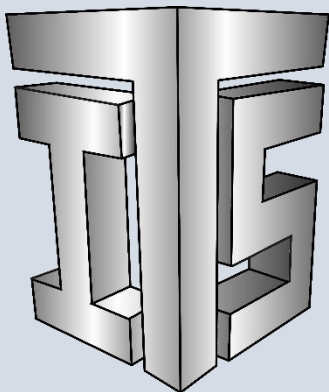


The **I**ndividual **T**hawing **S**ystem

Simply a better solution for defrosting of block-frozen fish such as Cod, Haddock, Saithe, Pollock, Redfish, Salmon, etc.



ITS-6 model has a capacity of 2 T/h

- user friendly, single operator
- less drip loss, greater yield
- water and energy efficient
- continuous thawing flow
- better product quality
- less space required

Individual Thawing System

ITS is fundamentally different from conventional thawing systems;

ITS is developed for gentle thawing of block-frozen fish without raising the temperature to an unacceptable level, without air injection, in order to achieve a minimal protein damage and loss, as well as to secure minimal oxidation, which in return means a far better result with improved quality and yield;

ITS can handle various block sizes. ITS ensures a correct thawing and a gentle handling of each individual fish. ITS requires only a single operator to feed and run the system;

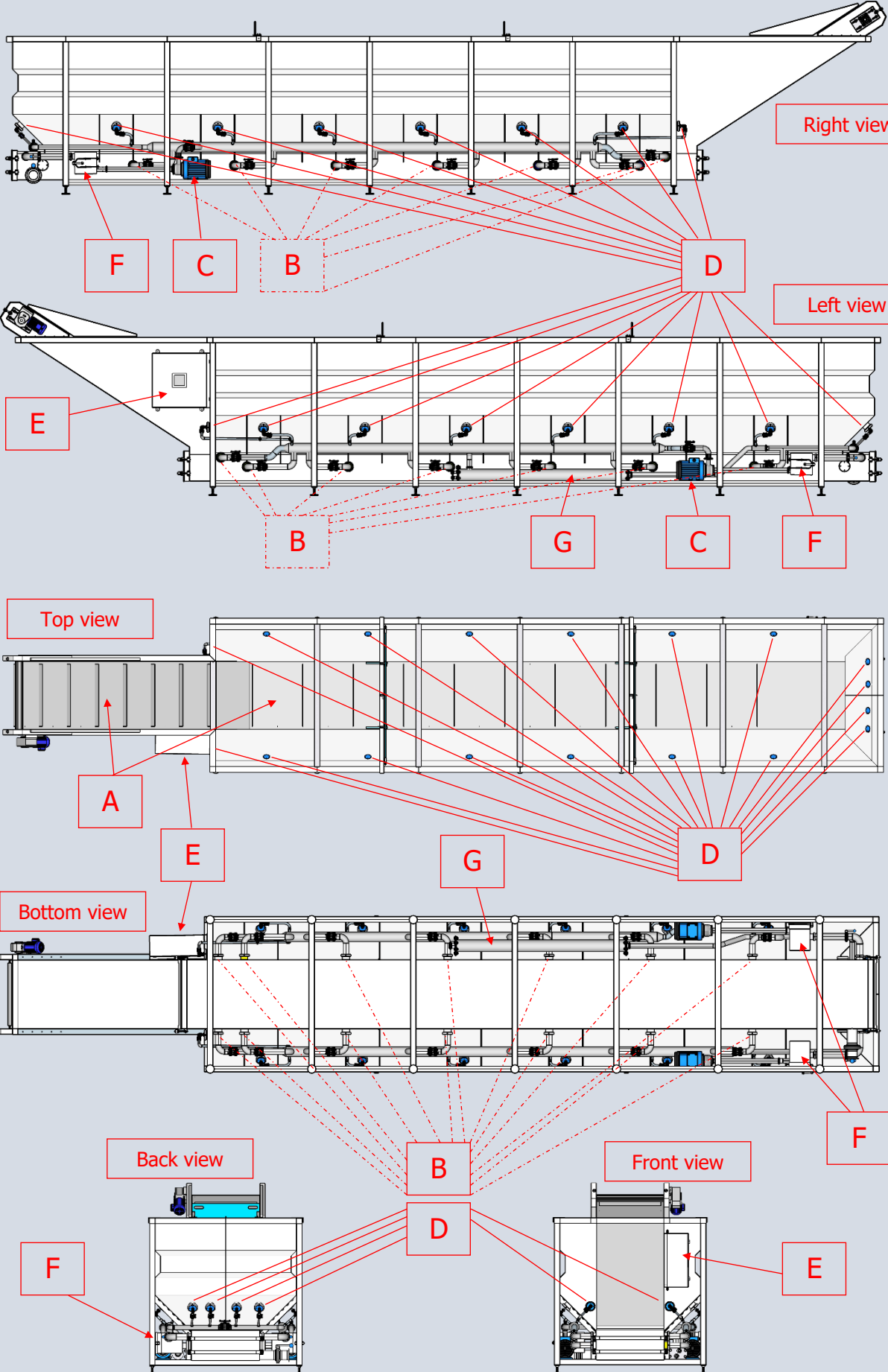
ITS is more than a machine. The know-how provided during start-up is of crucial importance for the best result, yield and quality;

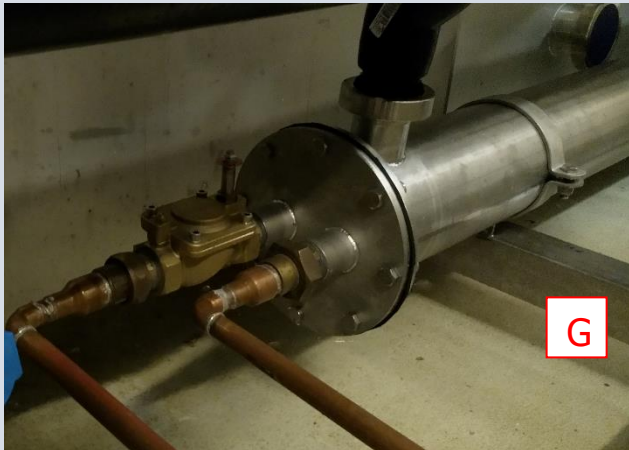
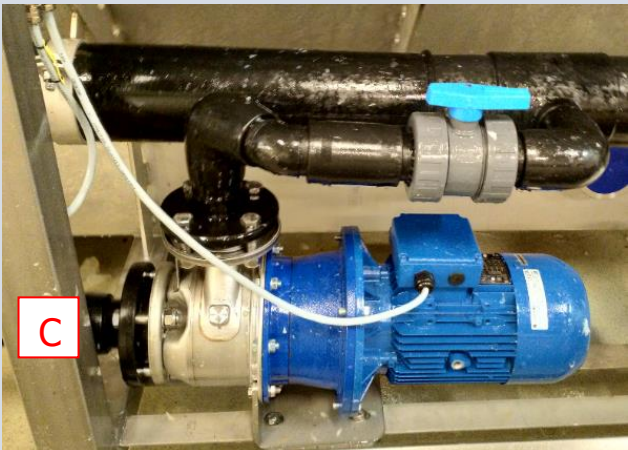
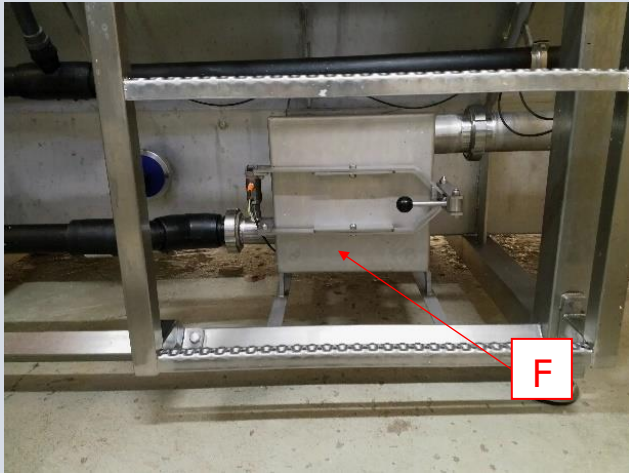
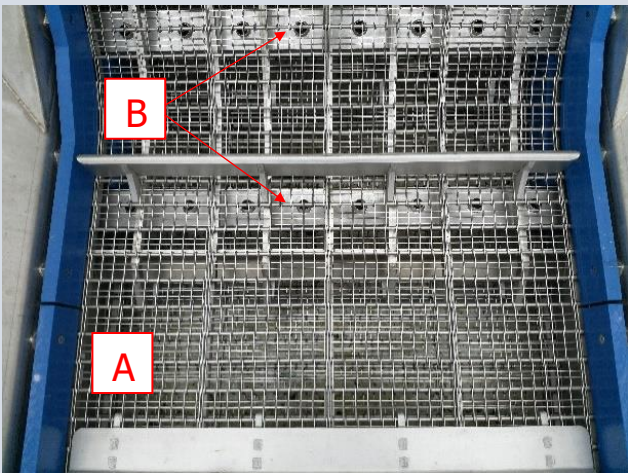
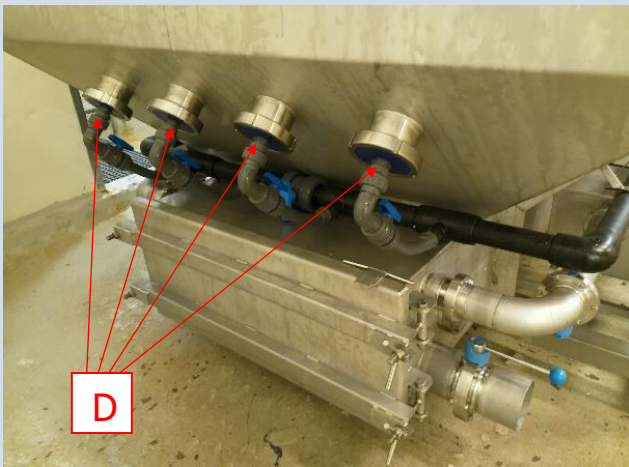
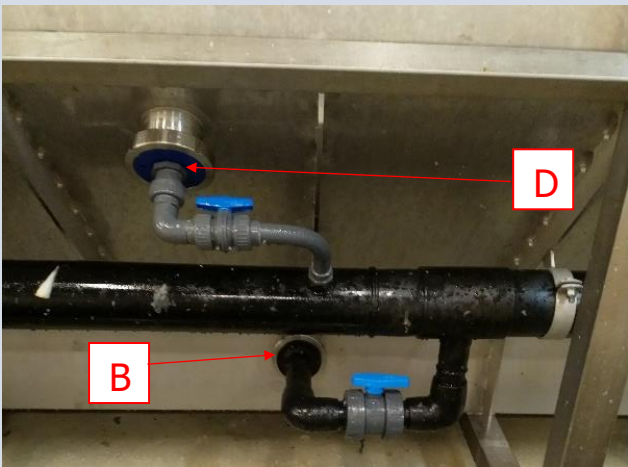
ITS process always begins with good logistic planning, then:

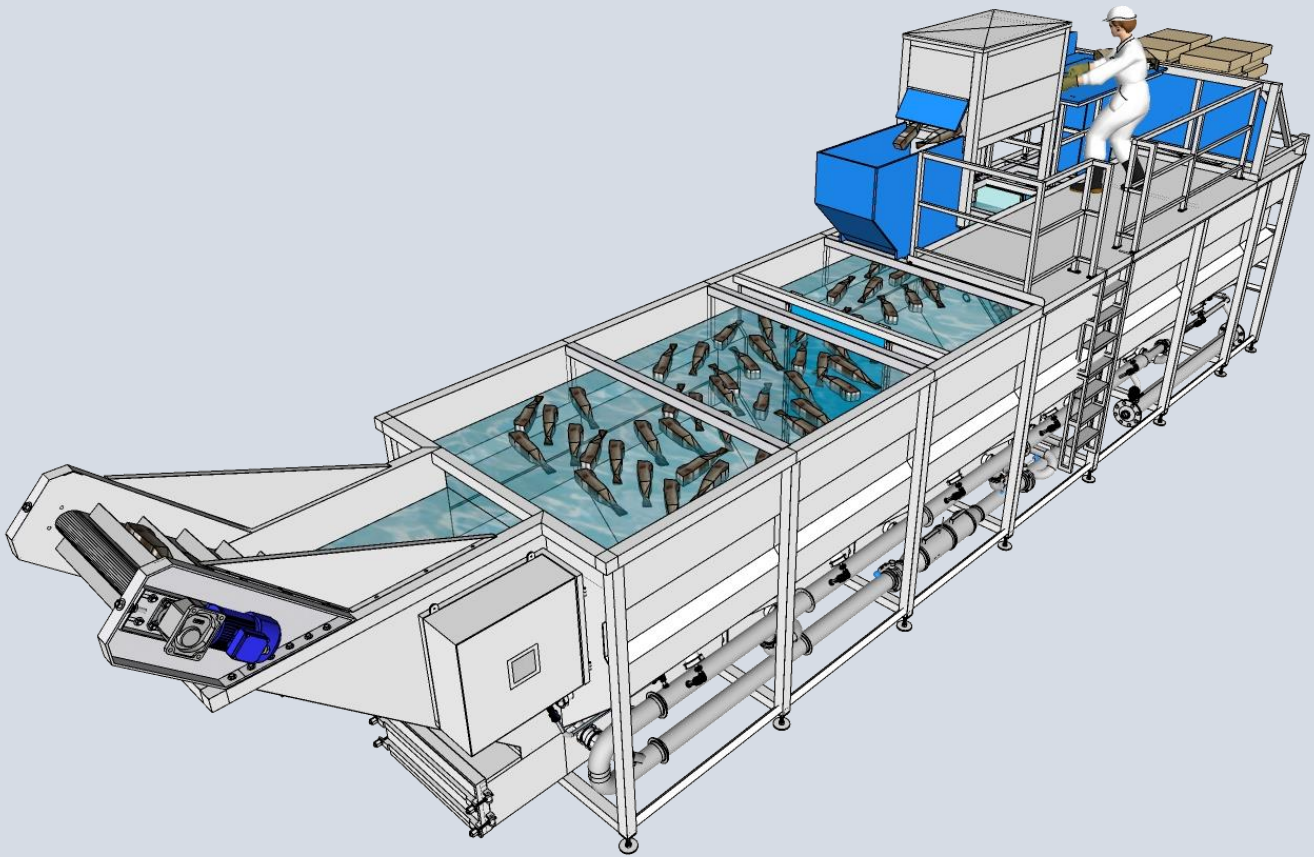
- tempering of the blocks while still packed on pallets;
- stripping the tempered blocks for packing material;
- pushing the naked blocks into the separator for mechanical disintegration to individual fish;
- circulation of the thawing water is performed with a programmable efficient pattern flow of water current and temperature, securing all fish are equally thawed;
- when most of the ice inside an individual fish has defrosted, the fish will sink and lay to rest on the discharge conveyor belt;
- at the time of discharge, no matter the fish size nor the arrival temperature, each fish holds a temperature of approx. -3°C in the chunkiest frontal part and $+2^{\circ}\text{C}$ in the tail;
- the defrosted fish are collected in tubs, preferably with cold brine, and temporarily stored for equilibration until the fish have reached the optimal condition (e.g. $\pm 0^{\circ}\text{C}$ in the entire body) for the following filleting process and handling.

Description of the functionality of the I T S thawing tank.

- Block frozen fish, typically tempered from -20°C to about -10°C, is disintegrated (cracked or fully separated from the block) before entering the ITS-tank.
- There are multiple possibilities for 'running pattern' with the ITS-tank. All is based on the fact that ice (70-80%) within the fish should melt. Since small fish do not contain as much ice as large, smaller fish need less duration in the thawing tank.
- The ITS tank thawing pattern is programmable in the integrated PLC, with adjustable factors such as: water temperature, water circulation speed and direction, bottom belt movement, a.m.
- The tank can be run automatically in a continuous flow of product arriving and departing, or with batches of fish (e.g. 7 ton), or what has actually proven most popular, to run a semiautomatic mode where one-only operator is shifting between discharging some quantity (e.g. about 1000 kg), before adding a similar quantity of frozen fish, then some discharge again, then adding, etc.
- See the attached illustration of a size ITS-6 model tank:
 - A** - is the stainless-steel belt made in non-damage design, fitted with specially designed lay-down flaps which erect only when required, namely on the elevating part when fish is discharged.
 - B** - is a set of nozzles alongside the bottom, spraying through the belt to create water circulation and fish movement.
 - C** - is powerful pumps, adjustable via PLC, to circulate the tempered water.
 - D** - is a set of angle-adjustable special side nozzles to direct the circulating water in any preferred direction.
 - E** - the electric-box containing the PLC, frequency inverters, ethernet connection, etc. On a display window on the electric-box front door all programming can be made.
 - F** - is a coarse filter unit for thawing water to prevent the pumps, pipes and nozzles from clogging.
 - G** - is an integrated pipe heat exchanger to maintain a pre-set temperature for the thawing water.







General Specifications

Thawing system	Throughput	Volume	Power rating	Size mm		
				L	W	H
Type	kg/h*	M3	kW**			
ITS-4	1500	25	12	9952	2270	3780
ITS-6	2000	35	12	12935	2270	3780
ITS-9	3500	50	17,5	17405	2270	2836

* Throughput can vary. Depends on block size, temperature, shape, size of fish and condition.

** Average