine)
- Gelatins (porcine)
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## EU Legislation: 1774/2002

13

- Mammalian, non ruminant blood meal versus poultry blood meal
  - Until now different processing requirements
  - No pressure sterilisation (method 1) required for poultry blood meal (method 7)
  - => with equal drying systems, digestibility of poultry blood meal should be better than porcine blood meal
    - Sonac poultry blood meal, drum dried: 70% mink digestibility
    - Daka porcine blood meal, spray dried: 67% mink digestibility
- Legislation has been changed as per 7-2007
  - Method 7 for porcine blood meal, with min. 80 Celcius.





## Drying systems for blood meal

digestibility		Mink digestibility:	Remarks:
	Spray dryer	>90%	Drying is costly
	Flash dryer	?	Drying is costly
	Paddle dryer	84%	
	Drum dryer	70%	
	Disk dryer	50%	Drying is cheap



# Quality of the blood used as raw material

Biogenec Amines	2002	2002	2003	2003	2004	2005	2006
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Tyramine	11	<10	<1	17	<10	<10	<10
Putrescine	244	295	79	189	97	153	75
Cadaverine	76	125	43	230	74	53	43
Histamine	<10	<10	3	<10	<10	<10	<10
Agmatine	<10	<10	<1	<10	<10	<10	<10
Phenylethylamine	<10	<10	1	<10	<10	<10	<10
Spermidine	<10	<10	2	<10	<10	<10	<10
Total Biogenec Amines	330	420	128	436	183	206	168



## Issues on blood meal

16

- Digestibility in salmon
  - Trials planned at Akvaforsk early 2008
  - Customer trials in Norway late 2007
- Effect of blood meal on oxidation of the feed
  - Fat oxidation
  - Astaxanthine oxidation
    - Product development and testing ongoing to tackle this issue
- Changing the attitude of the retailers
  - EAPA
- Logistics



## Aqua feed applications of animal by products

17

- Animal fat
- Blood meal
- **Blood products (porcine)**
- Gelatins (porcine)
- Hydrolisates (non ruminant)
- Di and tri calcium phosphates



## Issues on blood products

18

- Digestibility and oxidation see blood meal
- Effect of plasma on gut health of juvenile fish
- Changing the attitude of the retailers
  - EAPA: [www.eapa.biz](http://www.eapa.biz)

### Sustainable resources secure the future of aquaculture

The use of natural animal proteins in fish feed to develop a more environmentally responsible and ecologically sustainable aquaculture

Summary of a scientific opinion







## Aqua feed applications of animal by products

19

- Animal fat
- Blood meal
- Blood products (porcine)
- **Gelatins (porcine)**
- Hydrolisates (non ruminant)
- Di and tri calcium phosphates



## Issues on gelatins

20

- Gelatins can we used for 2 main reasons:
  - As a binder mainly in pelleted feed for shrimp
  - For it's high (13%) hydroxyproline content
- Possibility to replace wheat gluten?
- Can we replace more fish meal if we add gelatins to fish feed diets?

### **Research worth millions**

25.06.2007

By [Frank Gregersen](#)

Fiskeriforskning has detected a substance in fishmeal that can mean many hundreds of millions of Kroner (NOK) in increased revenues for the Norwegian aquaculture industry.



## Aqua feed applications of animal by products

21

- Animal fat
- Blood meal
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- Gelatins (porcine)
- **Hydrolisates (non ruminant)**
- Di and tri calcium phosphates



## Issues on hydrolisates

22

- Gelatin hydrolisates:
  - Source of amino acids and peptides
  - For it's high (13%) hydroxyproline content
  
- Mucosa hydrolisates:
  - Intestinal 'growth' factors (agriculture literature)
  - Source of amino acids and peptides
  - Juvenile fish



## Aqua feed applications of animal by products

23

- Animal fat
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- **Di and tri calcium phosphates**





## Issues on di and tri calcium phosphates

24

- Di Calcium phosphate:
  - Low level heavy metals
  - Usage in aqua feed?
  
- Tri Calcium phosphate:
  - Contains 12% of protein (collagen)
  - Usage in aqua feed?



## Conclusions

25

### ANIMAL BY PRODUCTS ARE:

- A sustainable source of protein and fat
- Highly nutritional
- Available in substantial quantities
- Safe



## Conclusions



Groen licht

Takkk!