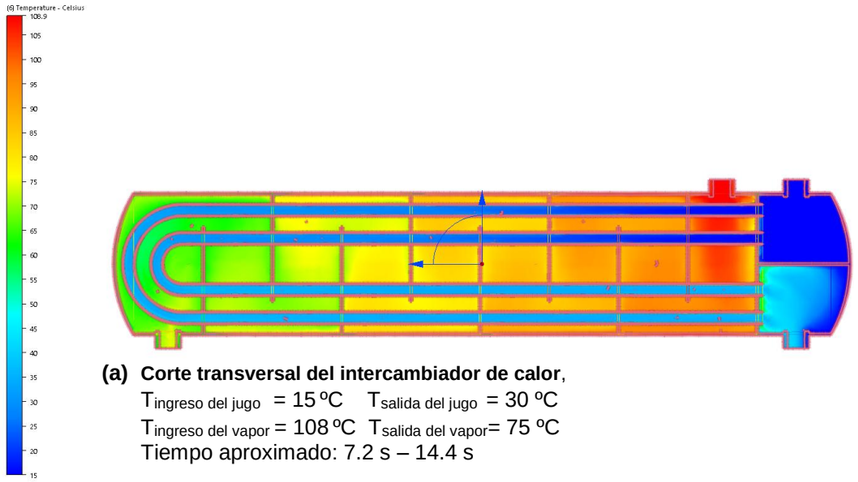
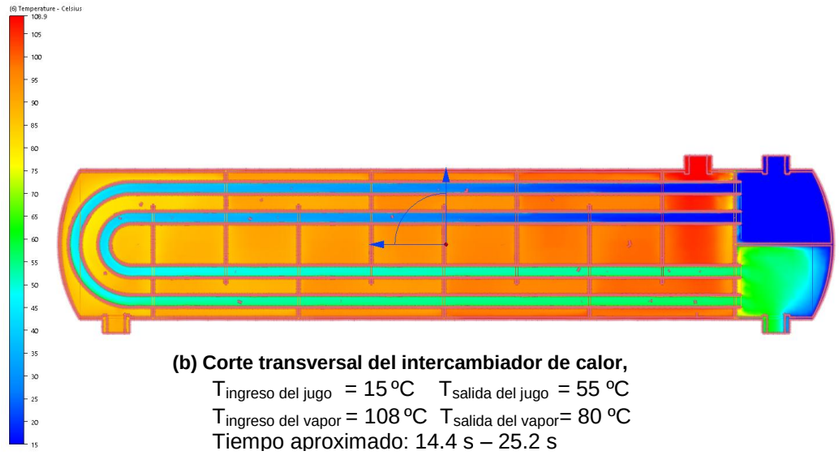
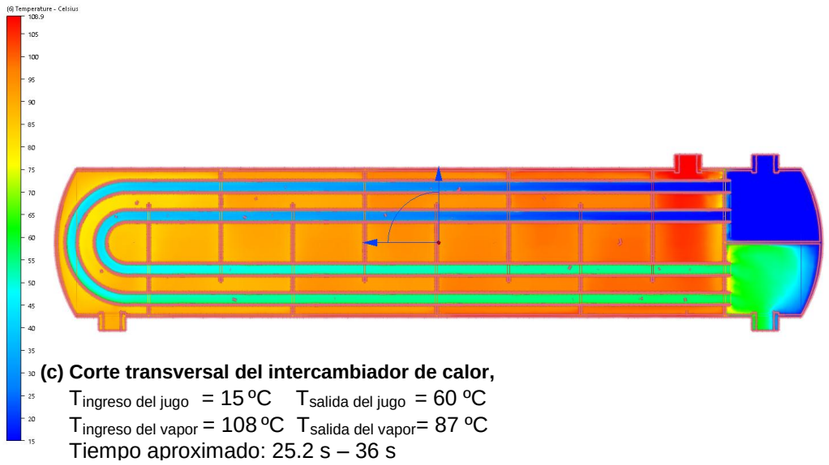


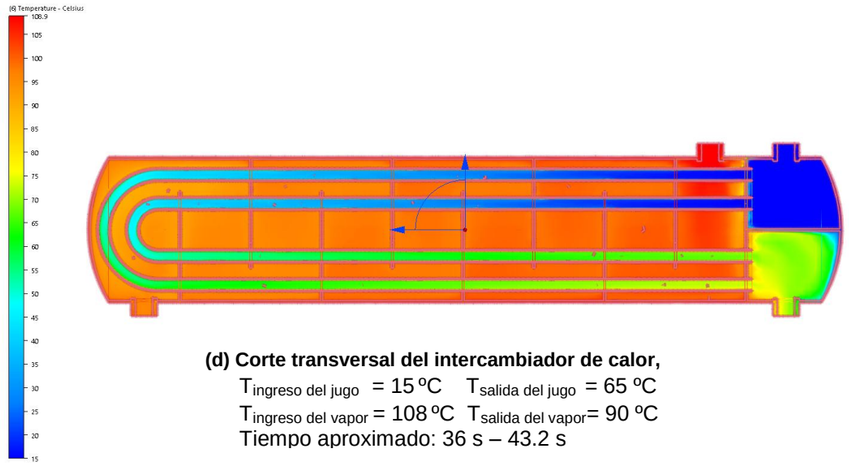

**(a) Corte transversal del intercambiador de calor**,
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 30 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 75 ºC
Tiempo aproximado: 7.2 s – 14.4 s



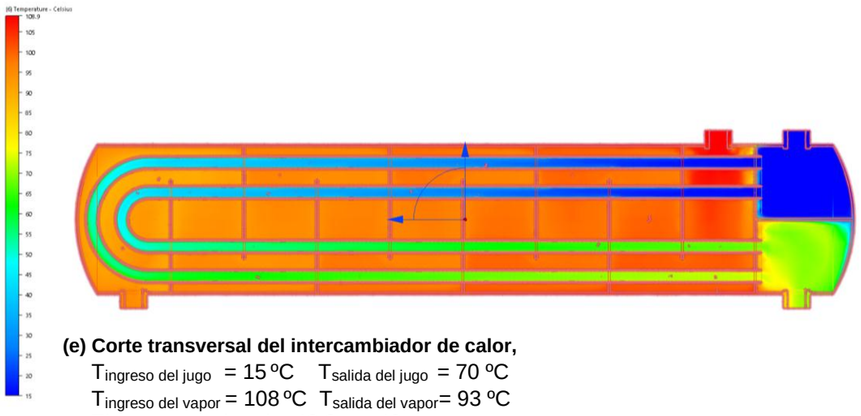

**(b) Corte transversal del intercambiador de calor,**
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 55 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 80 ºC
Tiempo aproximado: 14.4 s – 25.2 s



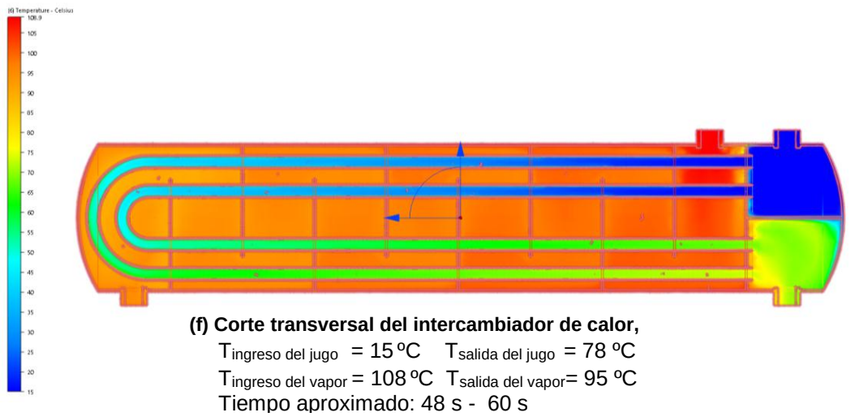

**(c) Corte transversal del intercambiador de calor,**
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 60 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 87 ºC
Tiempo aproximado: 25.2 s – 36 s




**(d) Corte transversal del intercambiador de calor,**
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 65 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 90 ºC
Tiempo aproximado: 36 s – 43.2 s




**(e) Corte transversal del intercambiador de calor,**
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 70 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 93 ºC
Tiempo aproximado: 43.2 s – 48 s




**(f) Corte transversal del intercambiador de calor,**
$T_{ingreso\ del\ jugo}$ = 15 ºC $T_{salida\ del\ jugo}$ = 78 ºC
$T_{ingreso\ del\ vapor}$ = 108 ºC $T_{salida\ del\ vapor}$= 95 ºC
Tiempo aproximado: 48 s - 60 s

**Figura 37:** Avance térmico aproximado de los fluidos dentro del intercambiador de calor de tubos y carcasa 1-2 (Fuente: propia).