

# PRODUCTS



ONDA is a leading company in Heat Exchangers, partner of all main Chiller manufacturers.

ONDA produces a complete range of Shell & Tube, Brazed Plate, Plate and Frame Heat Exchangers suitable for Air Conditioning, Refrigeration or Industrial applications.

Our evaporators and condensers are available in different base materials and well adapted to different refrigerants (R134a, R1234ze, R410...) from 3 to 1500 Tons (5000 kW). The high quality levels of Onda's products are guaranteed by ISO 9001 certification since 1995. Onda heat exchangers are manufactured under the major International standards and directives for pressure vessels (PED, ASME, GOST, CRN, AS1210). Upon customer request, Onda heat exchangers can be qualified by the major IACS members (RINA, GL, DNV, BV, LRS etc).



## ADVANCED HEAT EXCHANGERS

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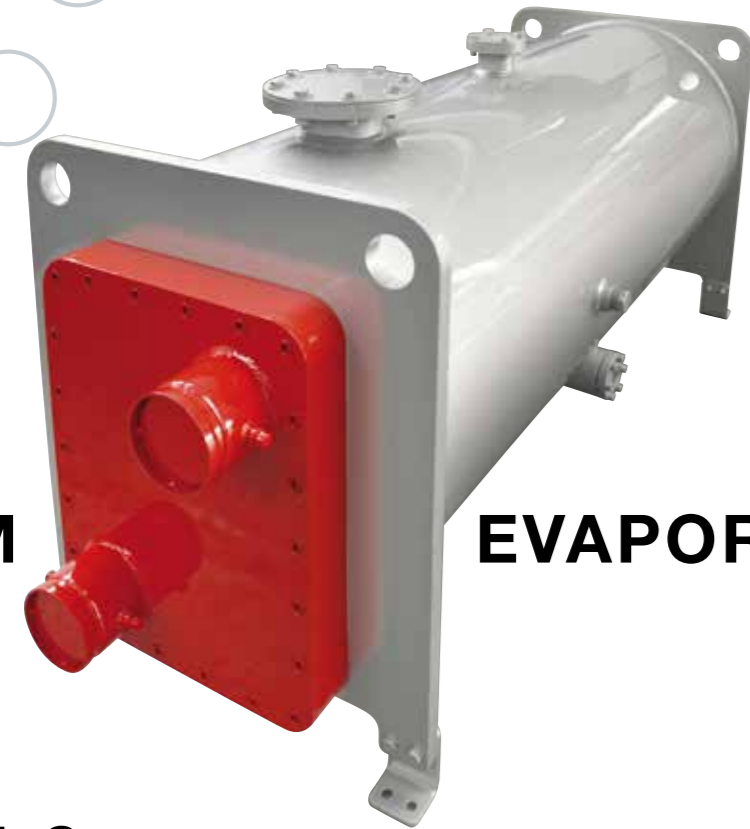
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### ONDA IS A LEADER IN HEAT EXCHANGERS

4 FACILITIES WORLDWIDE  
FEATURE AN AVANT-GARDE  
WORKSHOP WHERE THERMAL  
OUTPUT TESTS ARE  
PERFORMED IN COLLABORATION  
WITH RESEARCH  
CENTRES AND UNIVERSITIES.

Quality certification ISO 9001



# HYBRID FILM EVAPORATOR

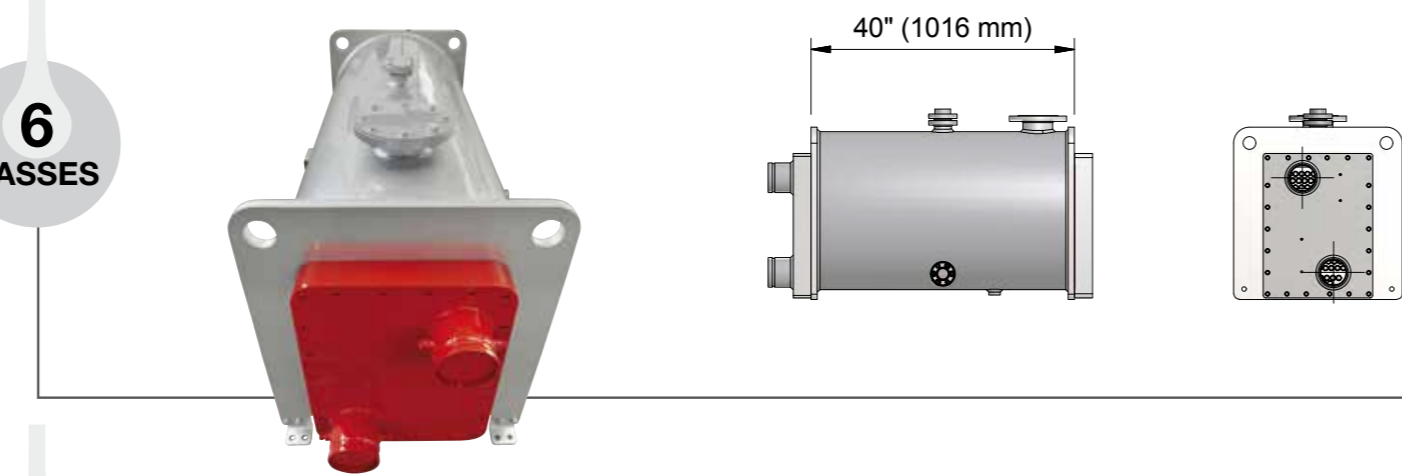
## BENEFITS

**PATENT PENDING**

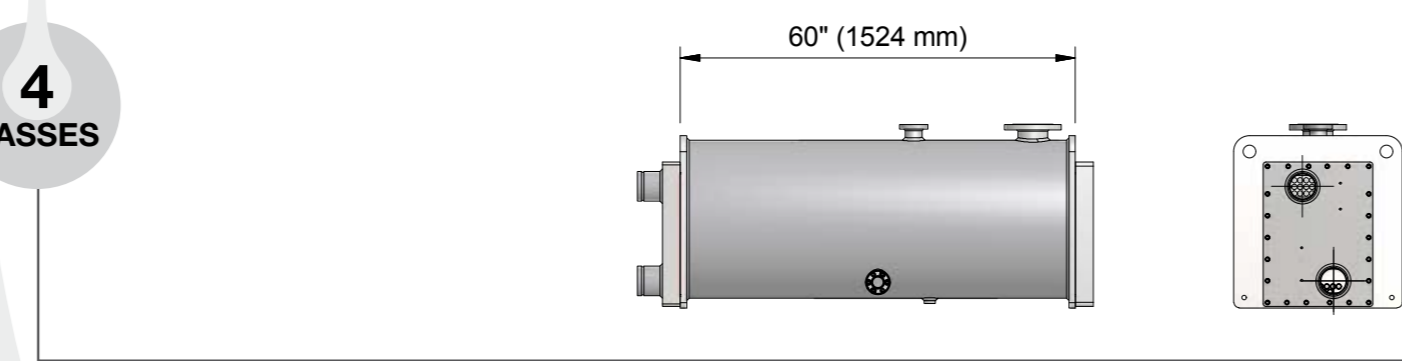
Onda has recently developed a new innovative evaporator to respond to an increasing efficiency market demand and a reduced refrigerant charge to balance the continuous refrigerants cost and taxes increase. The "Hybrid Film" evaporator combines the benefits of the pool boiling reliable performance and the falling film evaporator low refrigerant charge. The concept of this innovative heat exchanger has been developed by R&D and validated in Onda's laboratory with turbo (no oil) and screw compressor (with oil). The core design belongs to Onda's IPR and it is patent pending. The Hybrid Film evaporator new distribution system allows to keep control of the refrigerant liquid around the tubes in all the different working conditions, at full load and at part load as well. The amount of refrigerant liquid surroundings the tube is also optimized and reduced.

## RANGE

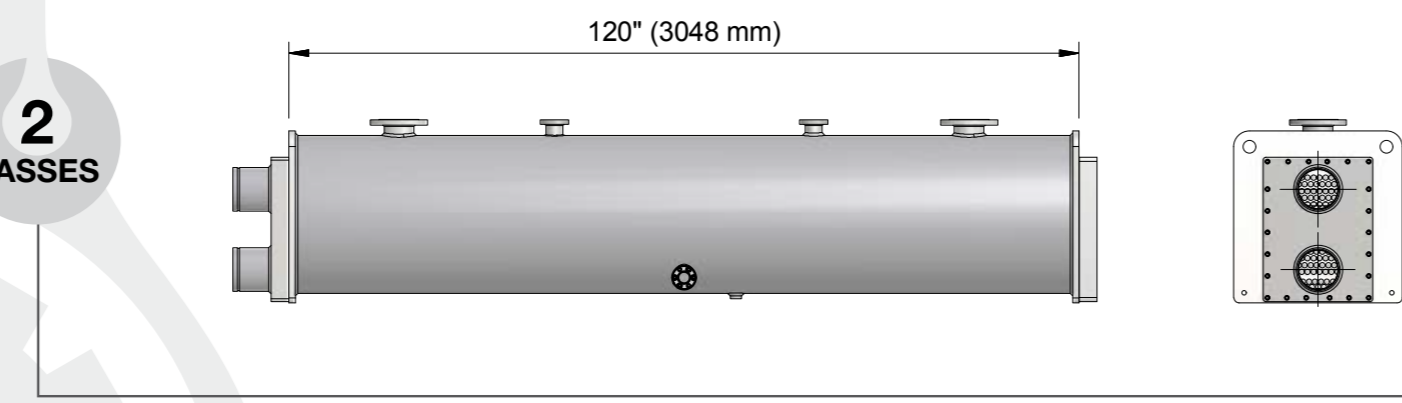
6 PASSES



4 PASSES



2 PASSES

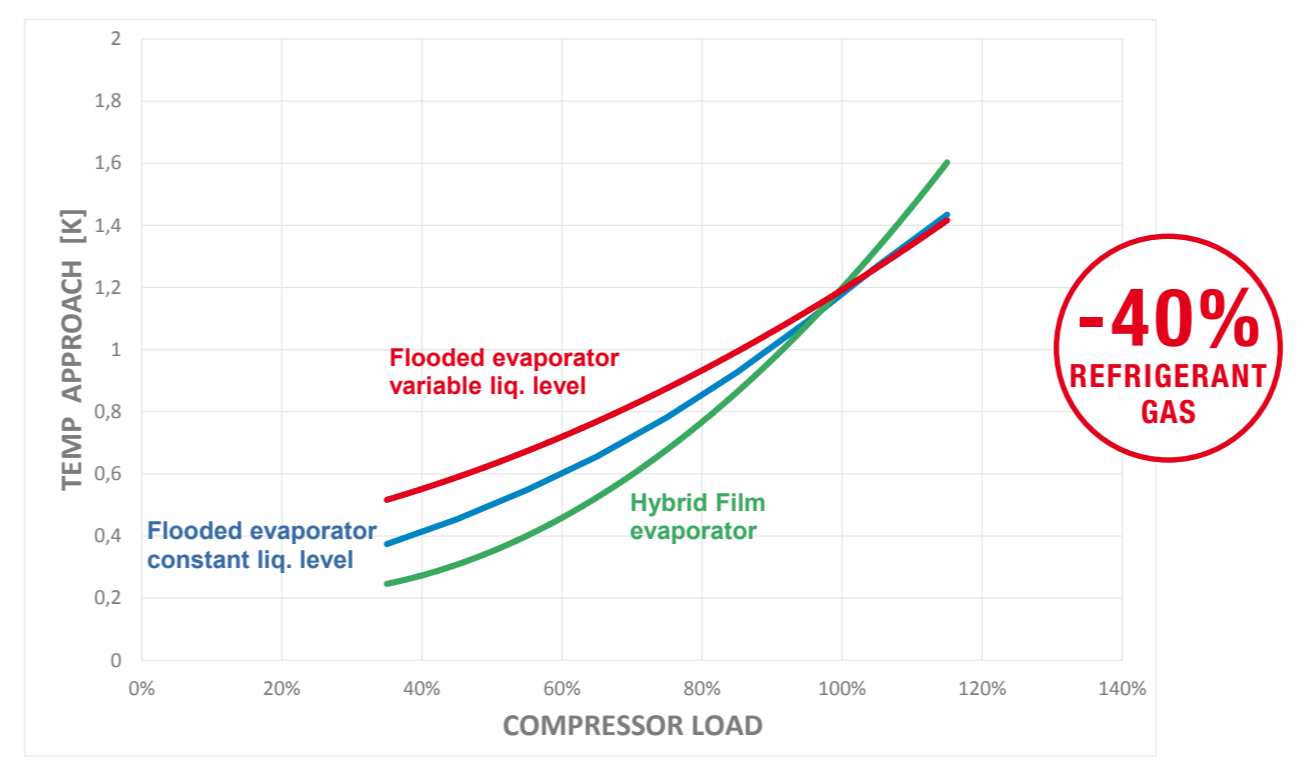


### Power Tons (kW)

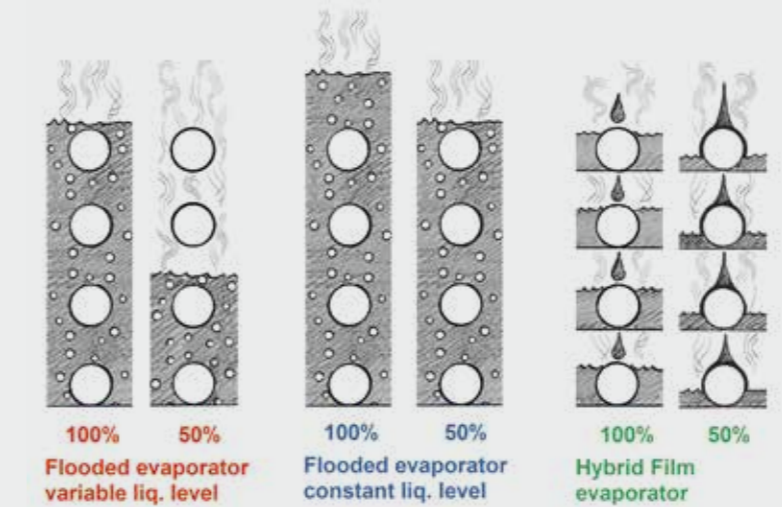
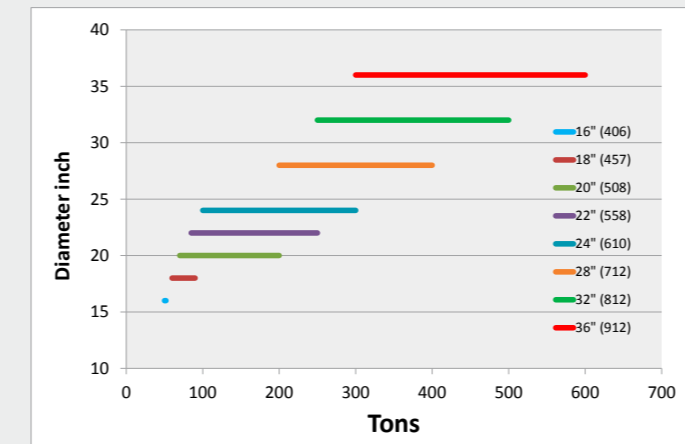
Length in (mm)	N° Passes	16" (406)	18" (457)	20" (508)	22" (558)	24" (610)	28" (712)	32" (812)	36" (912)
40" (1016)	6	50 (175)	60 (210)	70 (245)	85 (298)	100 (351)	\	\	\
60" (1524)	4	\	90 (315)	100 (351)	125 (438)	150 (526)	200 (700)	250 (1150)	300 (1053)
120" (3048)	2	\	\	200 (702)	250 (877)	300 (1053)	400 (1404)	500 (1755)	600 (2100)

## APPROACH

In the enclosed chart is exhibited a test benchmark with R134a, the two evaporators employ the same number of tubes and same tubes length.



Part load: when moving < 80% of the load the hybrid film is performing better with a reduced temperature approach with a positive impact on the chiller IPLV. Similar performance is also expected with HFO R1234ze. Refrigerant charge reduction : the charge saving vs flooded is in a range of 35 – 40%.



## SOFTWARE

available from web site

