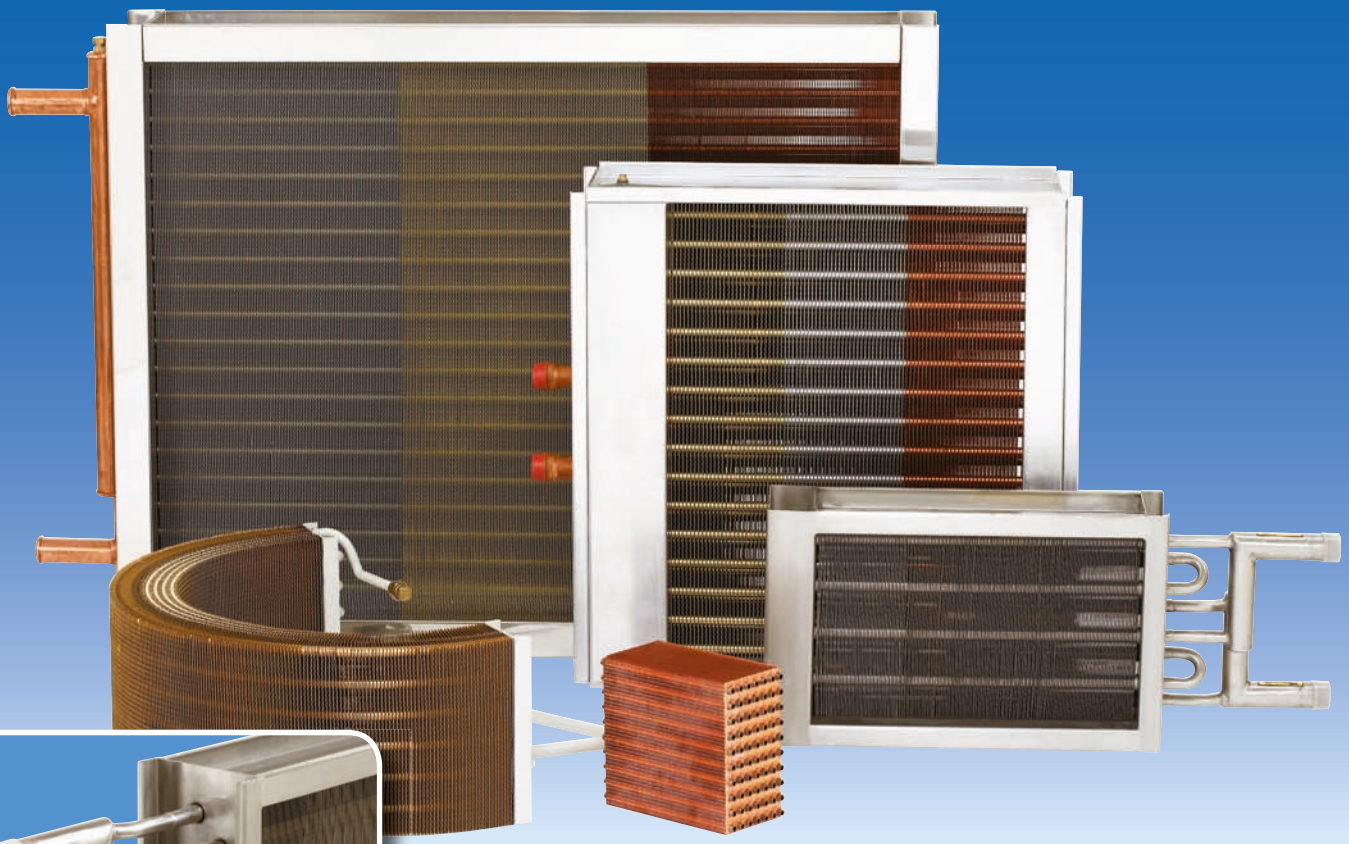
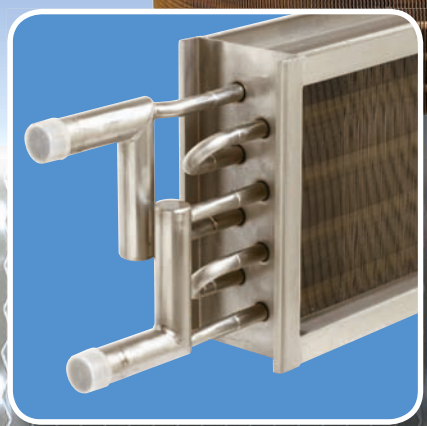
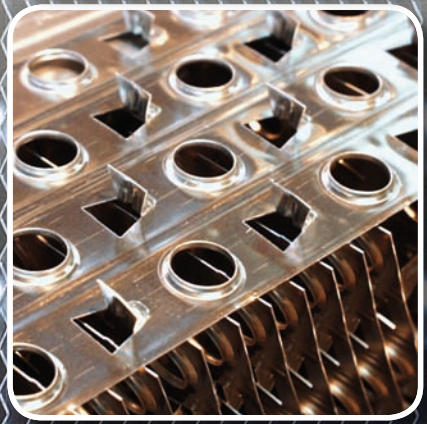
tt coil as

Coils

Lamelvarmevekslere
Tube & Fin Heat Exchangers







Lamelvarmevekslere – Coils

tt coil tilbyder en lang række forskellige typer af batterier til opvarmning og køling af luft i ventilationssystemer, luftkanaler, luftaggregater, proces køling, offshore og industrielle processer. Vore lamelvarmevekslere er fuldstændig kundetilpassede og kan leveres i mange forskellige materialekombinationer.

Alle beregninger bliver lavet i vort eget beregningsprogram **ttc Design**, som **tt coil** har udviklet på baggrund af mere end 30 års erfaring med coil produktion.

Siden 1976 har **tt coil** været en af Europas førende leverandører af lamelvarmevekslere, tørkølere og kondensatorer. I dag er **tt coil** ejet af den svenske virksomhed GL Beijer AB og indgår dermed i én af verdens største leverandørgrupper af køleudstyr, Beijer Ref.

Varmevekslere bruges primært til opvarmning eller køling af luft og i nogle tilfælde til varmegenvinding, og anvendelse af varmevekslere er den primære metode til varmeoverførsel mellem den luft som passerer over rørene og mellem lamellerne og varme- eller kølevæsken inde i rørene.

Til opvarmning benyttes varmt eller hedt vand, olie, proces væske eller damp. Til køling benyttes koldt vand, HFC og naturlige kølemidler.

Varmefladerne består af et antal lameller af tyndt metal, som er forsynet med huller til rørene. For at sikre en effektiv varmeoverførsel bliver rørene mekanisk ekspanderet på lamellerne. Vi kan udføre denne rørekspandering på coils i længder op til 12 meter.

For at kunne opfylde kravene til vort omfattende produktprogram, tilbyder vi mange forskellige forsatte og parallelle lamel geometrier forsynet med rør på enten 9,5, 12 eller 15,5 mm i diameter.

Lamellerne er som standard udført i aluminium og rørene i kobber men andre materialer er også til rådighed. Lamellerne kan udføres i rustfrit stål, kobber, fortinnet kobber, som epoxy coatede eller søvandsbestandig aluminium. Rørene kan udføres i rustfrit stål, fortinnet kobber eller kobber nikkel.

Foruden hele det tilgængelige spektrum af rør- og lamelmateriale, tilbyder vi en række lameloverflader, som f.eks. flad, bølget og sinusformet og med yderligere mulighed for at vælge mellem glatte eller rillede kanter.

Vi tilbyder nogle standard ramme konstruktioner men er specialister i at designe kundetilpassede varmevekslere med rammekonstruktioner i mål efter kundens ønske. Disse kan produceres med en række forskellige tykkelser og pladematerialer, f. eks galvaniseret, rustfrit stål, aluminium og kobber.

Ved behov for yderligere information eller assistance vil det glæde os at modtage Deres henvendelse enten via e-mail eller pr. telefon til vore salgsingeniører.

Tube and Fin Heat Exchangers – Coils

tt coil offers a great variety of heat exchangers for heating and cooling of air in ventilation systems, ducts, air handling units, process cooling, offshore and industrial heating & cooling. Our tube and fin heat exchangers are custom-made and can be supplied in many different material combinations.

All calculations are made in our own calculation programme **ttc Design** which has been developed by **tt coil** on the basis of more than 30 years' experience with coil production.

Since 1976 **tt coil** has been one of Europe's leading distributors of heat exchangers, dry air liquid coolers and air cooled condensers. Today **tt coil** is owned by the Swedish company GL Beijer AB and thus is part of Beijer Ref, one of the largest groups of suppliers of refrigeration equipment in the world.

Coils are designed mainly for the heating or cooling of air and in some cases for heat recovery and are the primary method used for heat transfer between the air passing over the tubes and between the fins and the heating or cooling fluid inside the tubes.

The heating medium can be warm or hot water, oil, process liquid or steam. The cooling medium can be chilled water, HFC and natural refrigerants.

Our coils are constructed of a large number of thin sheet metal fins with holes for the tubes. To ensure efficient heat transfer, the tubes are mechanically expanded into the fins. Such expansion integrity can be maintained with coil lengths up to 12 meters.

To fulfill the demanding range of applications, we offer a variety of staggered and in-line fin geometries using either 9,5, 12 or 15,5 mm diameter tubes.

The fins are made of aluminium and the tubes of copper as a standard, however, fins are also available in stainless steel, copper, tinned copper, with epoxy coating or as seawater resistant and tubes are available in aluminium, stainless steel, tinned copper or cupro nickel.

Besides the full spectrum of tube and fin materials that are necessary to meet the above, a variety of extended surface profiles are available to suit the range of applications e.g. flat, corrugated and sinusoidal with an option for plain or rippled edges.

We offer some standard casework constructions, but are specialists in designing customer specific heat exchangers with casework constructions according to customer specifications. These can be provided in a variety of thicknesses and sheet metal materials e.g. galvanized, stainless steel, aluminium and copper.

If you need any further information or assistance, please contact one of our sales engineers either by e-mail or telephone.

Coil kode betegnelse – Coil Code Definition

CW – TR – 2.0 – 1200 – 960 – 6R – 16 – V1 – Cu / Al

Applikation / Application

HW	Lavt tryk Varmt væske / Low Pressure Hot Fluid
SW	Højt tryk Varmt væske / High Pressure Hot Fluid
ST	Damp / Steam
CD	Kondensator kølevæske - HFC / Refrigerant Condensing - HFC
CW	Afkølet vand/brine / Chilled Water / Fluid
DX	Fordamper direkte ekspansion - HFC / Direct Expansion Evaporation - HFC

Geometri / Geometry

TR	60x30-ø15,5 (turboleret overflade) / (turbulated surface)
TP	60x30-ø15,5 (glat overflade) / (Plain surface)
TF	60x30-ø15,5 (glat overflade med finneafstand > 6 mm) / (Plain with fin pitch > 6,0 mm)
TS	30x30-ø15,5 (glat overflade) / (Plain surface)
T42	42x42-ø15,5 (kun rør) / (Bare Tube)
ES	33,33x28,8-ø12 (turboleret overflade) / (turbulated surface)
ET	30x26-ø12 (turboleret overflade) / (turbulated surface)
SP	25x21,65-ø9,52 (turboleret overflade) / (turbulated surface)

Lamel afstand (mm) / Fin Pitch (mm)

Lamel bredde (mm) - B Dim / Fin Length (mm) - B Dim

Lamel højde (mm) - H Dim / Fin Height (mm) - H Dim

Antal rørrækker / Number of Rows

Antal kredse / Number of Circuits

S	Tilslutninger i samme side / Same End Connections
O	Tilslutninger i hver side / Opposite End Connections

Vertical Coil / Vertical Coil

V1	Tilslutninger samme side - Pos højre / Same - RHS Connections
V2	Tilslutninger samme side - Pos venstre / Same - LHS Connections
V3	Tilslutninger i hver side - Pos højre for væske tilgang / Opposite - RHS Inlet
V4	Tilslutninger i hver side - Pos venstre for væske tilgang / Opposite - LHS Inlet

Horisontal Coil / Horizontal Coil

H1	Tilslutninger samme side - Pos højre / Same - RHS Connections
H2	Tilslutninger samme side - Pos venstre / Same - LHS Connections
H3	Tilslutninger i hver side - Pos højre for væske tilgang / Opposite - RHS Inlet
H4	Tilslutninger i hver side - Pos venstre for væske tilgang / Opposite - LHS Inlet

Damp Coil / Steam Coil

ALT 1	Tilslutninger i hver side - Ind/ud i én side - vertikale rør / Opposite - End In/Out - Vertical Tubes
ALT 2	Tilslutninger i hver side - Ind på midt/ud i side - vertikale rør / Opposite - Centre In/ End Out - Vertical Tubes
ALT 3	Tilslutninger i hver side - Ind/ud i midt - vertikale rør / Opposite - Centre In/Out - Vertical Tubes
TFHD	Tilslutninger i samme side - m. retur samlerør / Same - Horizontal Tubes - Transfer Header

Rør Materiale / Tube Material

Cu	Kobber / Copper
CuSn	Kobber fortinnet / Copper Tinned
CuNi	Kobbernikkel / CuproNickel
Al	Aluminium / Aluminium
SS304	Rustfri stål AISI304 / Stainless steel AISI304
SS316	Rustfri stål AISI316 / Stainless steel AISI316

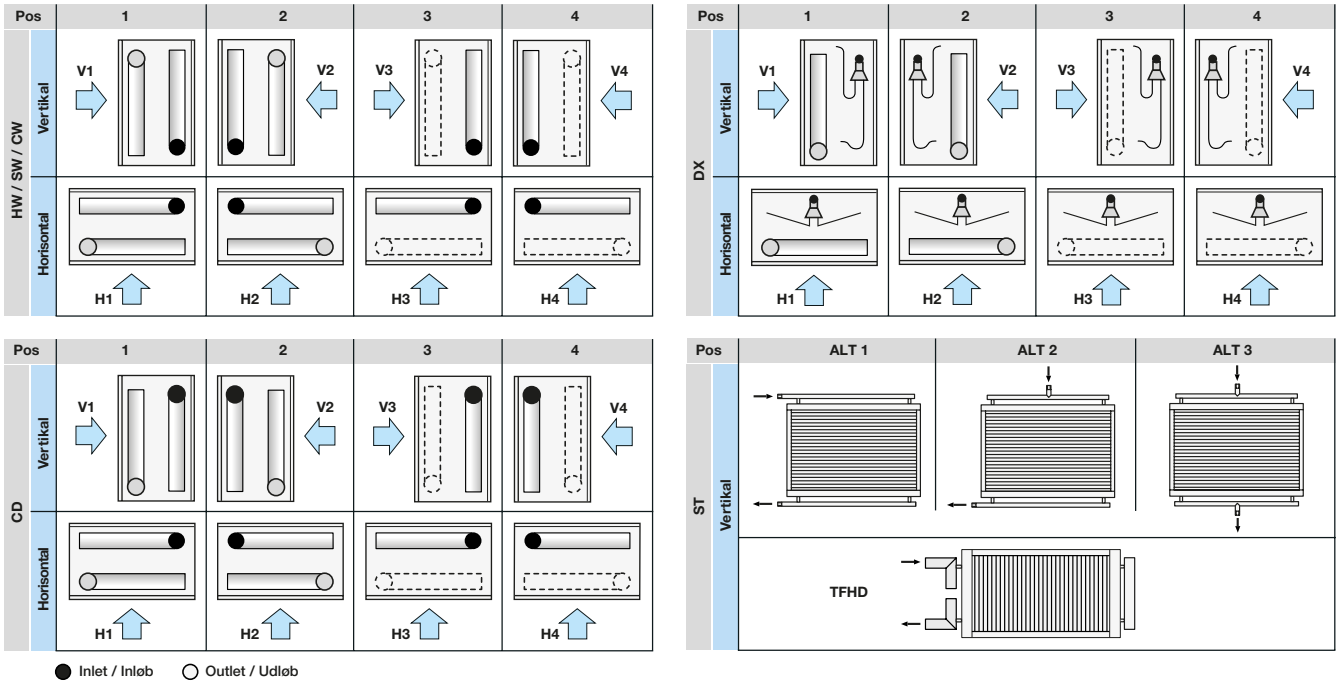
Lamel Materiale / Fin Material

Al	Aluminium / Aluminium
Alup	Aluminium epoxy overflade behandlet / Aluminium Prepainted (epoxy)
AlMg3	Aluminium Magnesium ~ søvandsbestandig / Aluminium Magnesium ~seawater resistant
Cu	Kobber / Copper
CuSn	Kobber fortinnet / Copper Tinned
SS304	Rustfri stål AISI304 / Stainless steel AISI304
SS316	Rustfri stål AISI316 / Stainless steel AISI316

Coil typer/Coil Types

HW	Varmt vand Hot Water	Varmeflade Heating coil	→	Opvarmning af luft med varmt vand/glycol Heating of air with hot water/glycol
CW	Afkølet vand Chilled Water	Køleflade Cooling coil	→	Køling af luft med afkølet vand/glycol Cooling of air with chilled water/glycol
SW	Overhedet vand Superheated Water	Varmeflade Heating coil	→	Opvarmning af luft med overhedet vand Heating of air with superheated water
ST	Damp Steam	Varmeflade Heating coil	→	Opvarmning af luft med damp Heating of air with steam
DX	Direkte ekspansion Direct expansion	Køleflade Cooling coil	→	Køling af luft med HFC kølemiddel Cooling of air with HFC refrigerant
CD	Kondensator Condenser	Varmeflade Heating coil	→	Opvarmning af luft med HFC kølemiddel Heating of air with HFC refrigerant

Coil positioner/Coil Positions

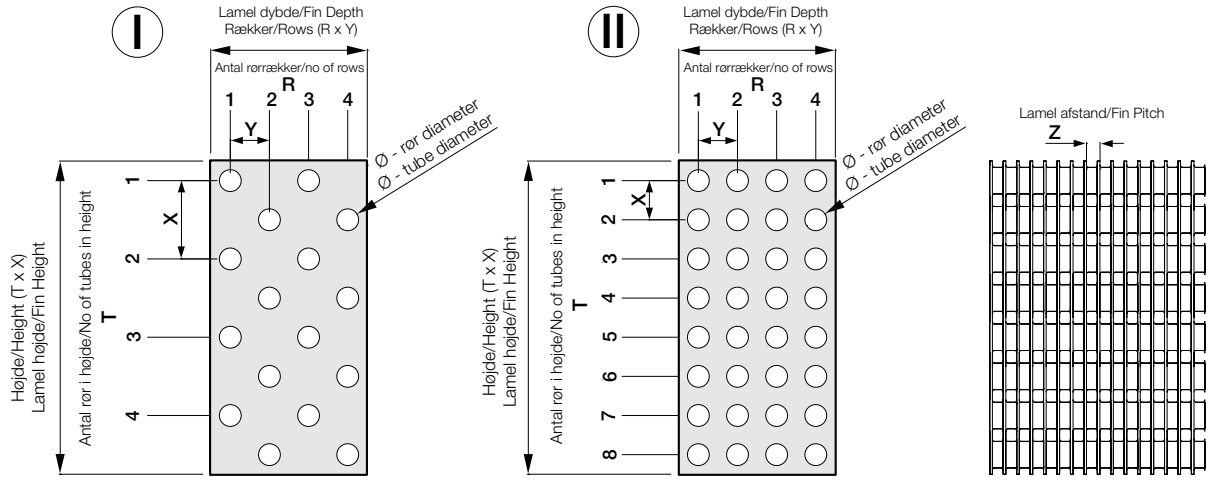


Materialevalg/Material Options

Rør/Tubes		Lameller/Fins		Ramme/Casework	
Al	Aluminium Aluminium	**Al**	Aluminium Aluminium	**FeZn**	Galvaniseret Galvanized
Cu	Kobber Copper	**AlMg3**	Aluminium Magnesium – søvandsbestandig Aluminium Magnesium – seawater resistant	**Al**	Aluminium Aluminium
CuSn	Kobber fortinnet Copper Tinned	**Alup**	Aluminium epoxy overfladebehandlet Aluminium Prepainted (epoxy)	**AISI316**	Rustfri stål Stainless Steel
CuNi	Kobbernikkel Cupro Nickel	**Cu**	Kobber Copper	**AISI304**	Rustfri stål Stainless Steel
AISI316	Rustfri stål Stainless Steel	**CuSn**	Kobber fortinnet Copper Tinned	**Cu**	Kobber Copper
AISI304	Rustfri stål Stainless Steel	**AISI316**	Rustfri stål Stainless Steel		
		AISI304	Rustfri stål Stainless Steel		

Geometriske data / Geometry Data

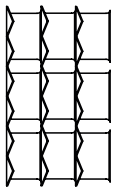
Forsat rør geometri / Staggered tube geometry **In-line tube geometry / Parallel rør geometri**



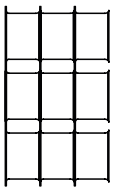
Lamel form / Fin shape

Sinusformet overflade/sinusoidal surface

Glat overflade/flat surface



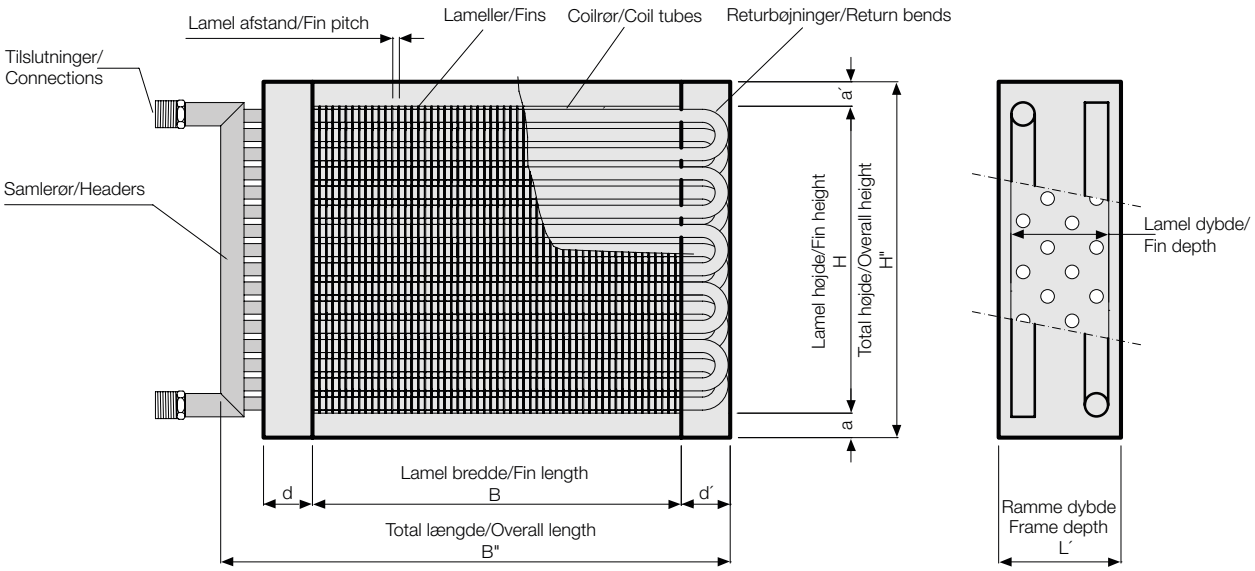
Rillet kant/rippled edge



Lige kant/straight edge

Geometri **Geometry**	**X** mm	**Y** mm	**ø** mm	**Z** mm	Rør Konfiguration Tube Pattern
TP	60.0	30.0	15.5	1.6 - 4.7	**I**
TR	60.0	30.0	15.5	1.6 - 4.7	**I**
TS	30.0	30.0	15.5	1.6 - 4.7	**II**
TF	60.0	30.0	15.5	6.0 - 15.0	**I**
T42*	42.4	36.7	15,5		**I**
SP	25.0	21.6	9.50	1.5 - 4.0	**I**
ES	33.3	28.8	12.0	1.6 - 4.7	**I**
ET	30.0	26.0	12.0	1.6 - 4.7	**I**

*Geometri med glatte rør – ingen finner / Geometry with bare tubes – no fins



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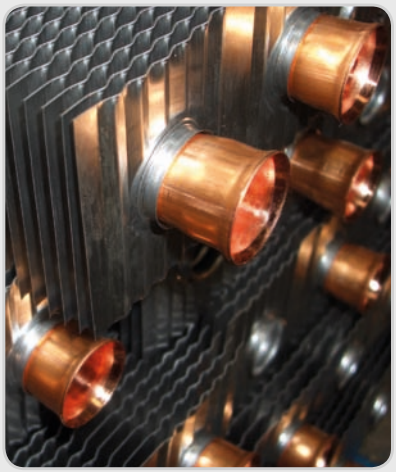





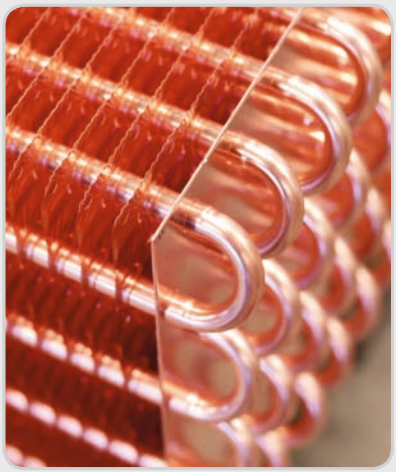
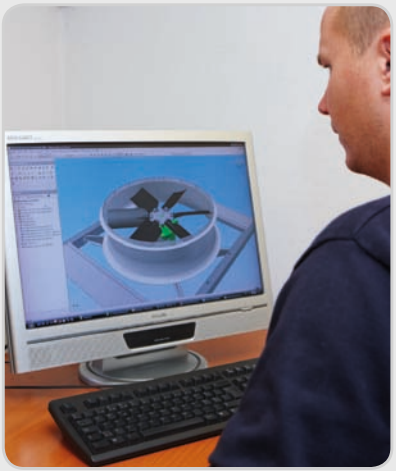
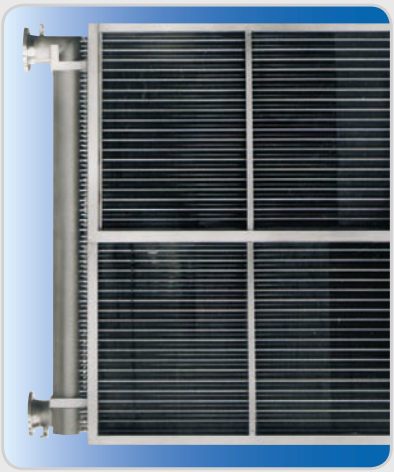

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