

Farmed versus Wild Cod – what are the benefits?

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Cod Farming in the Nordic Countries
Grand Hotel, Reykjavík
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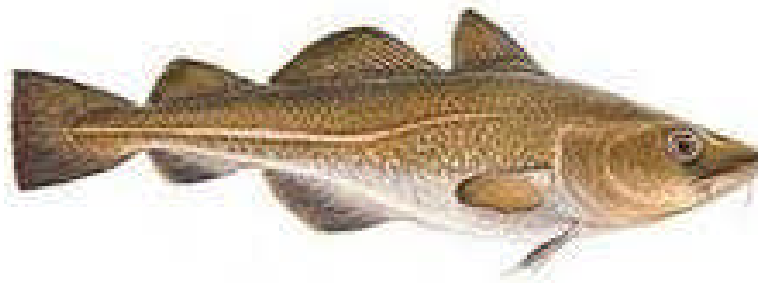
Quality aspects that can be controlled by farming

- Parasites – possible to select farm sites to eliminate parasites
- Better control on fish handling – less blood spots.
- Better control on bleeding – whiter flesh
- Better control on cooling – effect on texture and shelf life
- Pre-rigor filleting – reduced gaping
- Uniform quality – less fluctuations – easier to meet customer expectations



Effect on processing

- Control on fish size – Raw material size to fit products and optimize production value
- Control on condition factor – Increased condition factor will increase filleting yield
- Control on quantity – production controls slaughtering – raw material pulled through instead of pushed through
- Market demand can control processing – more even and more secure supply of product to market
- Byproducts – easier to make value out of byproducts



Marketing – is it possible to build niche market for farmed cod?

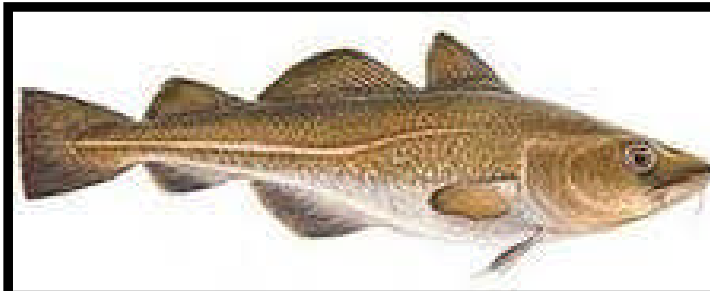
- Quality benefits
- Shelf life
- Optimal size
- Even supply



- Important to use those benefits to make something special out of farmed cod


What processes could there be?

- Whole fish
- Whole fish steaks
- Whole fillets
- Fillet portions
- Other?



Example from Codfarmers in Norway www.stromtorsk.no


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STRØM® DET NYE NAVNET PÅ FERSK TORSK

La oss være enige om at den beste torsken du kan få servert er den som ble trukket opp fra havet for noen timer siden. Rett opp fra det rene, klare vannet utenfor Nord-Norge og direkte til sløying og filetering. Er du enig i at det er den beste torsken du kan få servert?

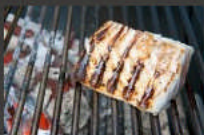
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Grillet Strøm® med oliven bakt tomat, paprika vinaigrette, grillet fennikel og

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PERFEKT GRILLET STRØM

Strøm på grillen er enkelt, raskt og veldig godt

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What can Marel do for processors of farmed Cod?

- Total plant design – optimized process
- For increased shelf life – cooling – superchill
- For optimized trimming process – processing lines
- For optimized portioning – portioning and packing lines
- For data capture - Innova

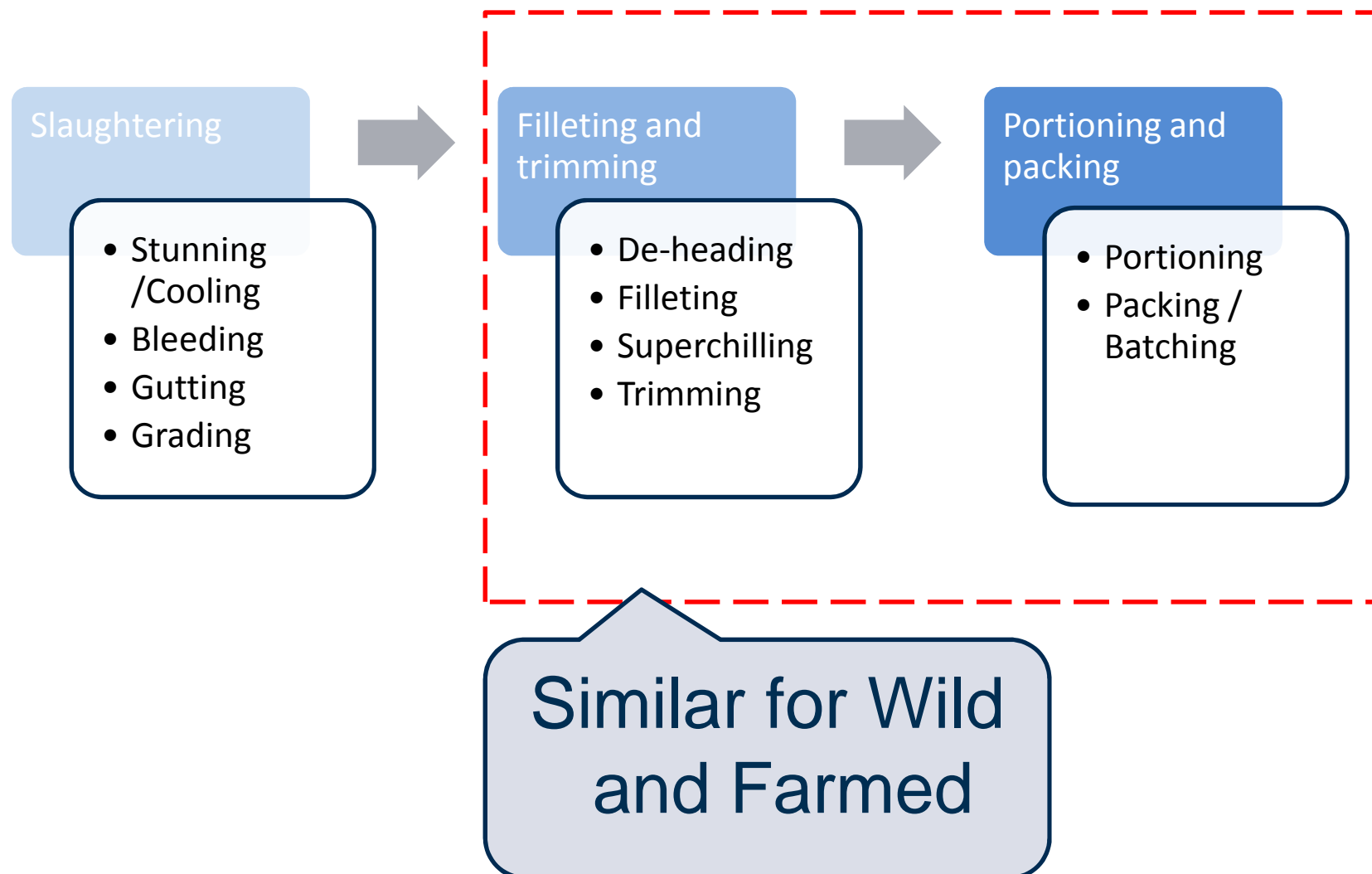


Linking processing knowhow from Wild Whitefish and Farmed Salmon

Processing Solution for Cod Fillet Portions – Fresh/Frozen



Farmed Cod Fillet Portion Process

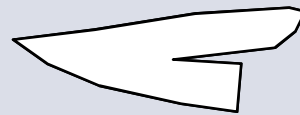


Advanced Whitefish Flowline System

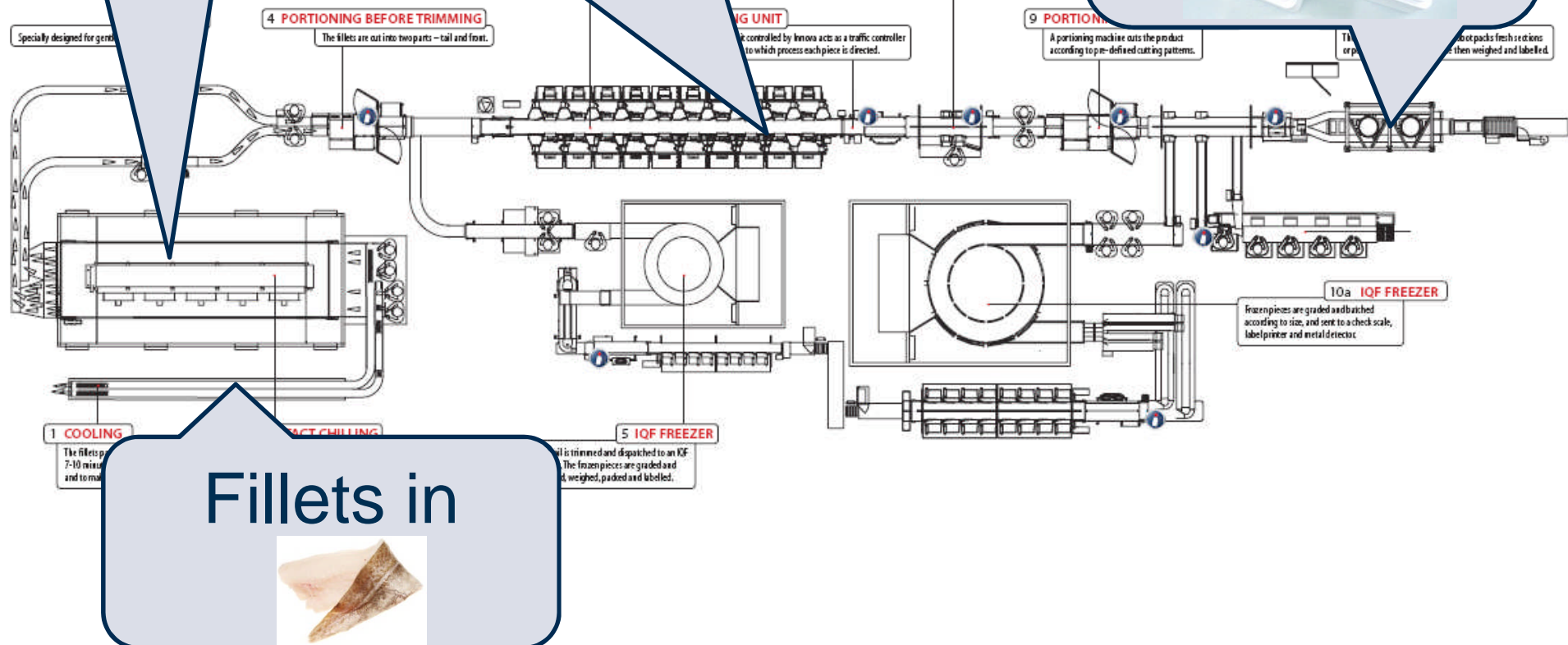
Superchiller



Flowline Concept



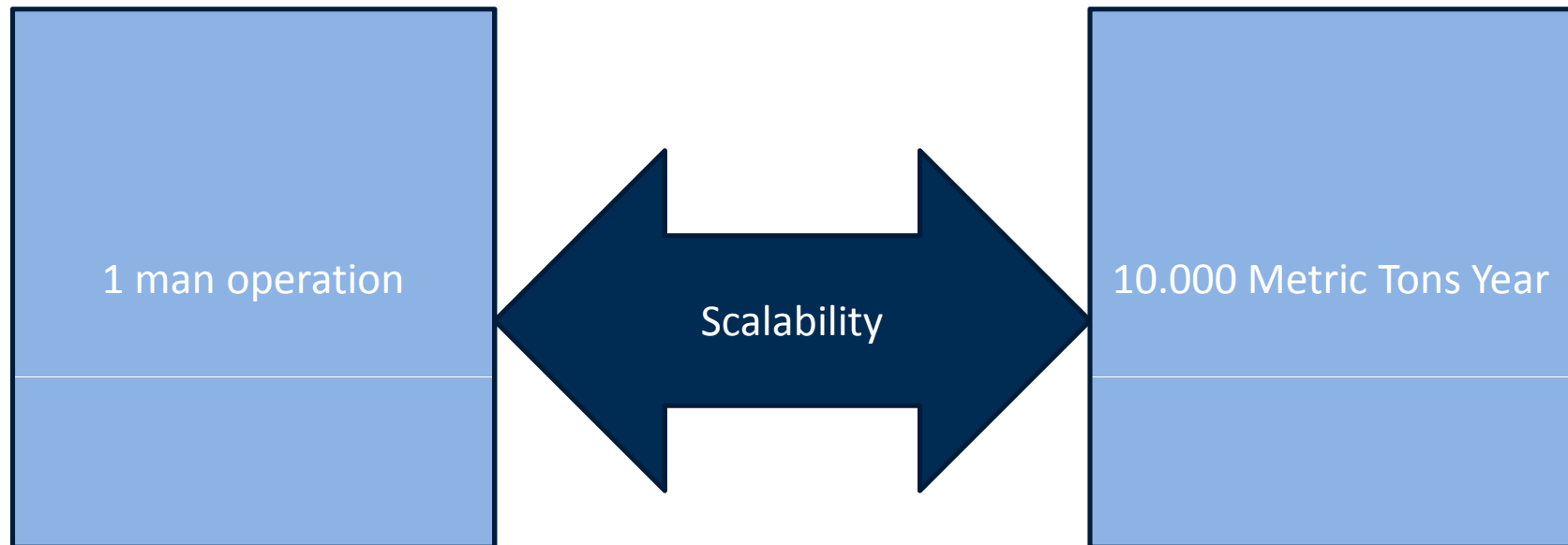
Packing



Fillets in



From Small to Big



- Processing systems can be scalable
- As cod farming is developing – processing will be in smaller range or in same facilities as wild processing
- As cod farming will develop we will see consolidation and more optimized plants

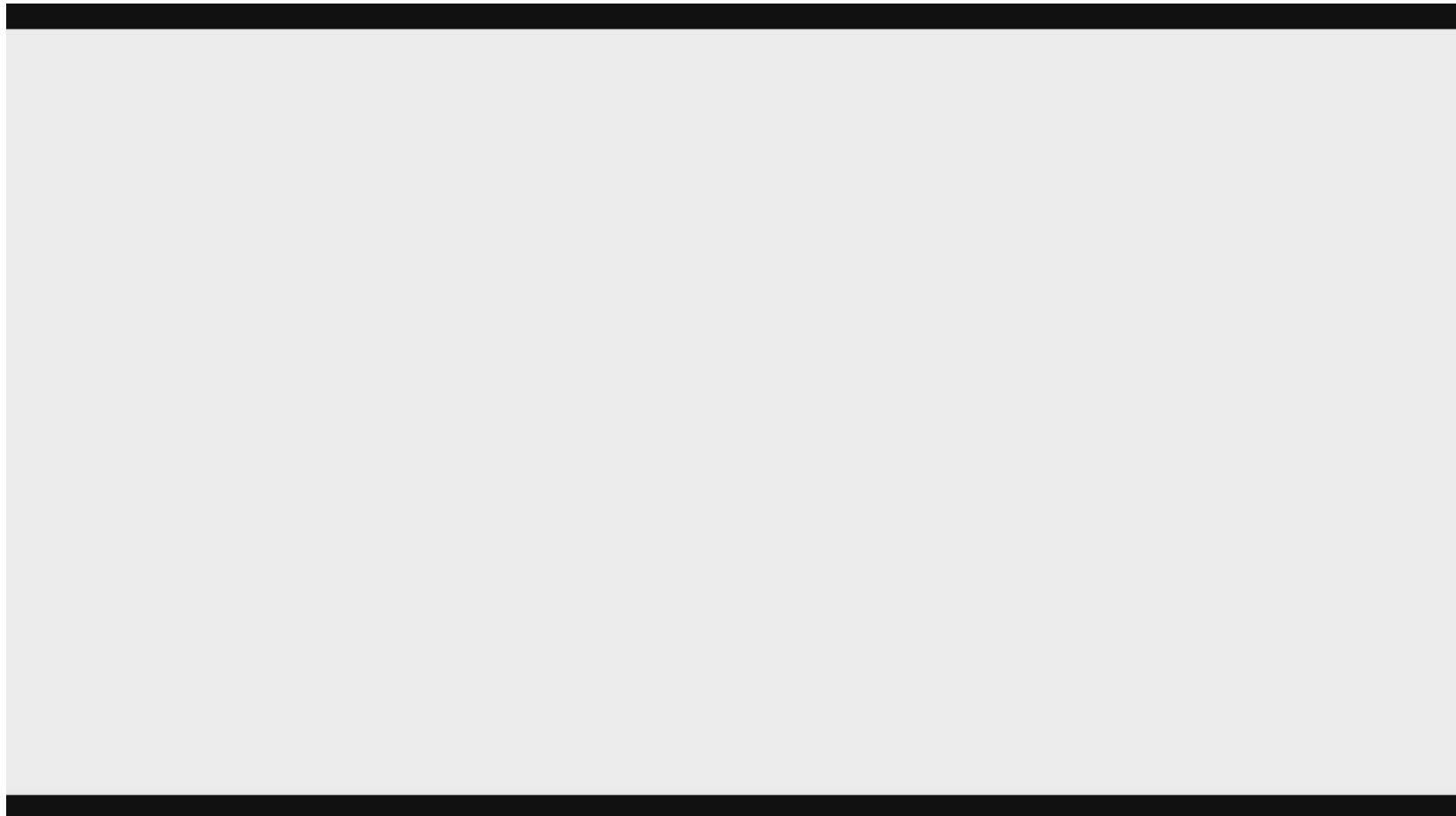
Superchill

- What is superchilling?
- New processing method where yield and quality is maximized
- Superchilled fillets are stiff, robust and strong.
- Skinning and other processing becomes easier
- Increased shelf life of products
- More valuable product mix – higher primary ratio and less secondary
- Increased total yield.



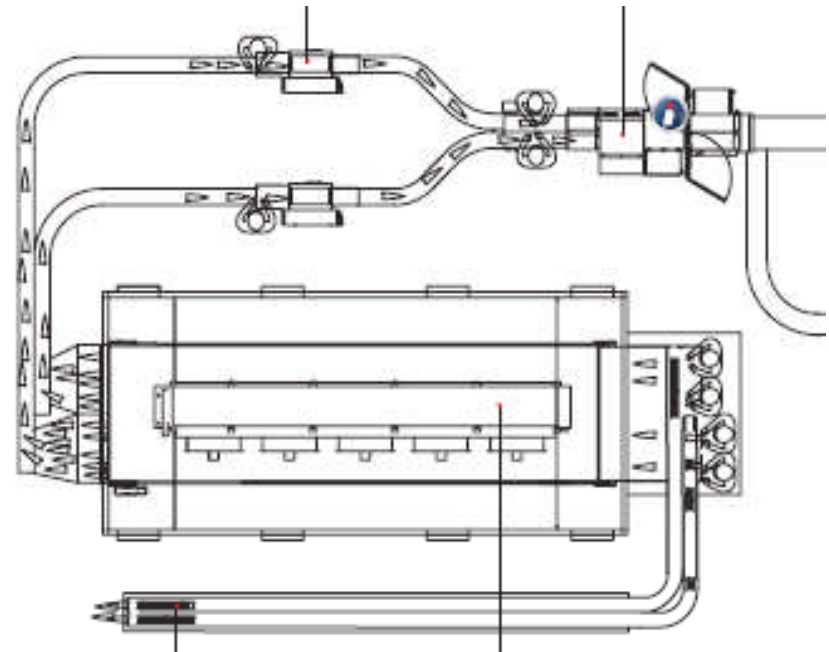
Advanced Flowline Concept – SUPERCHILLING SOLUTION

- [Advanced Flowline Concept](#)



Pre-chilling:

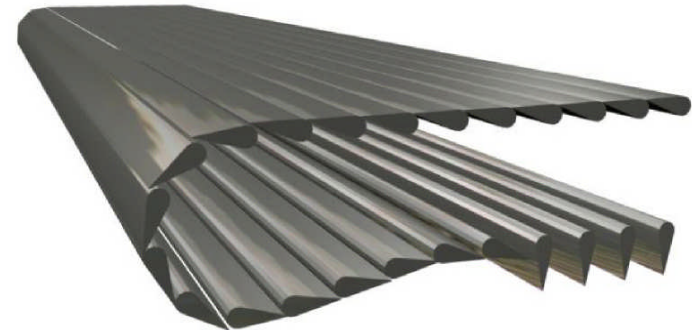
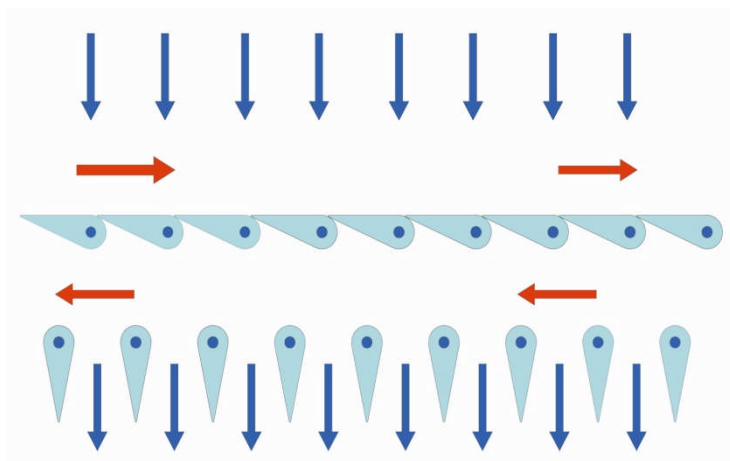
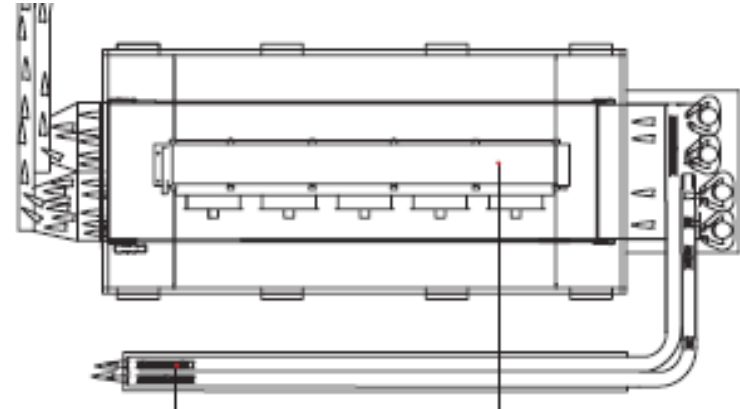
- Blood spots washed away – better looking product
- Cooling tank as a buffer as well
- Product cooled down to 0 C
- Salt content between 2,7 – 3 %
- Water pick-up approx 2% without changing product



Superchiller:

Fillets cooled instantly from 0 to $-1,5^{\circ}\text{C}$ by contact chilling through the skinside on a teflon belt and by airflow on top of fillets.

Cooling time is 9-12 minutes.



Superchilled Fillets:

Full control over cooling process.



The liquid inside the fillets can go 25% into the phase for freezing without any damage in the fish meat due to ice crystals. This result has been proved by the Icelandic Fisheries Laboratories and based on real experience from our customers.

The method allows for cooling the core of the product without freezing the surface.

Product mix - Cod

New concept – superchilled

Primary product:	80,0%
Secondary product:	14,0%
Mince/waste:	6,0%

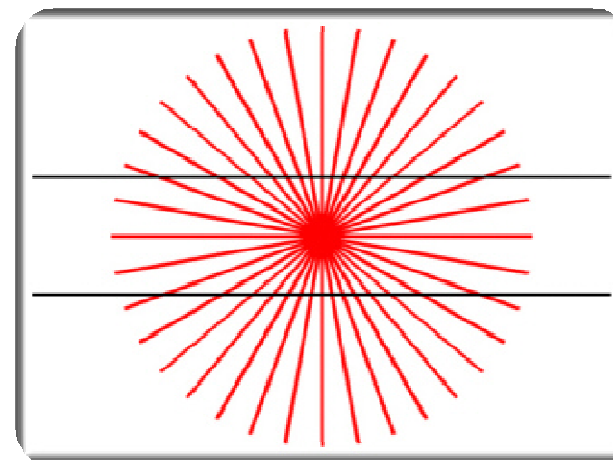
Traditional concepts (2005-2007)

Primary product:	68,0%
Secondary product:	22,0%
Mince/waste:	10,0%

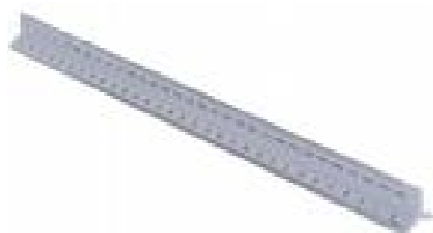
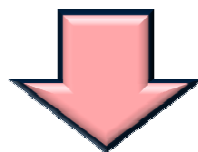


Not everything is what it seems at first sight !

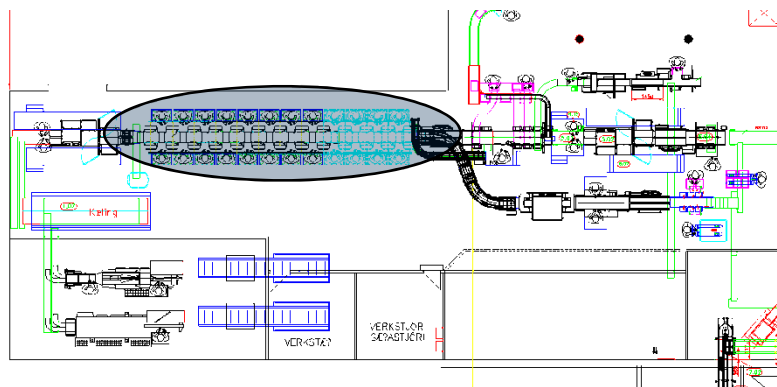
Are the two lines parallel or not?



To decide this would be useful?



Marel Flowline Concepts



Individual Monitoring:

- ✓ Yield
- ✓ Throughput
- ✓ Product Mix – focus on Primary Ratio
- ✓ Quality

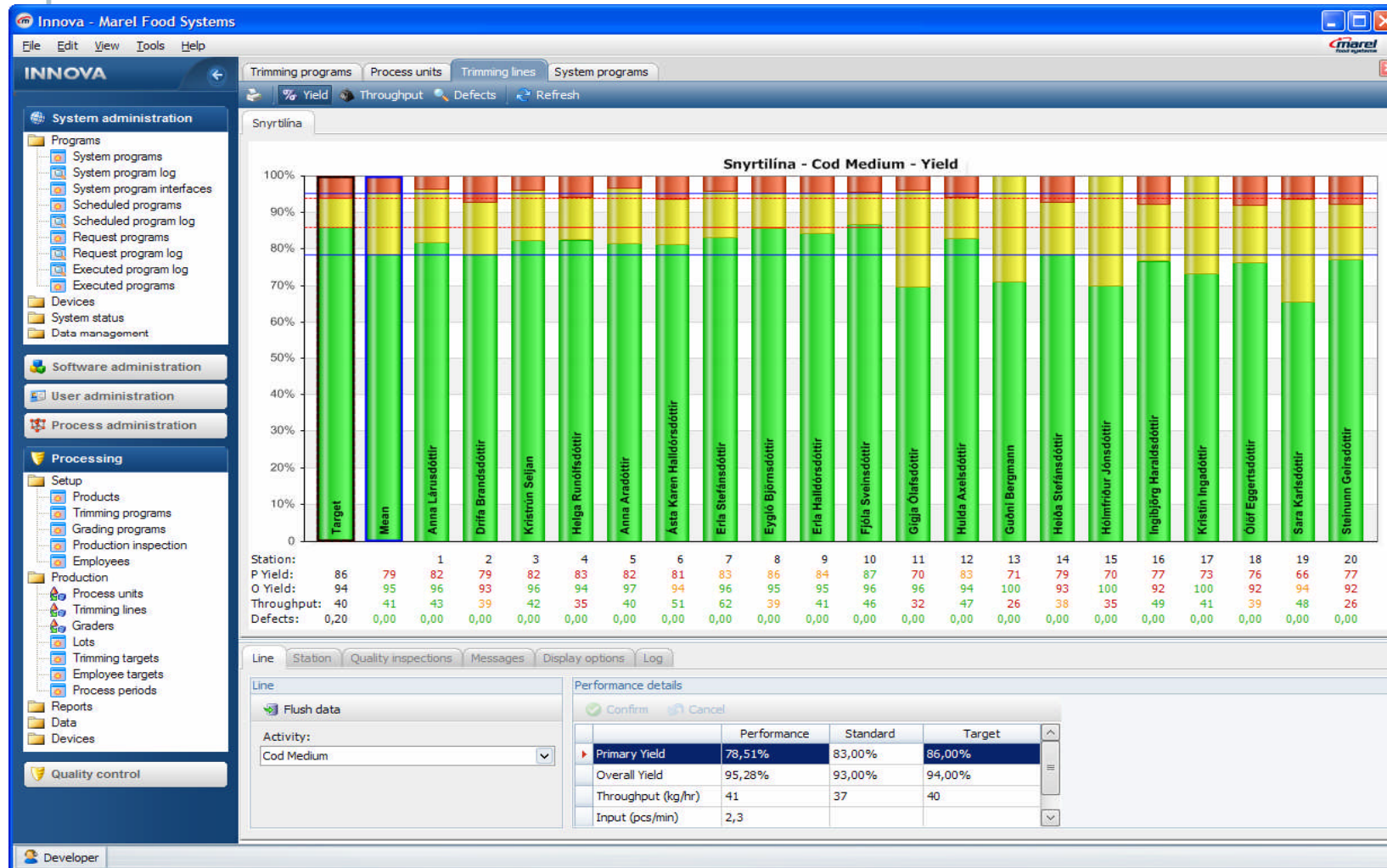
Feedback

- ✓ Operators get instant feedback on RT-220 Screen

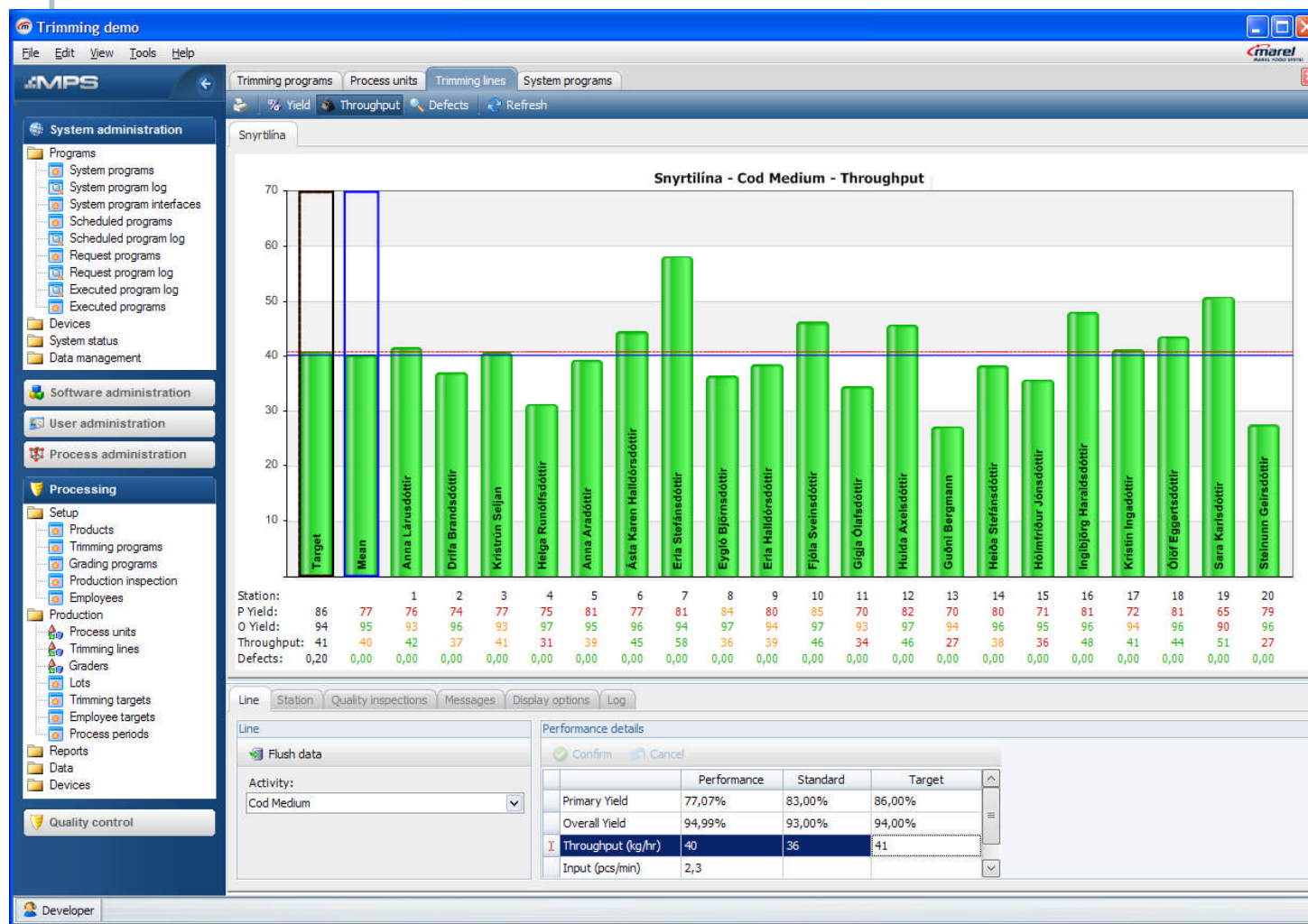
Results

- ✓ **Higher capacity (kg/man hour)**
- ✓ **Higher Primary Ratio – more value**
- ✓ **Defects traced to the source**

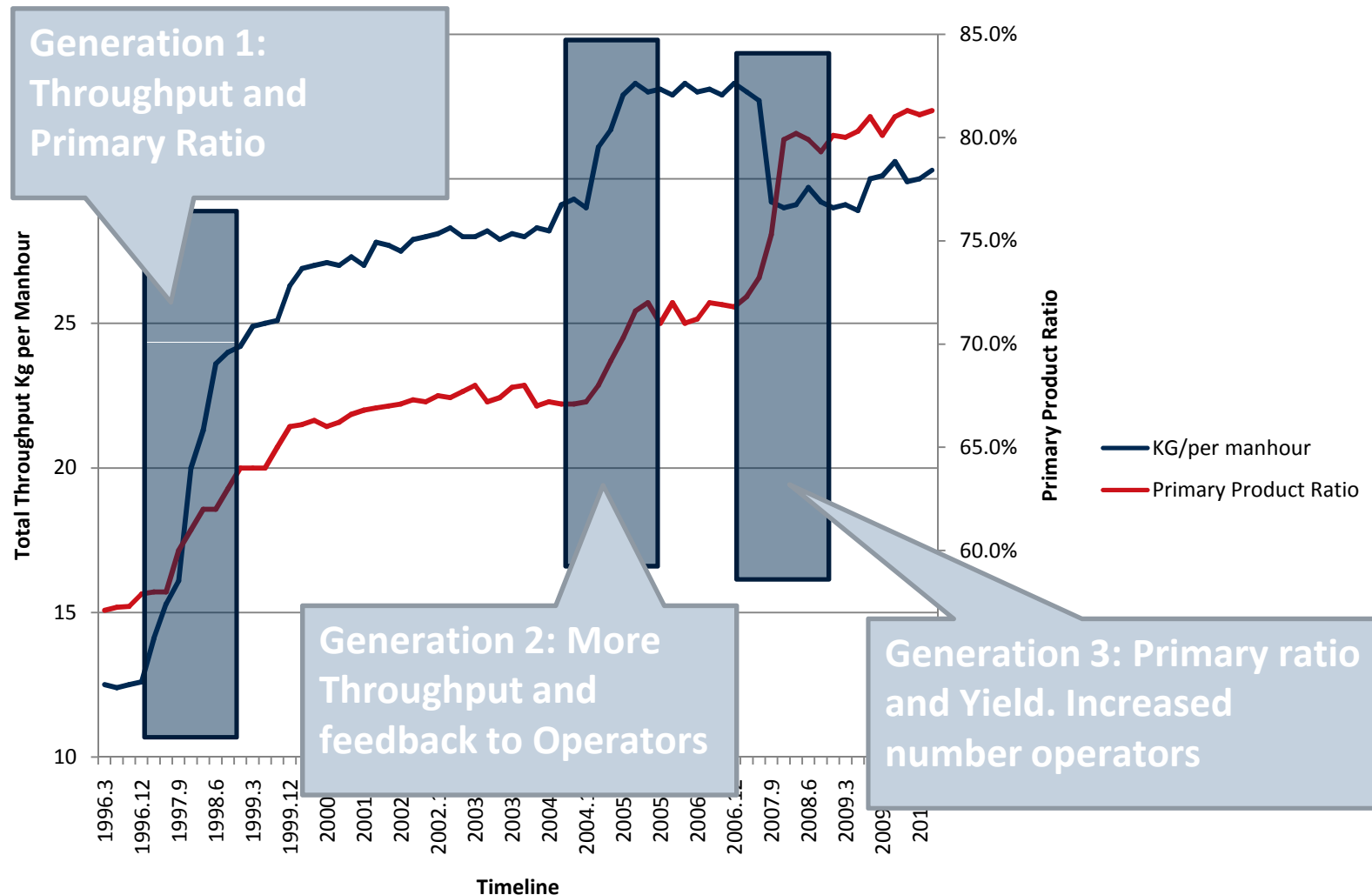
Innova Manual Trimming - Real-time monitoring






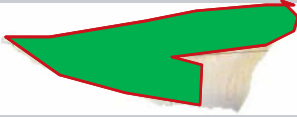
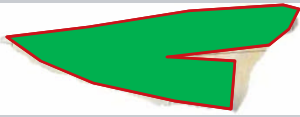


Innova Manual Trimming – Control panel



Implementation of 3 generations of Marel Processing Systems



	Traditional: No monitoring	Marel Generation1	Marel Generation2	Marel Generation 3
		Single outfeed. No feedback to Operators		Superchill 
Yield	49%	49%	49%	51,5%
Primary Ratio	 58%	 65%	 68%	 80%
Kg/manhour	12	25	33	30
Capacity, Raw material per 8 hours	12,5 Tonnes	23,5 Tonnes	37,5 Tonnes	37,5 Tonnes
Payback per year		3,5M eur	1,5M eur	3,3M eur

Summary

- It is a must to utilize the Characteristics of Farmed Cod compared to Wild to gain extra value
- It seems that fresh is the key word in the search for niche market for Farmed Cod
- Superchilling can help to extend shelflife and freshness
- In beginning plants will be small and size will increase as the industry develops
- Important to utilize processing knowhow from both Farmed Salmon and also from Wild Cod



Thank you / Dank u wel / Mange tak / Takk fyrir

