

# *The Future in Product Quality & Cold-Chain Control*



*NEW ICE PHYSICS*

*Fresh Fish “Ultra-Chilled” with PicoICE™ from Sea To Plate !*

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Authorized Distributor for PicoICE in Turkey



1. Uluslararası Su Ürünleri Yetiştiriciliği Fuarı  
11. Su Ürünleri Yetiştiriciliği Çalıştayı



2024 GSA Annual Innovation Awards Finalist

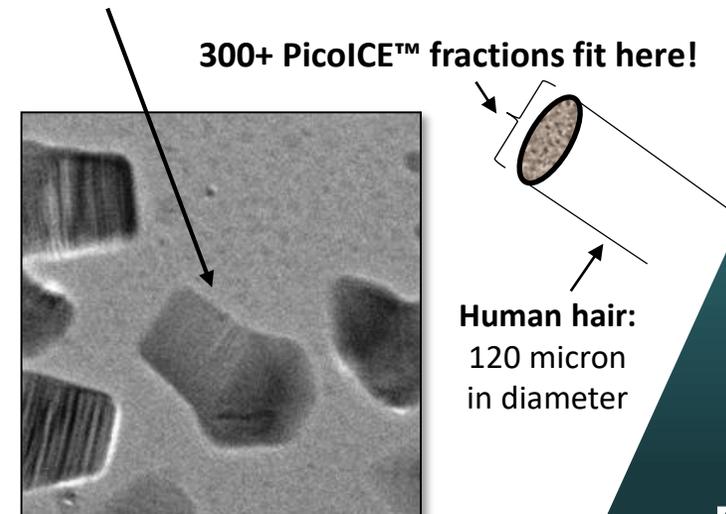
# PicoICE™ / “New ICE Physics!”

- PicoICE™ consists of ultra-small ice-fractions/particles
- Combined Titanium Seawater Chiller & PicoICE™ Maker
- Fresh Seawater IN – PicoICE™ OUT – ON DEMAND !
- Internal pre-chilling of process water to maintain full ice-output at variable seawater inlet temperatures
- Up to 10 to 20 times faster cooling of fresh raw material
- Extremely power- and operating cost efficient, robust, light weight, small foot-print and user friendly design.



## Single unit of PicoICE™

Unique pegged shape allows for contoured coating of raw material – note all edges are rounded and there is no crystallization and bruising of raw material .

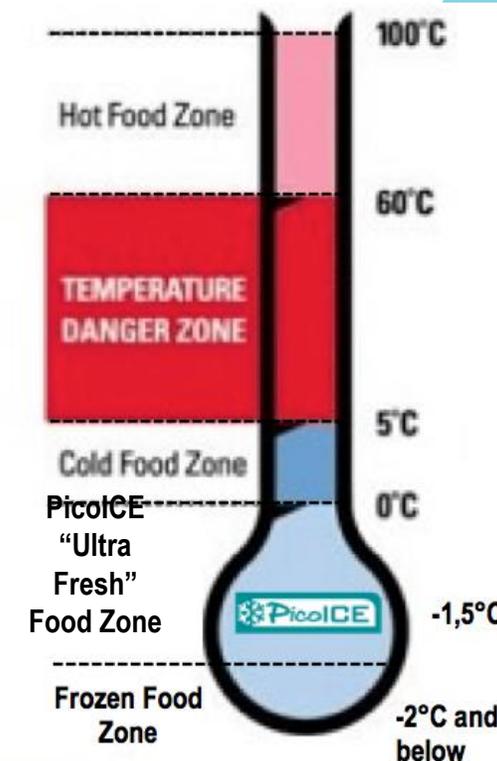
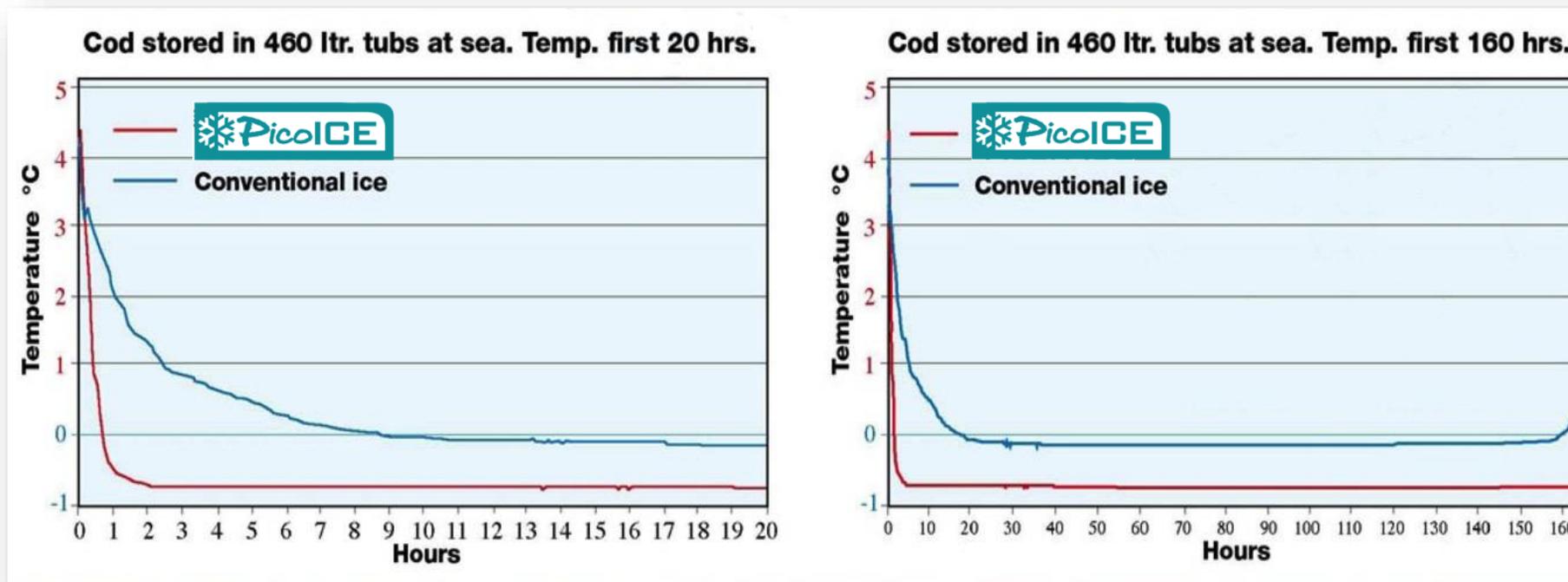


**Fresher Food. Reinvented.**

# PicoICE™, Fish Cooled Deeper, Faster, Longer!



- Direct- and Ultra-Fast Superior Cooling characteristics deliver “Ultra-Chilling”
- Preserved Freshness and longer shelf-life of Premium Grade Products
- **Lower and more ideal core temperature reached 10x to 20x faster**
- Reduced cost of cooling fresh fish throughout all processing stages

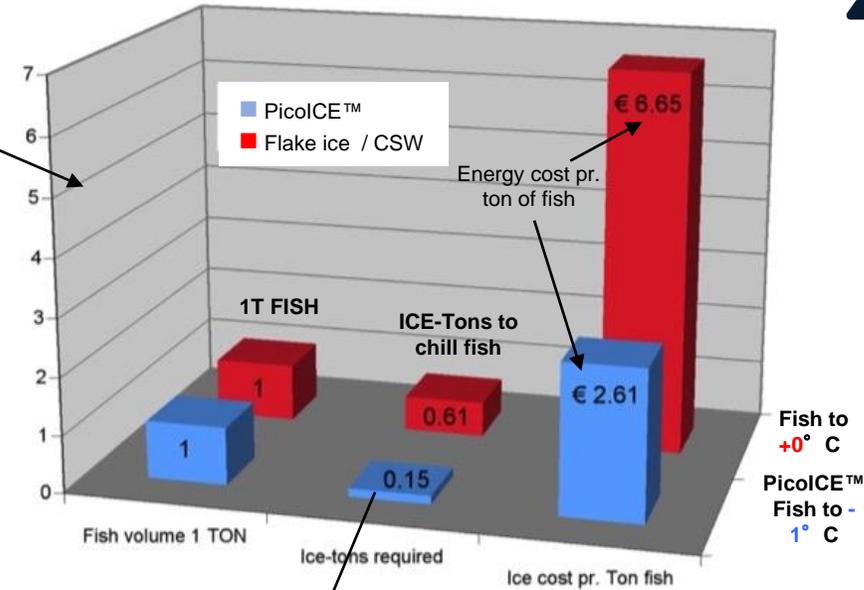


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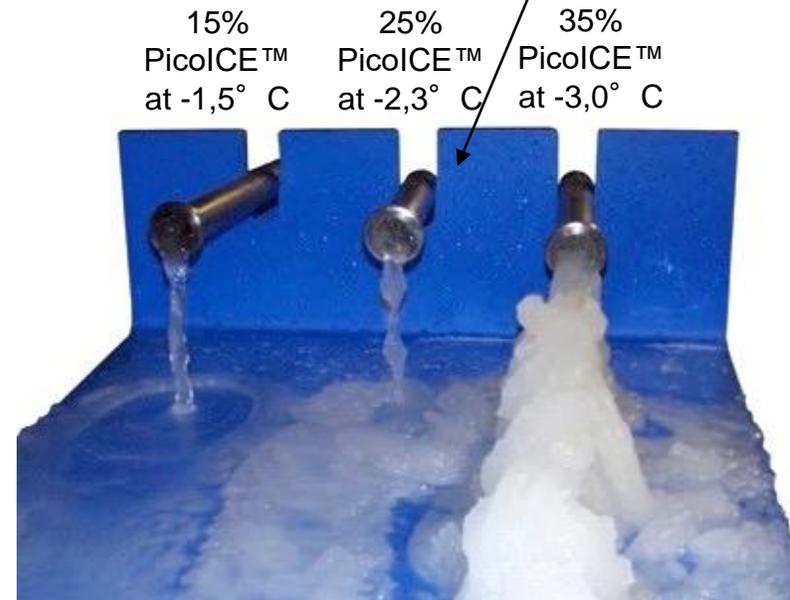
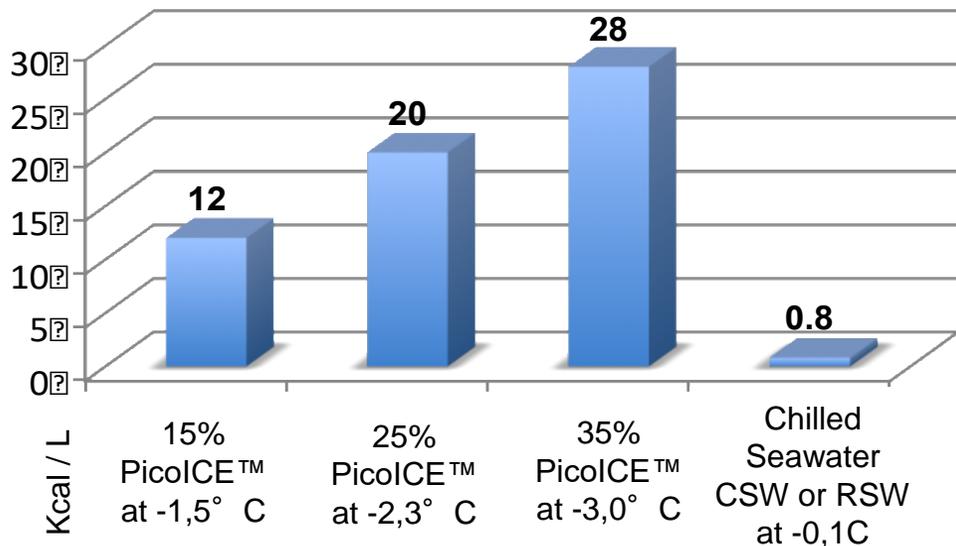
# PicoICE™ Cooling Fish @ Significant Lower Cost



- **Reduced cost to chill each ton of fresh fish:\***
  - 2,5 X less energy cost pr. ton fish (Land-power)
  - 10-20X Faster cooling prevents weight loss
  - Less ice & more fish packed and stored at -1°C
  - **No drip from boxes at -1°C = Dry trucks and roads !**
  - Premium fish - Longer shelf-life – Less food waste !
- **Superior water retention in-between ice fractions provides full closure of the raw material to oxygen**



Cooling Capacity pr. 1L / PicoICE™ v/s Chilled Seawater (CSW)



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\* When compared with CSW made from seawater mixed with flake-ice/crushed ice

# PicoICE™, Higher Quality Fish at Higher Value!



***Fresh Fish in “Ultra-Fresh” Premium Quality Condition,  
at -0,7° C, even after 2 weeks storage in PicoICE™ !***

Dramatic difference between fresh N-Atlantic Cod delivered for processing after 14 days storage in thick PicoICE™ from point of catch at sea when compared to conventional flake ice storage:



# PicoICE™ System - Land Based Installation...



A Customized PicoICE™ System with automatic ice-delivery- and temperature control system in multiple fish cooling tanks throughout all processing stages in the facility.



## Main System Components and Operating Advantages:

- PiC 2090-2C15 Ice-Machine with two separate PicoICE™ outlets with total ice output of 60-100T of 15-30% ice solution in 24 hours.
- 9ton stainless steel, insulated ice buffer tank with high-output ice-delivery pump and automatic ice level control.
- **Automatic ice delivery and temperature monitoring in multiple fish cooling tanks in the processing facility**
- Touch Display to select fish tank priority and temperature
- Water-proof remote Fish-Tank selection cabinet
  
- **Optional Remote monitoring and control of PicoICE™ System (via mobile app or PC)**



- Log-report of temperature history for each fish tank
- Silky-soft Seawater ICE
- No fresh-water used!
- “Ultra-Chilling” of all incoming fish

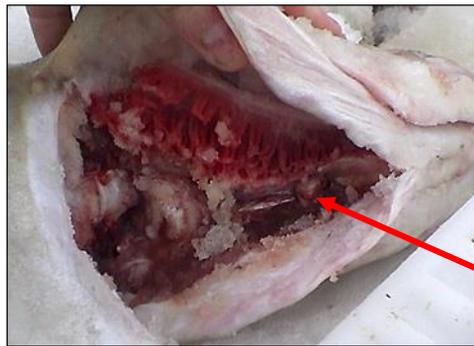


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# PicoICE™ System Marine Based Installations...



Compact PicoICE™ Systems with ice-delivery- and temperature monitoring Systems in bleeding- and fish cooling tanks and thick ice buffer tanks delivering ice into fish-hold



## Main components and operating advantages:

- PicoICE™ Machine Models with multiple individual PicoICE™ outlets with a total ice output range of 10 to 100T of variable ice concentration solutions delivered in 24 hours on demand.
- 1,5 to 10ton insulated stainless steel ice tanks for thick- and thin ice, with high output ice-delivery pump and ice level control.
- Automatic ice delivery and temperature monitoring in bleed- and fish cooling tanks on fish processing deck.
- Touch panel Display operates the systems remotely.
- Optional 2<sup>nd</sup>. remote monitoring and operation of System.
- Log-report of temperature history for each fish tank
- Silky-soft Seawater ICE produced ON DEMAND!
- No fresh-water required for the PicoICE System.
- Ultra-Chilling of all fish from point of CONTACT

*Fish gills after 2 weeks in thick PicoICE™*



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# PicoICE™ Technology Main Operating Benefits...



Super-Low Power Consumption and Refrigerant Charge, Small Foot-print, Light Weight, Compact, Efficient, Robust and User-Friendly Design



**Mobile and easily scalable units**

**On-site demonstration of PicoICE™ "Plug & Play" ice-production**

**Fast installation and start-up of system components in processing facilities.**

**PicoICE™ ON DEMAND!**



*All incoming Fish chilled with 20% PicoICE™*

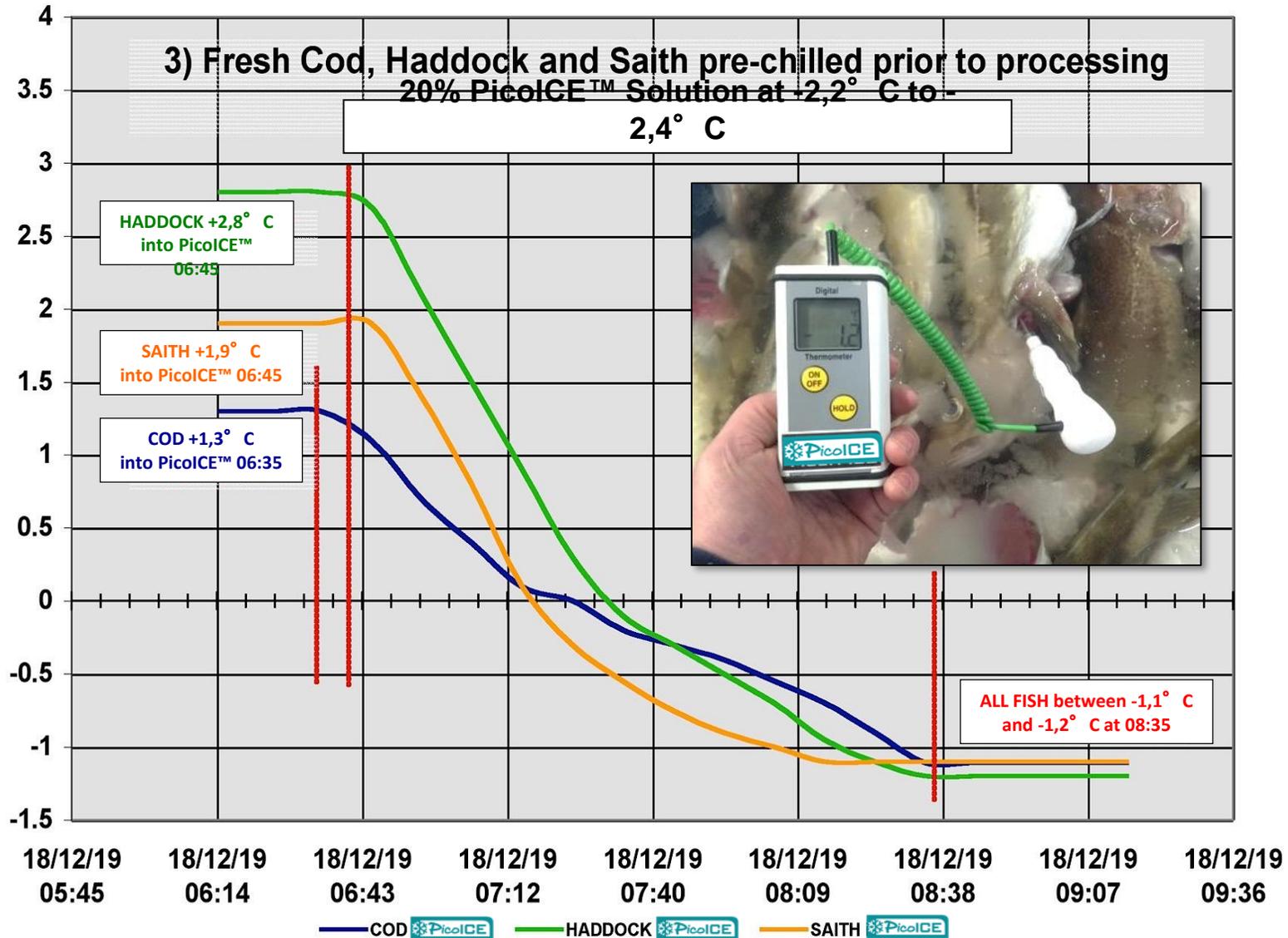
*Fish temperature after PicoICE™ chilling*

*Ultra-Chilled loins with PicoICE™ for packing*



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# PicoICE™ “Ultra-Chilling” Test – Typical Results...



## Test results..

Various fish species “Ultra-Chilled” with PicoICE™:

Irrespective of the different starting points in incoming fish temperature, each species of fish reaches the same low temperature of -1,1° C to -1,2° C within two hours with initial start temperature ranging from +1,3° C to +2,8° C – actually chilled with either RSW or flake ice on the boats prior to delivery.

Benefits of processing fresh fish chilled to below -0,1° C prior to processing:

- keeps the fish more firm
- reduces / prevents drip-loss
- greatly improves weight yield and quality in final products
- Reducing freezing time and wasted defrost time

Allowing **more fish** and **less ice** in boxes!



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# “New Ice-Physics” Deliver Significant Advantages!

## Positive Impact of PicoICE® throughout the fresh food value chain



### Farm / Fishing Vessel:

#### **Input Benefits:**

- ✓ Less energy & fuel cost
- ✓ Lower use of space/footprint
- ✓ Lower refrigerant charge
- ✓ Less weight of equipment
- ✓ Easy to use and operate

#### **Output Benefits:**

- ✓ Higher quality fish
  - faster cooling
- ✓ No skin damage
  - silk soft ice
- ✓ Improved storage
  - less ice, more fish
- ✓ Longer at sea if needed
  - fish is fresher longer

#### **Qualitative Impact:**

- ✓ Improved food hygiene
  - particularly in summer
- ✓ Easier to handle
  - lower physical impact

### Processor Stage:

#### **Input Benefits:**

- ✓ No fresh-water usage
- ✓ Lower electricity usage
- ✓ Immediate cooling on contact
  - Direct cooling - no spill of ice
- ✓ Automatic “PicoICE on demand”
  - with remote control option (app)
- ✓ Reduced labor cost and risk
- ✓ Less handling & less fork-lift cost

#### **Output Benefits:**

- ✓ Colder “Super-Fresh” fish
  - chilled faster prior to processing
- ✓ Fish more firm / better texture
  - better fish for filleting
- ✓ Less drip-loss, better yield
  - more kilos packed and sold
- ✓ Consistent Cold-Chain Control
  - throughout all processing stages

#### **Qualitative Impact:**

- ✓ Positive on sustainability claims
- ✓ Improved food safety
- ✓ Improved company reputation

### Transport Stage:

#### **Input Benefits:**

- ✓ For use in styro- & carbon boxes

#### **Output Benefits:**

- ✓ Less ice & more fish packed
- ✓ No melt-water in trucks
- ✓ Lower fuel consumption
  - reduced carbon footprint
- ✓ Better transport economics

#### **Qualitative Impact:**

- ✓ Lower fish temperatures - Less drip
  - less packed “overweight” required
- ✓ Fish shipped at “Premium” quality

- ✓ Cleaner trucks

- ✓ Cleaner roads!

### Customer:

#### **Input Benefits:**

- ✓ Premium quality fish
- ✓ Better eating quality

#### **Output Benefits:**

- ✓ Longer shelf-life
- ✓ Higher sales - more value
- ✓ Less waste – cost saving

#### **Qualitative Impact:**

- ✓ Less food waste



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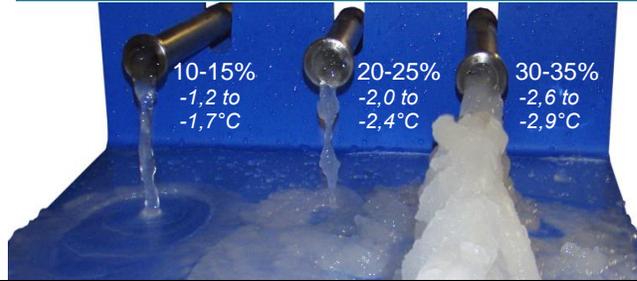


SeaToPlate - Cold Chain Control

Food Processing Applications:

Fresh Fish-, Aquaculture, Fruit- & Vegetables, Meat and Produce.

## 2026 NEW GENERATION SYSTEMS - Internal Titanium Chiller- & PicoICE Machines Design



\* Seawater inlet temp.

**15 °C**

\*\* Pre-Chilled Seawater

**0 °C**

### Facts About PicoICE :

Combined internal seawater-titanium chiller and PIC-Icemaker compact design.

PicoICE Units with multiple ice-makers deliver multiple ice% solutions at different temperatures simultaneously, made directly from fresh seawater - on demand \*

\* PicoICE maker ice-% output and ice temperature is adjusted with variable flow rates of inlet water for each PIC-Icemaker.

**FEBRUARY 2026**

All data is subject to change without notice

Ltr. to USG conversion **3,785**

### PicoICE Machine Models Range:

Small Footprint Industrial- & Marine Models:

Model / Ice-gen. / Kgs / Running Amps / Kw's

PiC-1020-1C/1gen./ 295kg / 11Amp / 4,4 kW	3.60
PiC-2050-1C/1gen./ 395kg / 21Amp / 8,4 kW	7.20
PiC-2090-2C/2gen./ 689kg / 31Amp / 12,3 kW	14.40
PiC-2140-3C/3gen./ 875kg / 49,5Amp / 19,8 kW	21.60
PiC-2190-4C/4 gen. / 980kg / 74Amp / 29,6 kW	28.80

Compr. Size kW

11.52
23.04
46.08
69.12
92.16

### Ice Output / Cooling Capacity / 24hrs

Ice Output Capacity in 24 hours

kW	MT ice	Kcal.	Btu's IT
<b>9.00</b>	2.33	186,768	28,015
<b>18.00</b>	4.67	373,536	56,030
<b>36.00</b>	9.34	747,072	112,061
<b>54.00</b>	14.01	1,120,608	168,091
<b>72.00</b>	18.68	1,494,144	224,122

### Footprint

Estim. Size:

L/W/H - Cm.
105 x 55 x 65
125 x 60 x 90
150 x 75 x 110
150 x 90 x 125
165 x 105 x 130

### Lowest Ice-%

**10 % ice**

Pr. day	Pr. hour
<b>23,351</b>	<b>973</b>
<b>46,703</b>	<b>1,946</b>
<b>93,405</b>	<b>3,892</b>
<b>140,108</b>	<b>5,838</b>
<b>186,811</b>	<b>7,784</b>

### Actual PicoICE output capacity at various ice% concentrations

**15 % ice    25 % ice    30 % ice    40 % ice**

Pr. day	Pr. hour						
15,568	649	9,341	389	7,784	324	5,838	243
31,135	1,297	18,681	778	15,568	649	11,676	486
62,270	2,595	37,362	1,557	31,135	1,297	23,351	973
93,405	3,892	56,043	2,335	46,703	1,946	35,027	1,459
124,541	5,189	74,724	3,114	62,270	2,595	46,703	1,946

\* Capacity in ice output reference for PicoICE units is based on inlet seawater supply ( or 3 to 3,5% saltwater ) at 10 to 15°C.

\*\* ALL PicoICE MODELS INCORPORATE INTERNAL TITANIUM PRE-CHILLERS FOR 10-15° SEAWATER TEMPERATURE

Refrigerants charged: R-448-A, R-449-A, R-507-A

\*\*\* CUSTOMISED MODELS UPON REQUEST -

Available power options: 3 x 400V/ 50Hz / 3x460V/60Hz - 3x220V / 60Hz - 3x230V/50Hz



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CUTTING EDGE / Turn Key Total Concept - Cold-Chain Control  
 Quality Improvement Technology

Fresher Food - Reinvented

## PicoICE™ Technology Confirmed Benefits & main Advantages:

- Reduced cost to chill each ton of fresh fish and other raw material during processing:
  - 25-50% less energy cost to chill each ton of fish during processing
  - 10-25% more fish-volume and less ice in boxes for market / down-stream supply chain
  - Up to 20X faster cooling reaching lower “Ultra-Fresh” fish temperatures to prevent weight loss
- Superior retainment of water in between the ice fractions (*no melting required*)
- Full 100% contact between fish and PicoICE™ from point of application
- High closure of the raw material to oxygen during storage
- Up to 90% less refrigerant charge required on PicoICE™ machines when compared to other ice-making systems
- Light weight/small foot-print and mobile design
- No fresh water is required in the PicoICE™ process
- All PicoICE™ is made from only fresh seawater
- PicoICE™ is made and delivered on demand
- Most efficient ice distribution, full temperature control and user friendly ice handling.
- PicoICE™ allows high level of automation in all ice delivery and temperature cold-chain control.
- All models include internal titanium chillers to maintain full ice output in PicoICE™ units at variable seawater conditions and temperatures.



All PicoICE™ machines with “Multi-ICE” set-up can deliver multiple types and temperatures of PicoICE™ simultaneously – **ON DEMAND!**



*Fresher Food - Reinvented*

*We thank you for your hospitality, time and interest in our technology.  
For any further information please either send us an e-mail or visit our web-sites.*

*[www.octoaqua.com](http://www.octoaqua.com) / [www.picoice.com](http://www.picoice.com)*



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