CLEAN-IN-PLACE HEAT EXCHANGERS

HRS K-CIP SERIES

The HRS K-CIP Series is a multitube heat exchanger designed for the heating of cleaning-in-place (CIP) fluids.

The K-CIP Series is specifically designed for heating cleaning-in-place (CIP) fluids. Using HRS corrugation technology, heat transfer and efficiency are increased over standard smooth tube heat exchangers. This allows for a short, compact design and minimises fouling.

An expansion bellows is fitted to absorb the differential expansion between the shell and the inner tubes, and multiple units can be interconnected for larger applications. The K-CIP is a fully welded unit for longevity and low OPEX (no gaskets). Options include frame mounting, insulation and stainless steel cladding.

TECHNICAL DATA

APPLICATION:

CIP (Steam) Heating.

FEATURES:

Short, compact design.
Corrugated inner tubes for increased heat transfer.
Bellows are fitted to absorb differential expansion between shell and inner tubes.

MATERIALS OF CONSTRUCTION:

Shell (Steam) Side: AISI 304 stainless steel
Tube (CIP) Side: AISI 316L stainless steel

SURFACE FINISH:

External: Matt
Internal: Descaled

STANDARD DESIGN CONDITIONS:

Shell (Steam) Side: -1/8 barg, 0/175 °C
Tube (CIP) Side: -1/8 barg, 0/175 °C

STANDARD CONNECTIONS:

Shell (Steam) Side: Flange
Tube (CIP) Side: Tubeplate Flange

RANGE

MODELS	SHELL OD (mm)	LENGTH (m)	HEAT TRANSFER AREA (m^2)	SHELL SIDE CONNECTION	TUBE SIDE CONNECTION
K-CIP-1	76	2	0,8	DN50 / 3”	DN40 / 2”
K-CIP-2	104	2	1,4	DN80 / 3”	DN65 / 2,5”
K-CIP-3	129	2	2,1	DN100 / 4”	DN80 / 3”
K-CIP-4	154	2	3,4	DN125 / 5”	DN100 / 4”
K-CIP-5	168	2	4,1	DN150 / 6”	DN100 / 4”

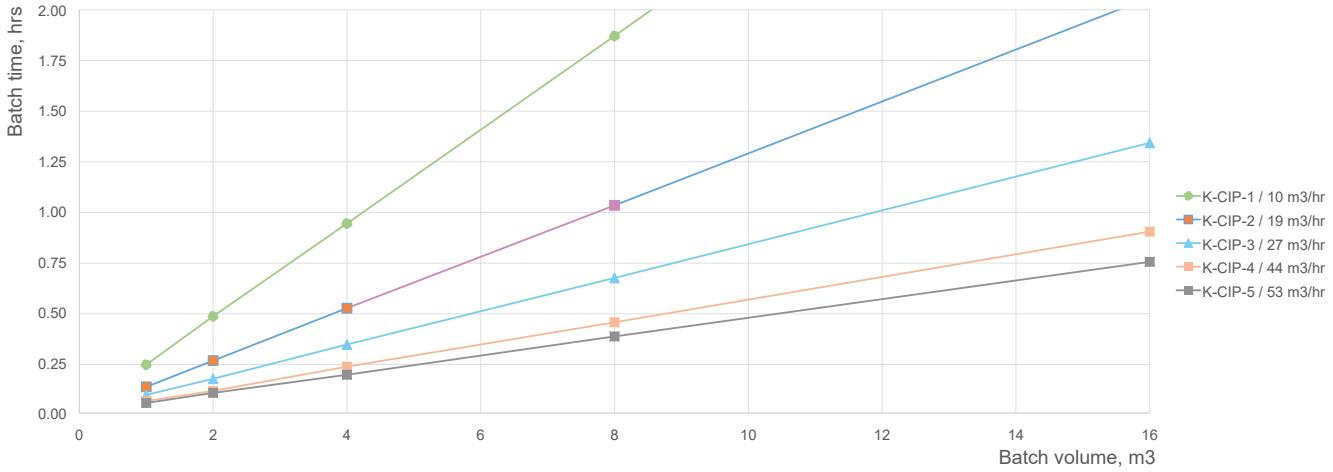
MECHANICAL DESIGN CODES

PD5500, EN13445, ASME

CLEAN-IN-PLACE HEAT EXCHANGERS

HRS K-CIP SERIES

BATCH HEATING SELECTION GRAPH



Graph showing batch heating times for K-CIP models. Batch recirculation flow rate indicated for each model.

- Heating trajectory: 20 to 75 °C.
- 3 barg saturated steam is considered on service side.

DIRECT HEATING SELECTION TABLES

ΔT = 20 °C	FLOW RATES, M^3/hr K-CIP-1	FLOW RATES, M^3/hr K-CIP-2	FLOW RATES, M^3/hr K-CIP-3	FLOW RATES, M^3/hr K-CIP-4	FLOW RATES, M^3/hr K-CIP-5
50-70°C	0-12	12-21	21-31	31-49	49-58
60-80 °C	0-10	10-19	19-28	28-44	44-52
70-90 °C	0-9	9-17	17-24	24-39	39-46

ΔT = 30 °C	FLOW RATES, M^3/hr K-CIP-1	FLOW RATES, M^3/hr K-CIP-2	FLOW RATES, M^3/hr K-CIP-3	FLOW RATES, M^3/hr K-CIP-4	FLOW RATES, M^3/hr K-CIP-5
40-70°C	0-8	8-14	14-20	20-32	32-38
50-80 °C	0-7	7-12	12-18	18-29	29-34
60-90 °C	0-6	6-11	11-16	16-25	25-30

Tables with flowrates capacities for direct heating for each K-CIP model, different temperature trajectories.
Table values are shown in graph format on the next page.

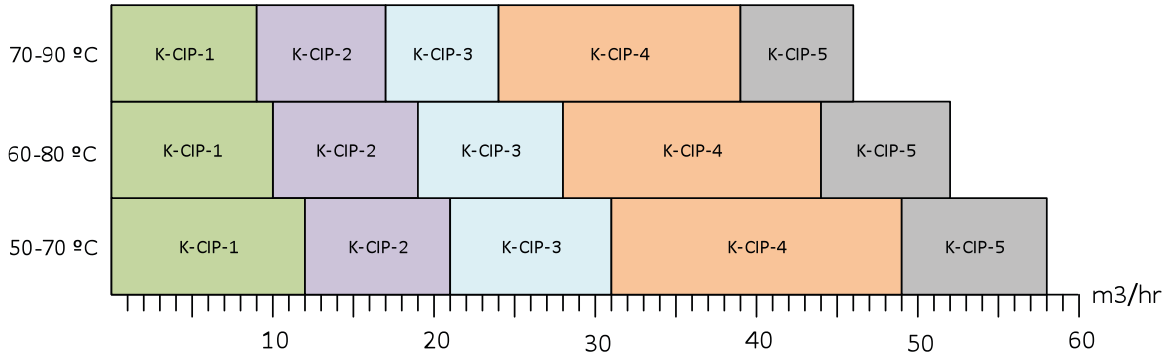
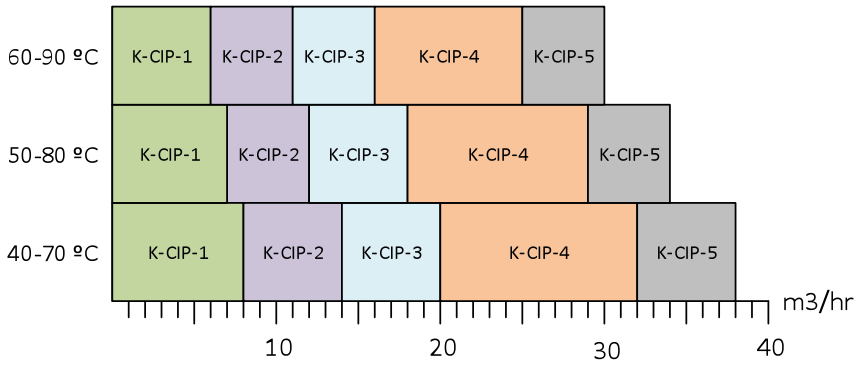
- 0-12 means applicable flow rate range is 0 to 12 m^3/hr.
- 50-70 °C means inlet temperature is 50 °C and outlet temperature is 70 °C.
- 3 barg saturated steam is considered on service side.

HRS HEAT EXCHANGERS hrs-heatexchangers.com **Malaysian Office** +603 8081 1898 info@my.hrs-he.com

CLEAN-IN-PLACE HEAT EXCHANGERS

HRS K-CIP SERIES

Temperature difference ΔT = 20 °C



Temperature difference ΔT = 30 °C