Modeling and Optimization of solar energy and industrial waste heat integration into a heat distribution network for an industrial zone by TRANSYS-MATLAB linked method

D. Buoro, a optimization of a distributed energy supply system for an industrial area, Energy 58 (2013) 128 -137

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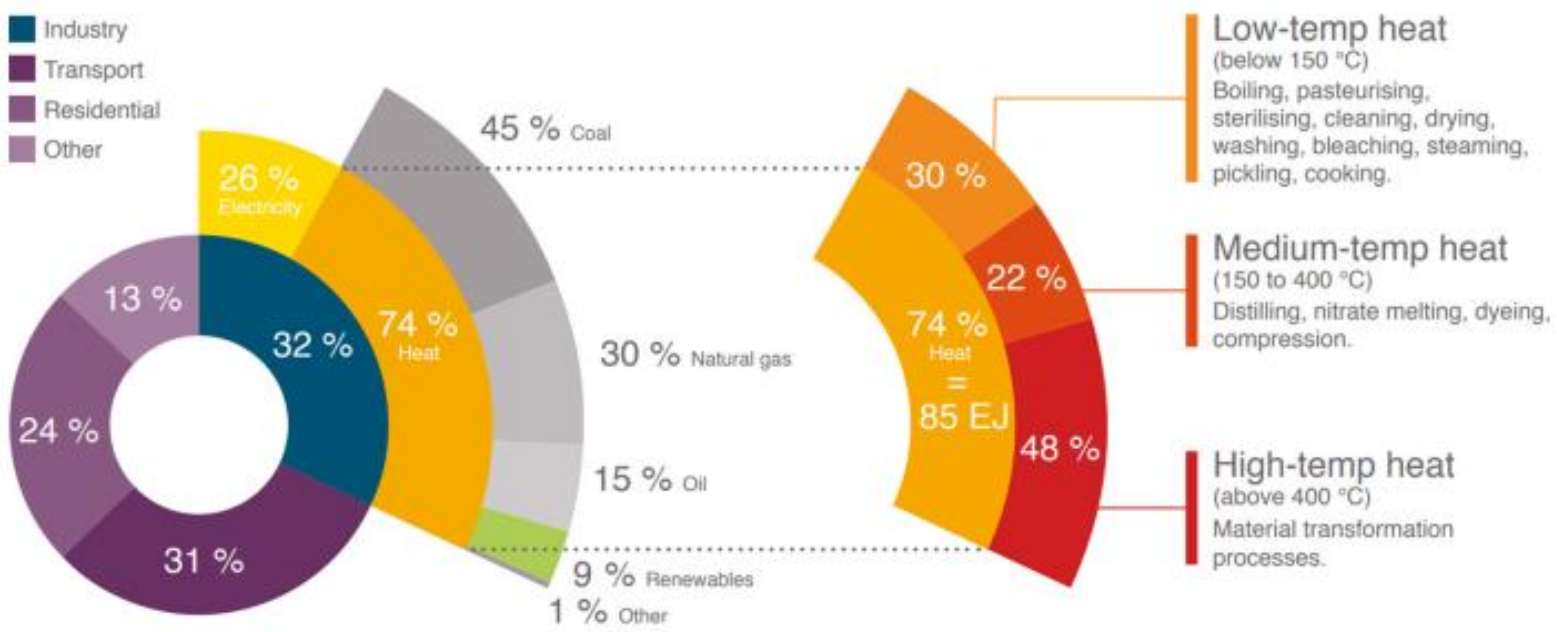
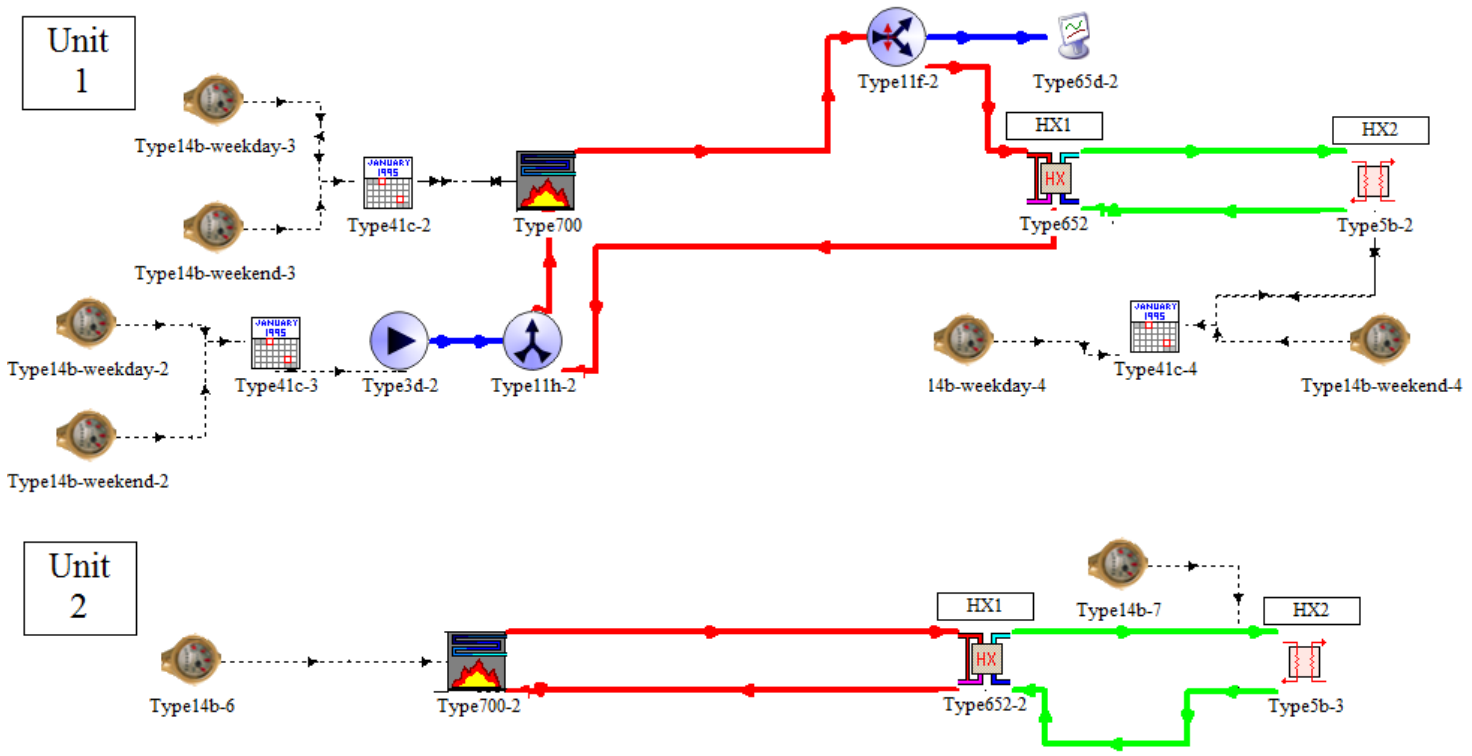
Industrial Solar Process Heat Potential

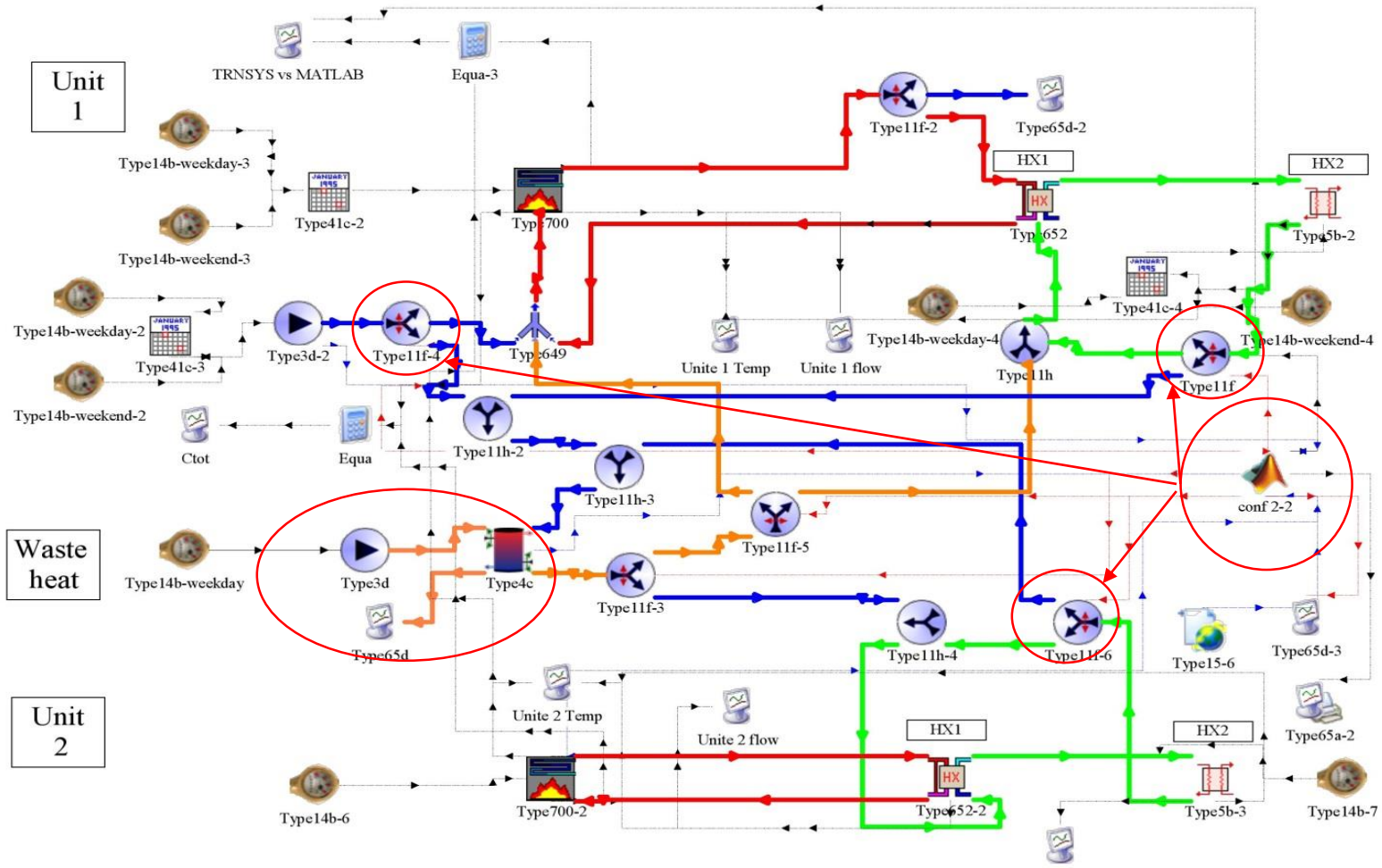


Total final energy consumption in 2014

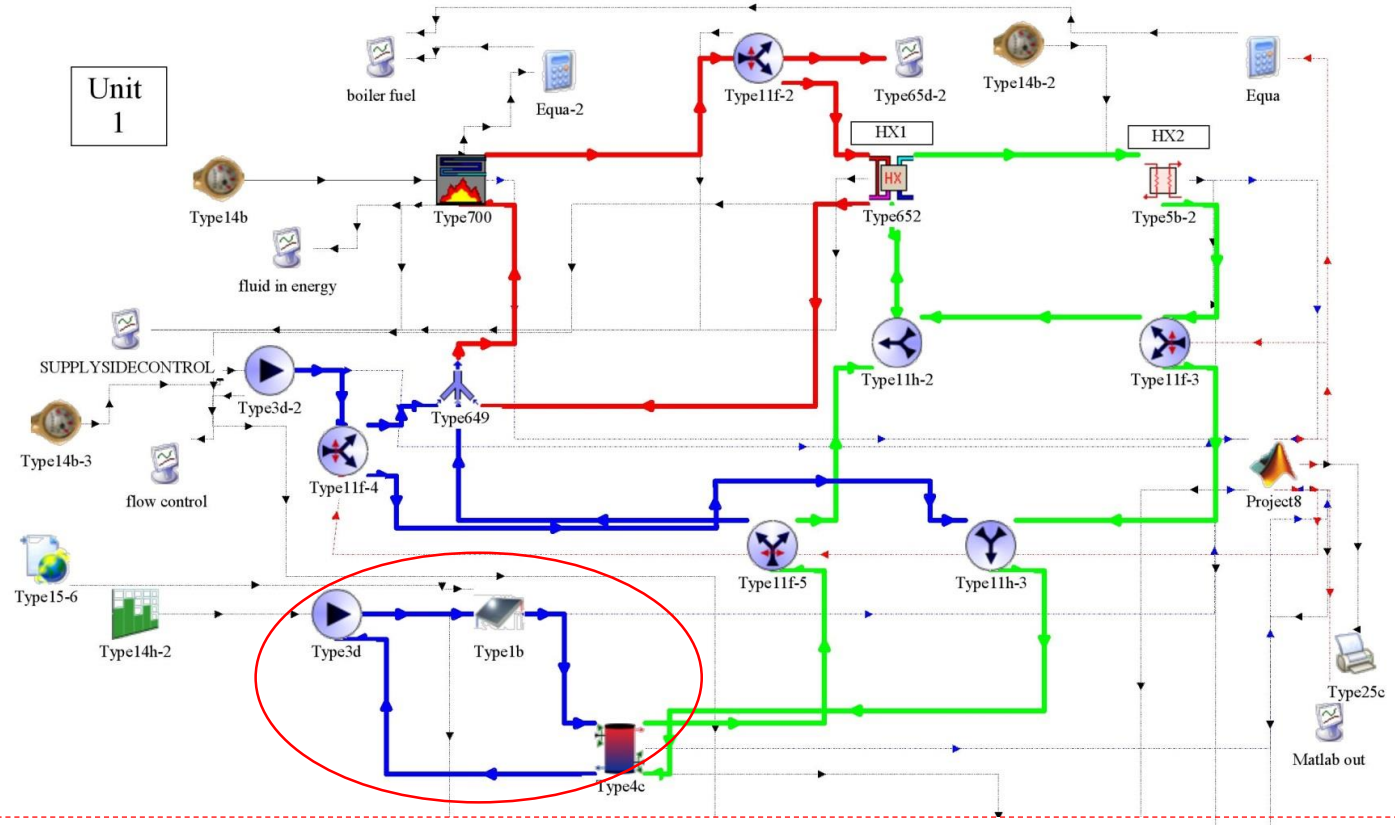
Configuration 1 (Basic Configuration)

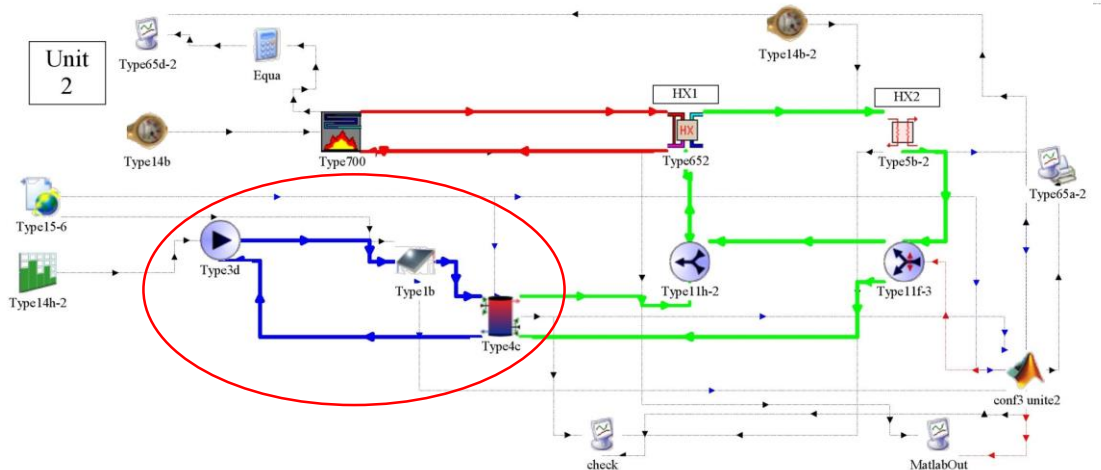


Configuration 2 (sharing Industrial waste energy)

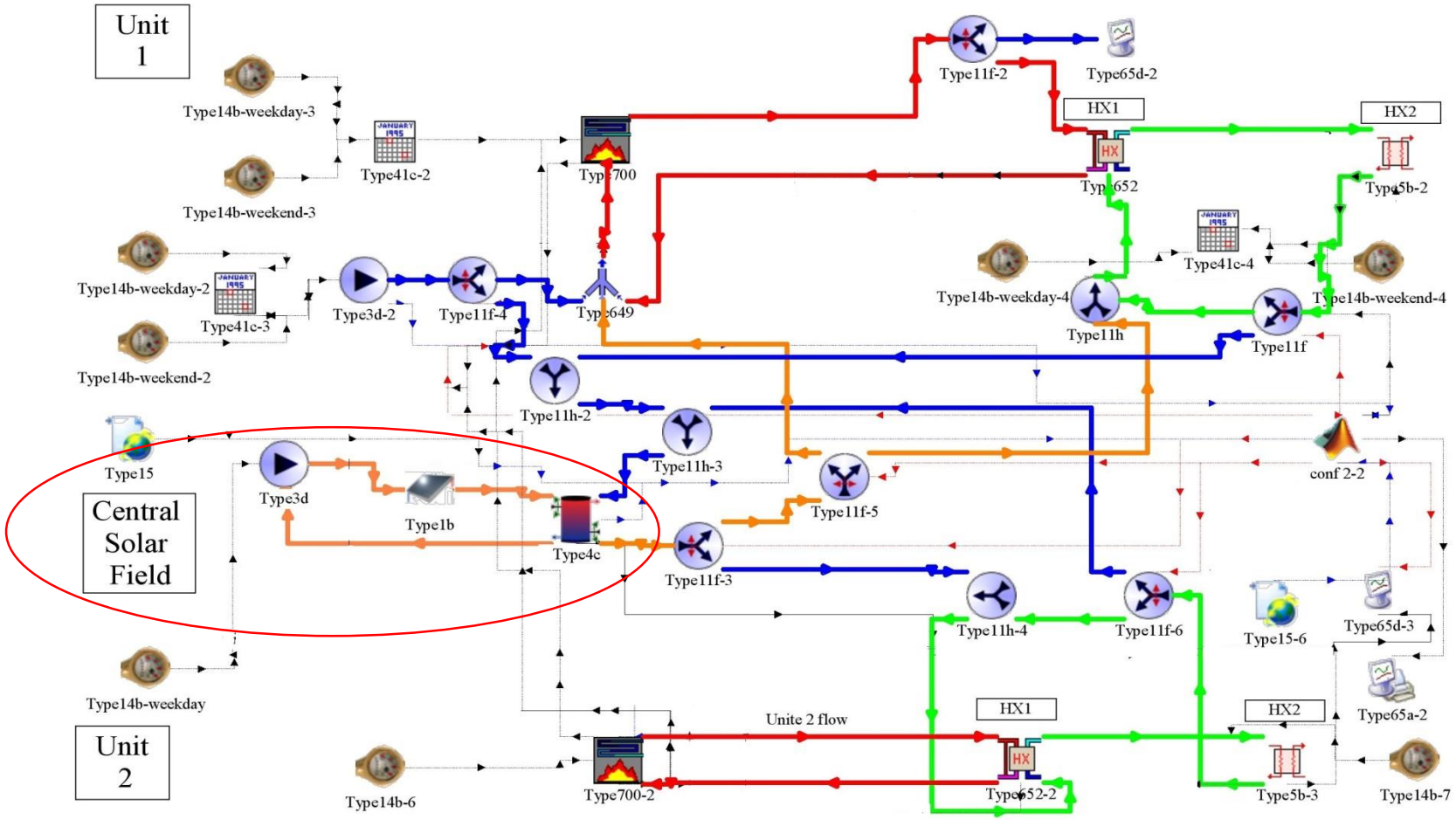


Configuration 3 (Units with separated solar energy)

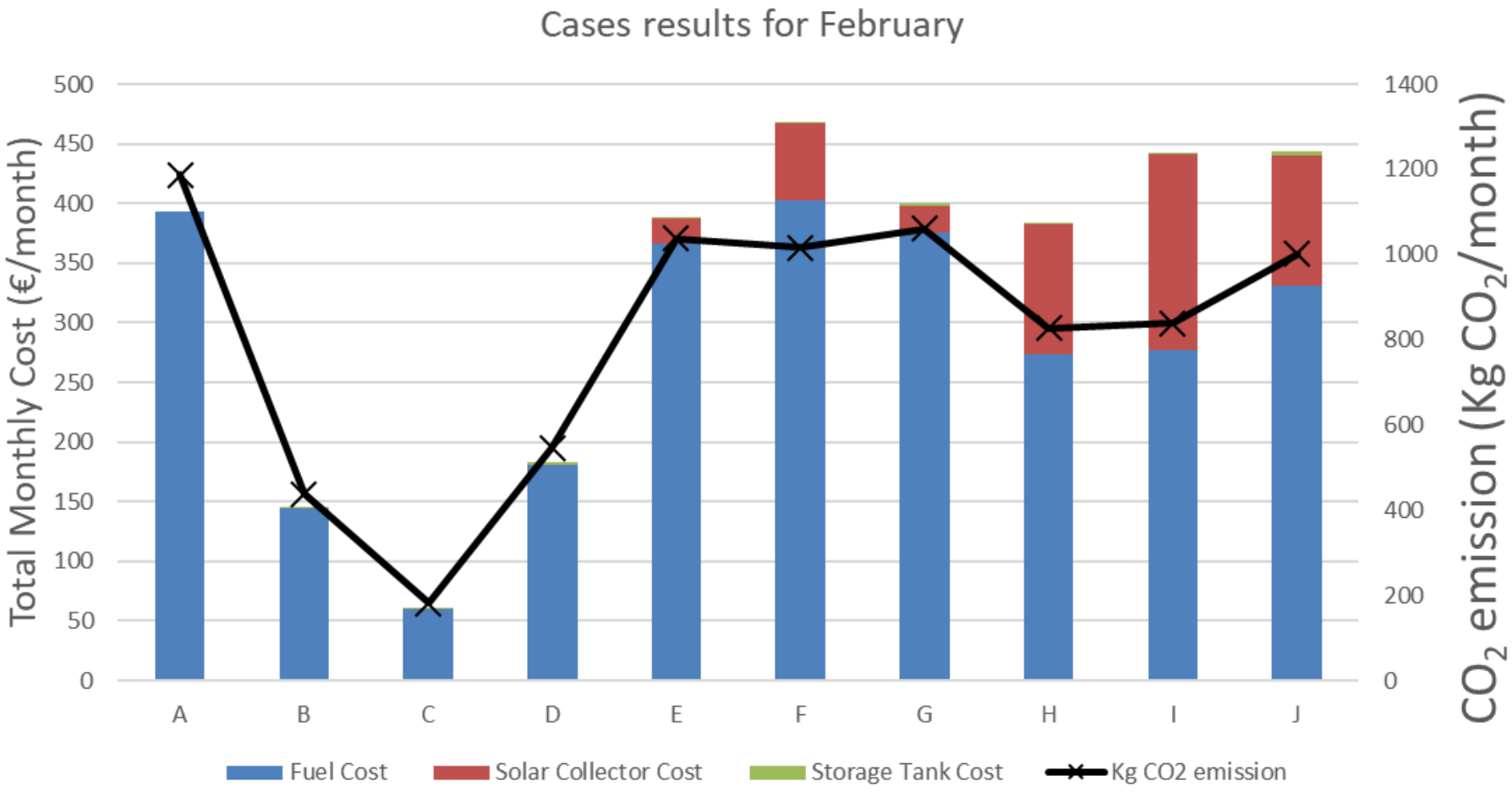




Configuration 4 (Units use Central solar energy)

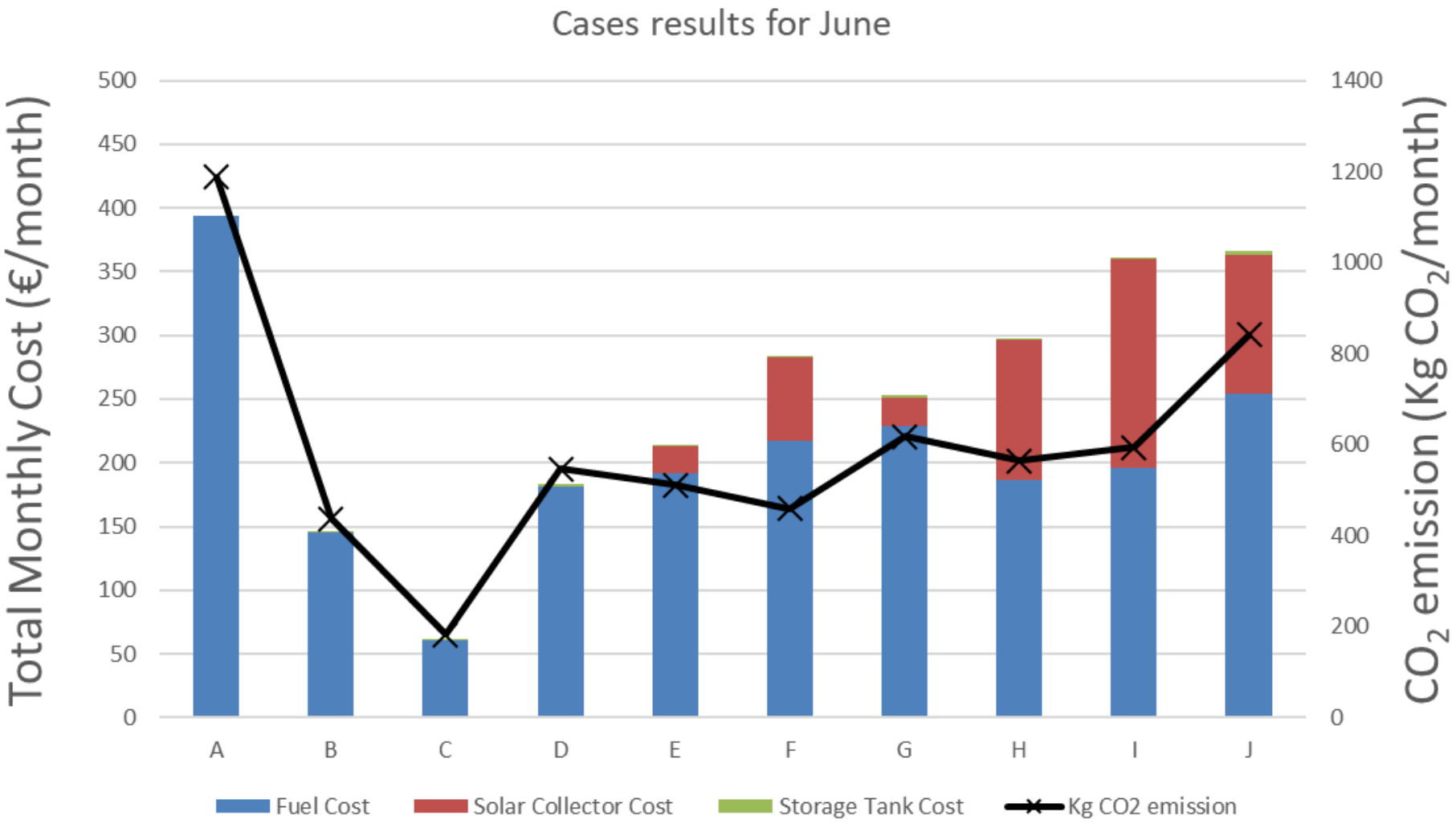


Results for February



Case	Configuration
A	Conf.1
B	Conf.2 ($Vs=1m^3$, $Tw=100\ °C$)
C	Conf.2 ($Vs=1m^3$, $Tw=120\ °C$)
D	Conf.2 ($Vs=5m^3$, $Tw=100\ °C$)
E	Conf.3 ($Vs=1m^3$, $As=20\ m^2$, $\dot{m}s=100$ kg/hr)
F	Conf.3 ($Vs=1m^3$, $As=60\ m^2$, $\dot{m}s=100$ kg/hr)
G	Conf.3 ($Vs=5m^3$, $As=20\ m^2$, $\dot{m}s=100$ kg/hr)
H	Conf.4 ($Vs=1m^3$, $As=100\ m^2$, $\dot{m}s=500$ kg/hr)
I	Conf.4 ($Vs=1m^3$, $As=150\ m^2$, $\dot{m}s=500$ kg/hr)
J	Conf.4 ($Vs=5m^3$, $As=100\ m^2$, $\dot{m}s=500$ kg/hr)

Results for June



Case	Configuration
A	Conf.1
B	Conf.2 ($Vs=1m^3$, $Tw=100\ °C$)
C	Conf.2 ($Vs=1m^3$, $Tw=120\ °C$)
D	Conf.2 ($Vs=5m^3$, $Tw=100\ °C$)
E	Conf.3 ($Vs=1m^3$, $As=20\ m^2$, $\dot{m}s=100$ kg/hr)
F	Conf.3 ($Vs=1m^3$, $As=60\ m^2$, $\dot{m}s=100$ kg/hr)
G	Conf.3 ($Vs=5m^3$, $As=20\ m^2$, $\dot{m}s=100$ kg/hr)
H	Conf.4 ($Vs=1m^3$, $As=100\ m^2$, $\dot{m}s=500$ kg/hr)
I	Conf.4 ($Vs=1m^3$, $As=150\ m^2$, $\dot{m}s=500$ kg/hr)
J	Conf.4 ($Vs=5m^3$, $As=100\ m^2$, $\dot{m}s=500$ kg/hr)