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# Updates on Land-Based Closed-Containment Systems For Salmon

Washington State Extension  
May 14, 2012

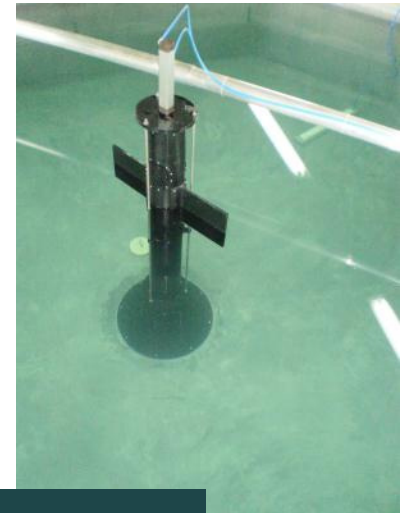
- **North America** potential projects for salmon growout in land-based closed containment systems:
  - British Columbia     **6 projects** (1 in const; 5 planned)
  - U.S.     **6 projects** (3 built; 3 planned)
- **Europe**
  - Denmark     2 project (1 in const; 1 planned)
  - Scotland     1 project (planned)
- **China** (2 built, several planned)
- **Chile** (2 planned)

## Farms Now Producing Salmon in Land-Based Systems

- *Aquaseed – Sweetspring Salmon, Rochester, **Washington*** (Coho salmon)
- *Teton Fisheries LLC – Miller Hutterite Colony, Choteau, **Montana*** (Coho salmon)
- *East End Hutterite Colony, Havre, **Montana*** (Coho salmon)
- *Yantai Salmon Farm – Shandong Oriental Ocean Sci-Tech Co., Yantai, Shandong Province, **China*** (Atlantic salmon)
- *BDV SAS, Normandie, **France*** (Atlantic salmon)



# Yantai Salmon Farm (Yantai, Shandong Province, China)



Shandong Oriental Ocean Sci-Tech Co.  
(slide courtesy of Idar Schei, AquaOptima)

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# Yantai Salmon Farm

- Smolt facility designed by AquaOptima
- Chinese company then copied aspects of the design to design growout components
  - 12 x 750 m<sup>3</sup> growout tanks;
  - saltwater production
  - First Atlantic salmon harvests in 2011 at 1.5 kg
  - Off-flavor and early maturation (grilse) are problematic



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# BDV SAS (Normandie, France)



(Photo courtesy of Jonas Langeteig)

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## BDV SAS (Normandie, France)

- Producing 4-6 kg Atlantic salmon
  - No grilse problems reported
- Two 15 m x 5 m tanks in place; only one used
- Technology provided by the Norwegian company Eco Farms AS, with both mechanical and the biological filter in the middle of the tank.
- Uses borehole water at 15ppt, but with a high system turnover rate

- *Namgis First Nation – K'udas*, Port McNeill, **British Columbia**, Canada (Atlantic salmon); under construction
- *Langsand Laks*, Hvide Sande, **Denmark** (Atlantic salmon); under construction
- *Sustainable Fish Farming Canada*, Centre Burlington, **Nova Scotia**, Canada (Atlantic salmon); converting to salmon
  - Dr. Jeremy Lee



## Farms Preparing To Producing Salmon in Land-Based Systems

- There are more than a half dozen farms in the design or financing stage (reported in press)
  - *Atlantic Sapphire*, mid-Atlantic **USA** (Atlantic salmon)
    - Thue Holm
  - *Palom Aquaculture*, Gouldsboro, ME, **USA** (Atlantic salmon)
    - Bryan Woods
  - *NeoSalmon*, Los Lagos Region, Southern **Chile** (Atlantic salmon)
  - *Danish Salmon AS*, Hirtshals, **Denmark** (Atlantic salmon)