

Latest Results on Domestic Hot Water Storage

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INTRODUCTION

Thermal needs for Domestic Hot Water production

Domestic Hot Water



120 liters at 60°C

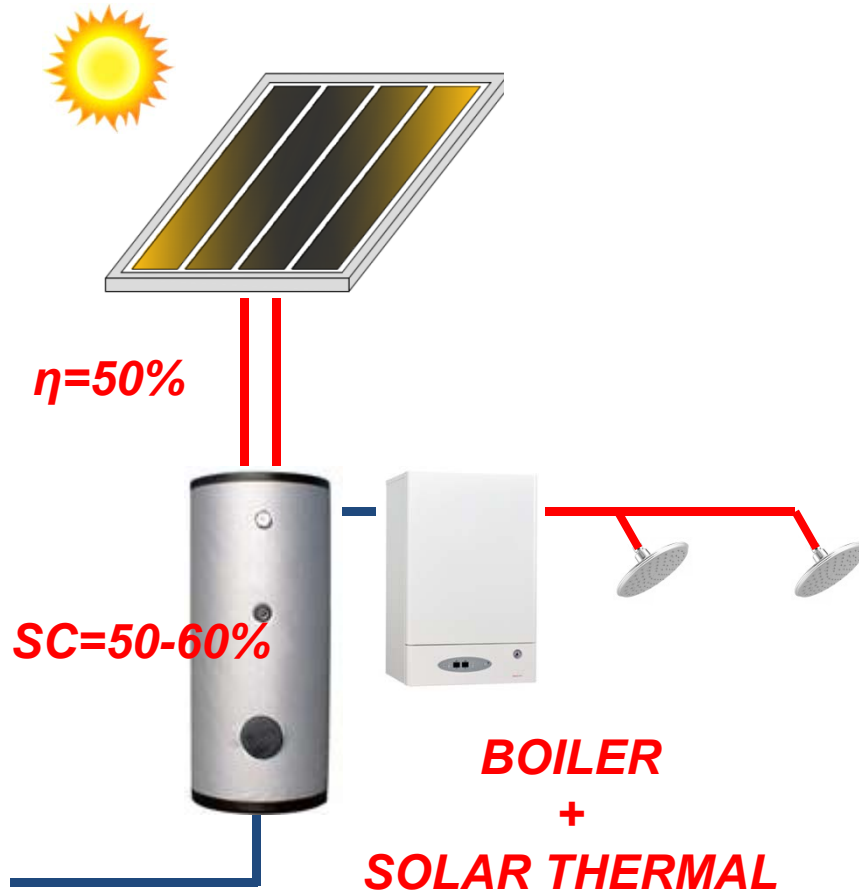
Demand =7 kWh/day

Demand =2500 kWh/year

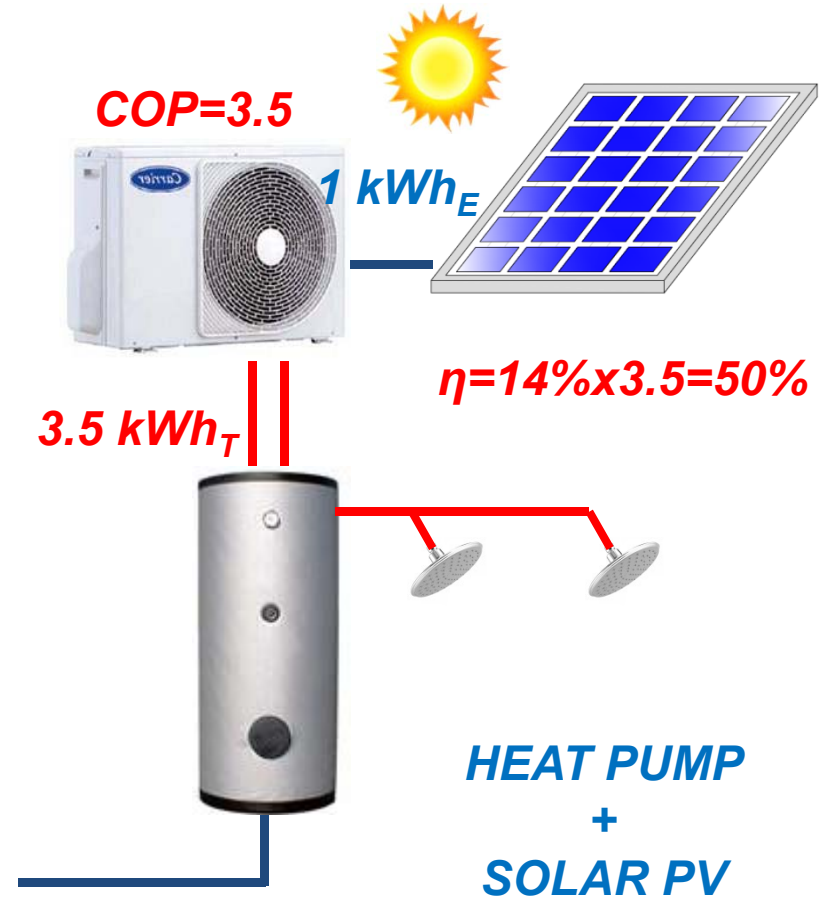
Demand =25 kWh/year/m²

INTRODUCTION

BOILER + SOLAR THERMAL vs. HEAT PUMP + PV



vs.



EXPERIMENTAL RESULTS ON HEAT PUMP + PV

Applied Thermal Engineering 101 (2016) 379–389

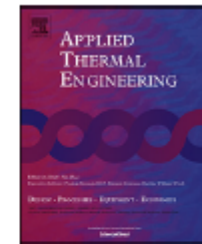


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journal homepage: www.elsevier.com/locate/apthermeng



Research Paper

Experimental study of the solar photovoltaic contribution for the domestic hot water production with heat pumps in dwellings

F.J. Aguilar ^{a,*}, S. Aledo ^b, P.V. Quiles ^a

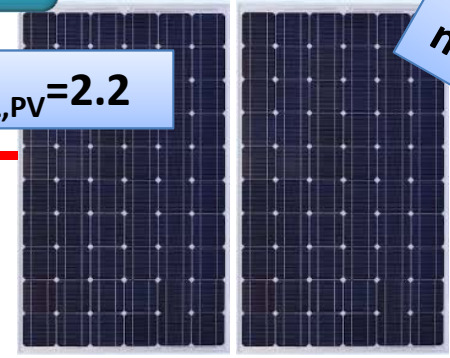
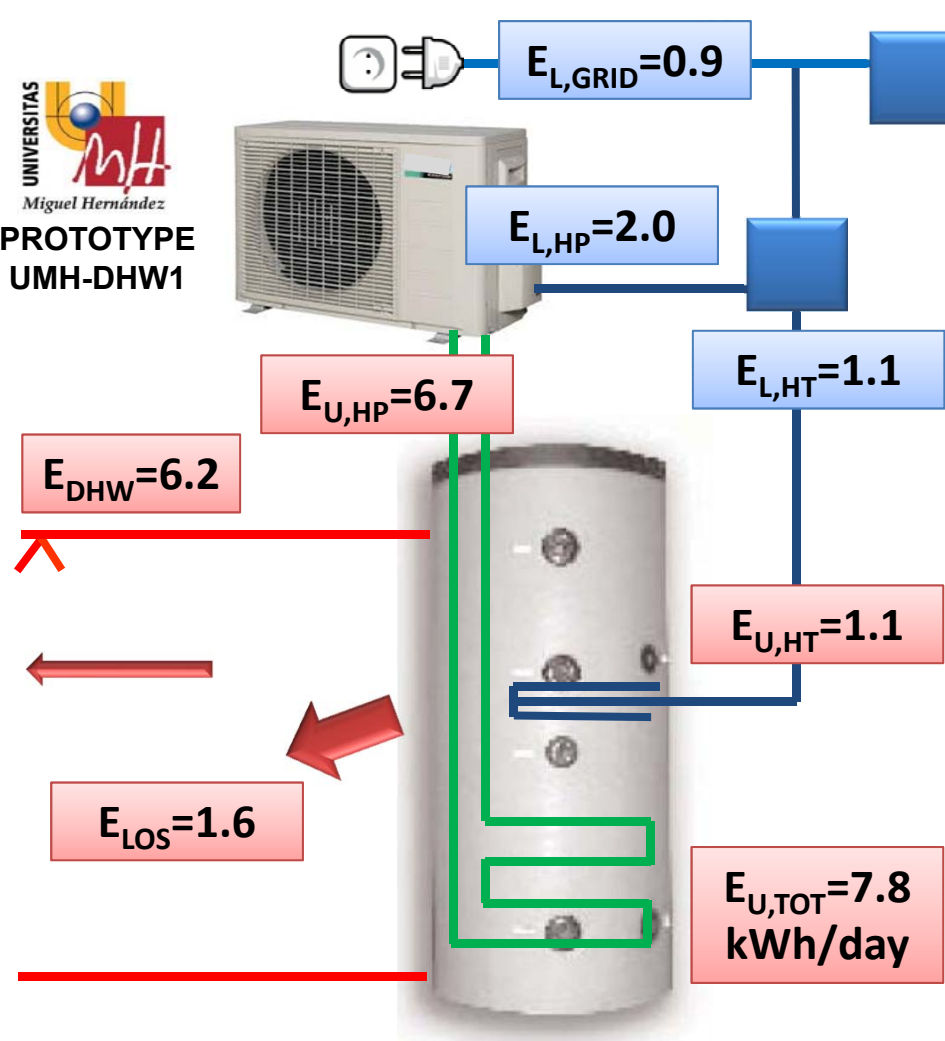
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^b S.L., Printer, C/ Nicolás de Bussi, 30, Elche 03320, Spain



EXPERIMENTAL RESULTS ON HEAT PUMP + PV

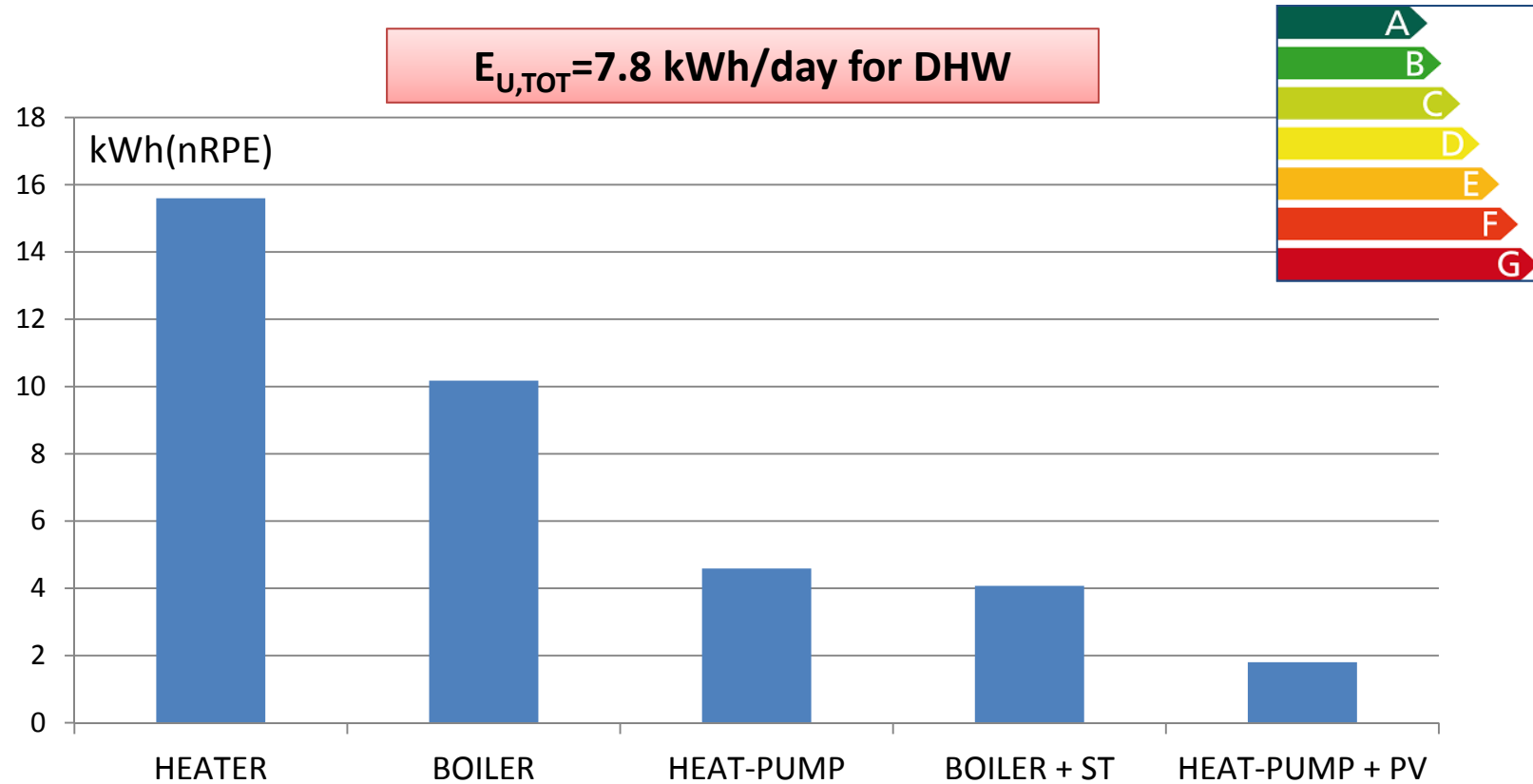

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 PROTOTYPE UMH-DHW1



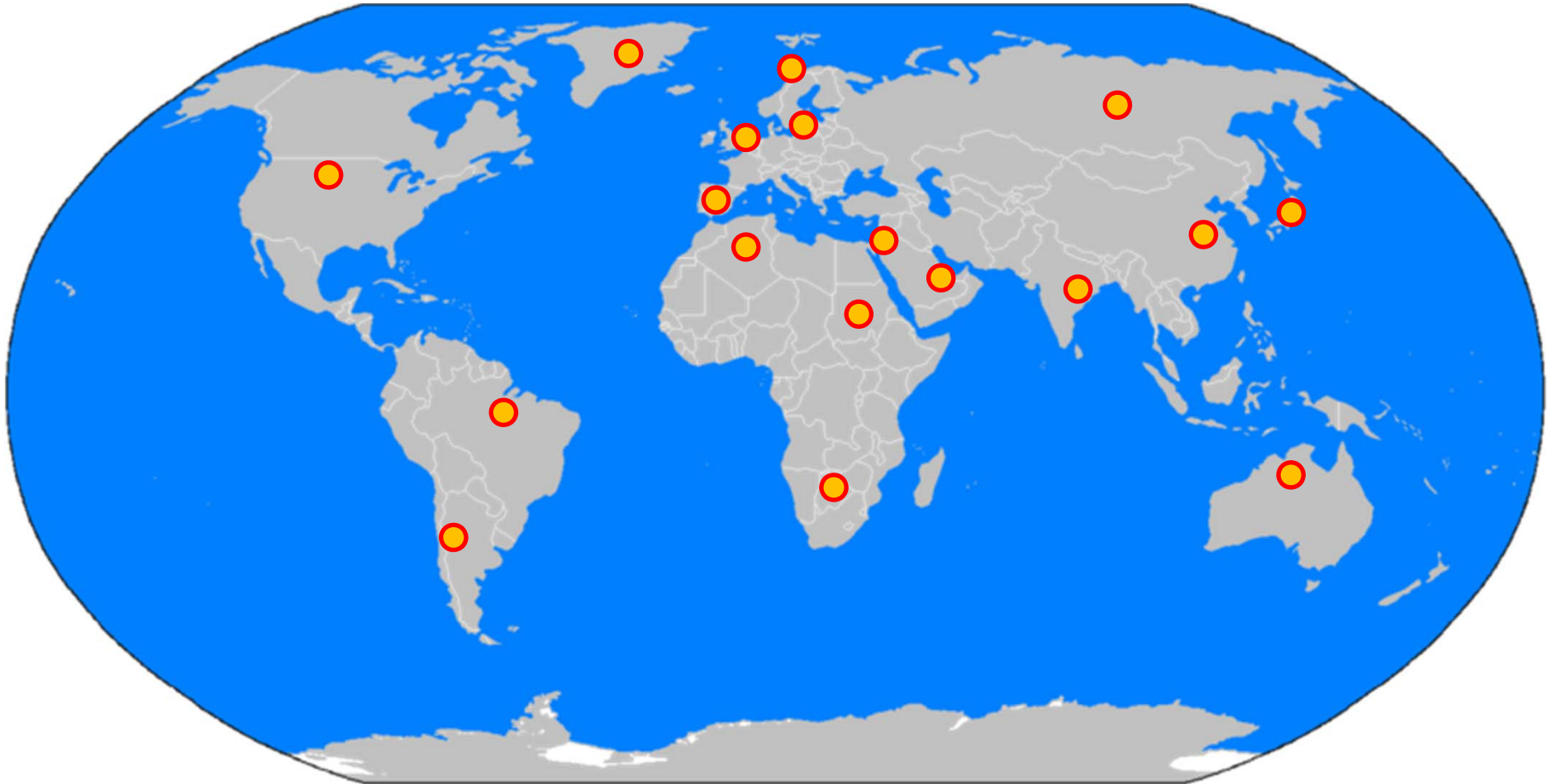
1 year measurements!!

- $E_{U,TOT}=7.8$ kWh/day
- $E_{L,GRID}=0.9$ kWh/day
- $PE_{nR}=1.8$ kWh_{nRPE}/day

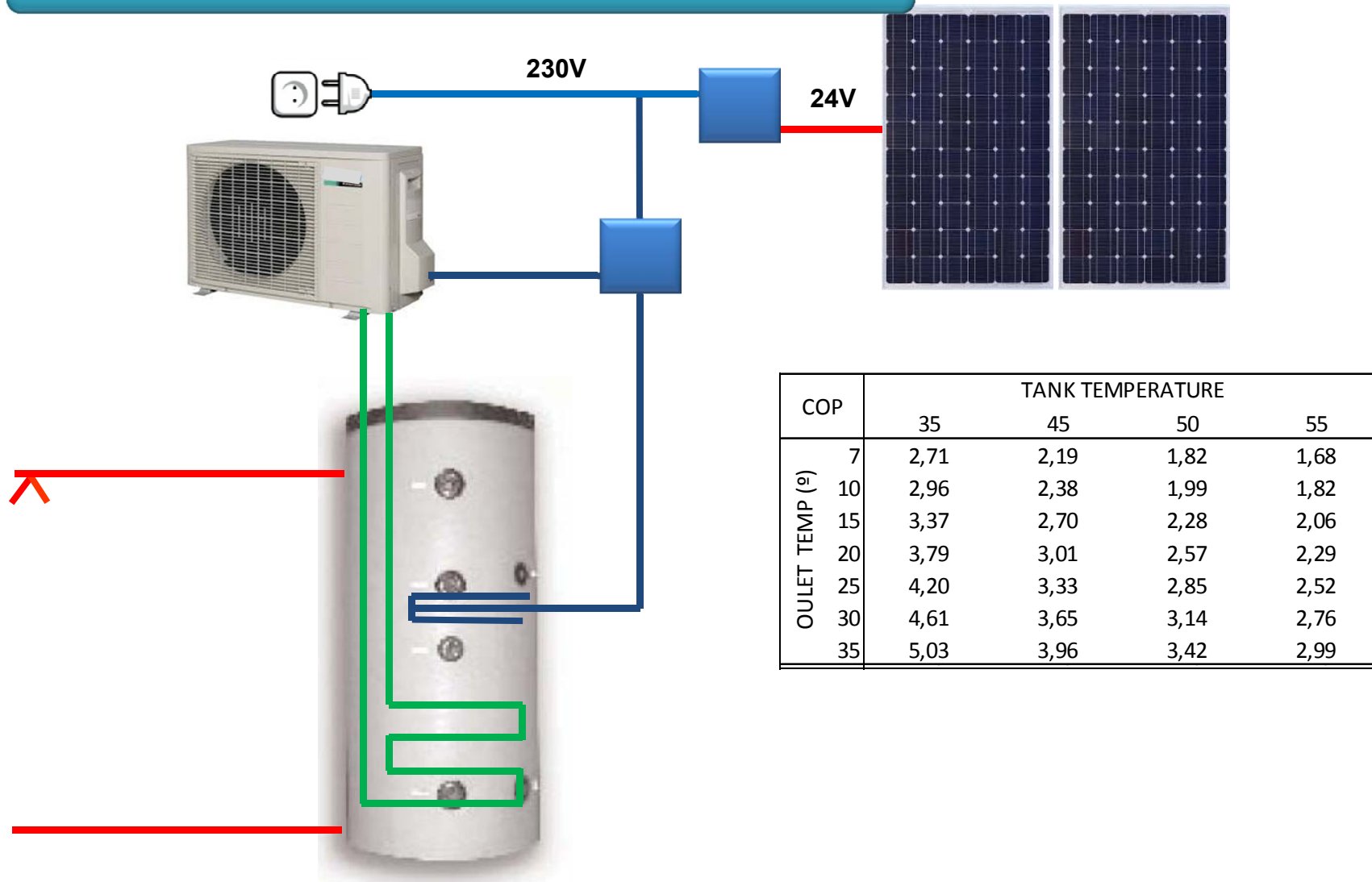
EXPERIMENTAL RESULTS ON HEAT PUMP + PV



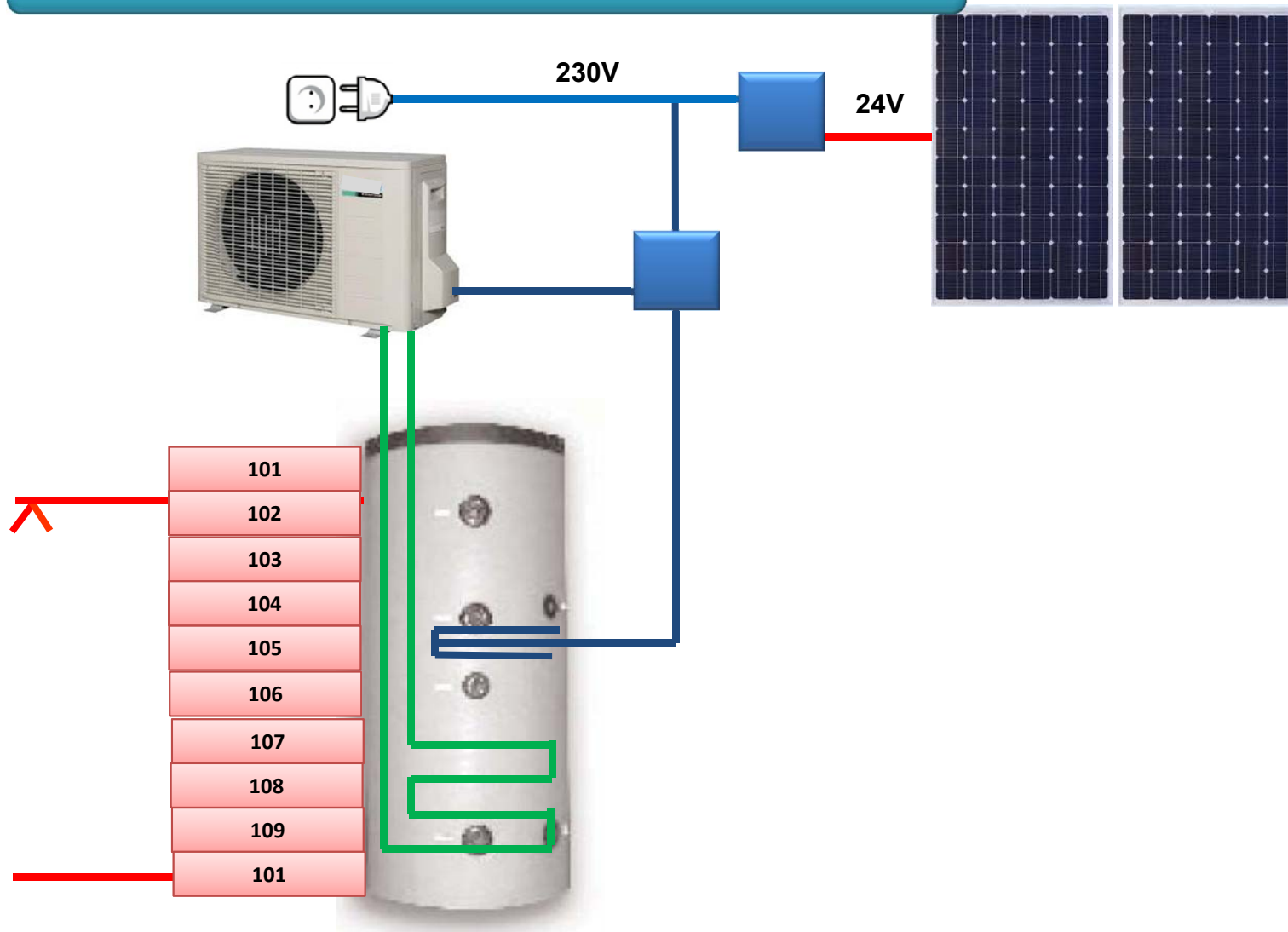
EXTENSION OF THE RESULTS



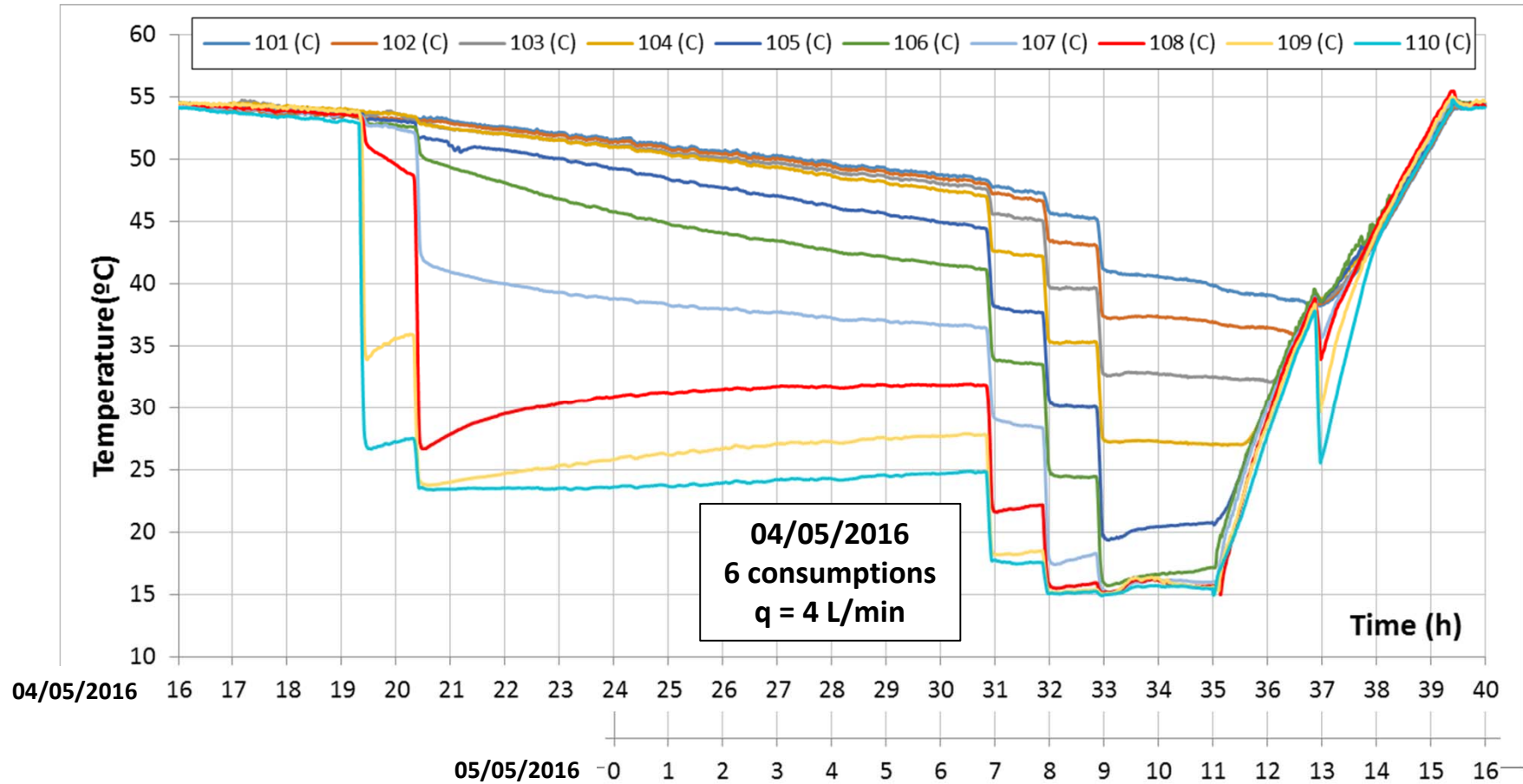
THERMAL STORAGE FOR DOMESTIC HOT WATER



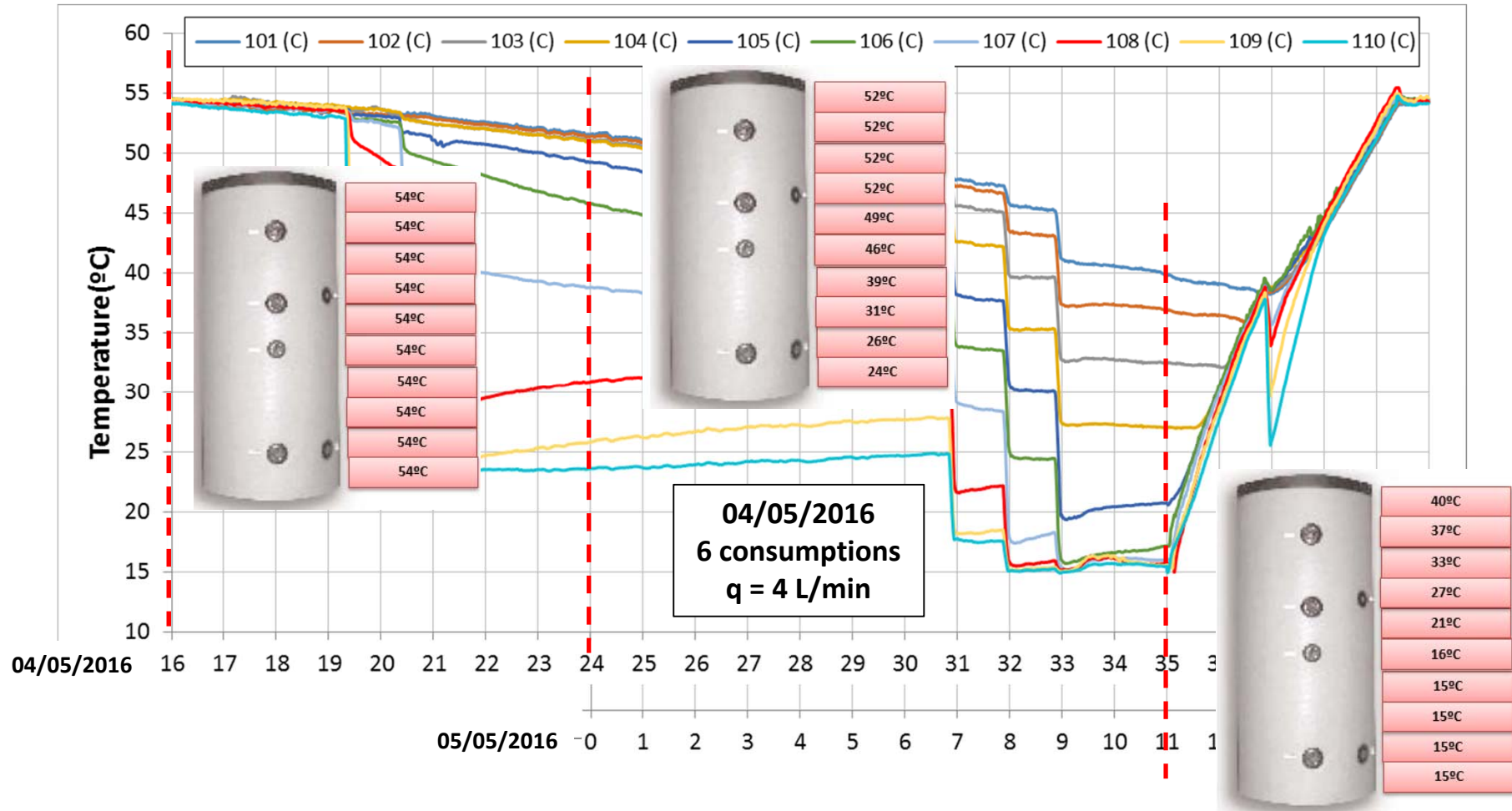
THERMAL STORAGE FOR DOMESTIC HOT WATER



THERMAL STORAGE FOR DOMESTIC HOT WATER

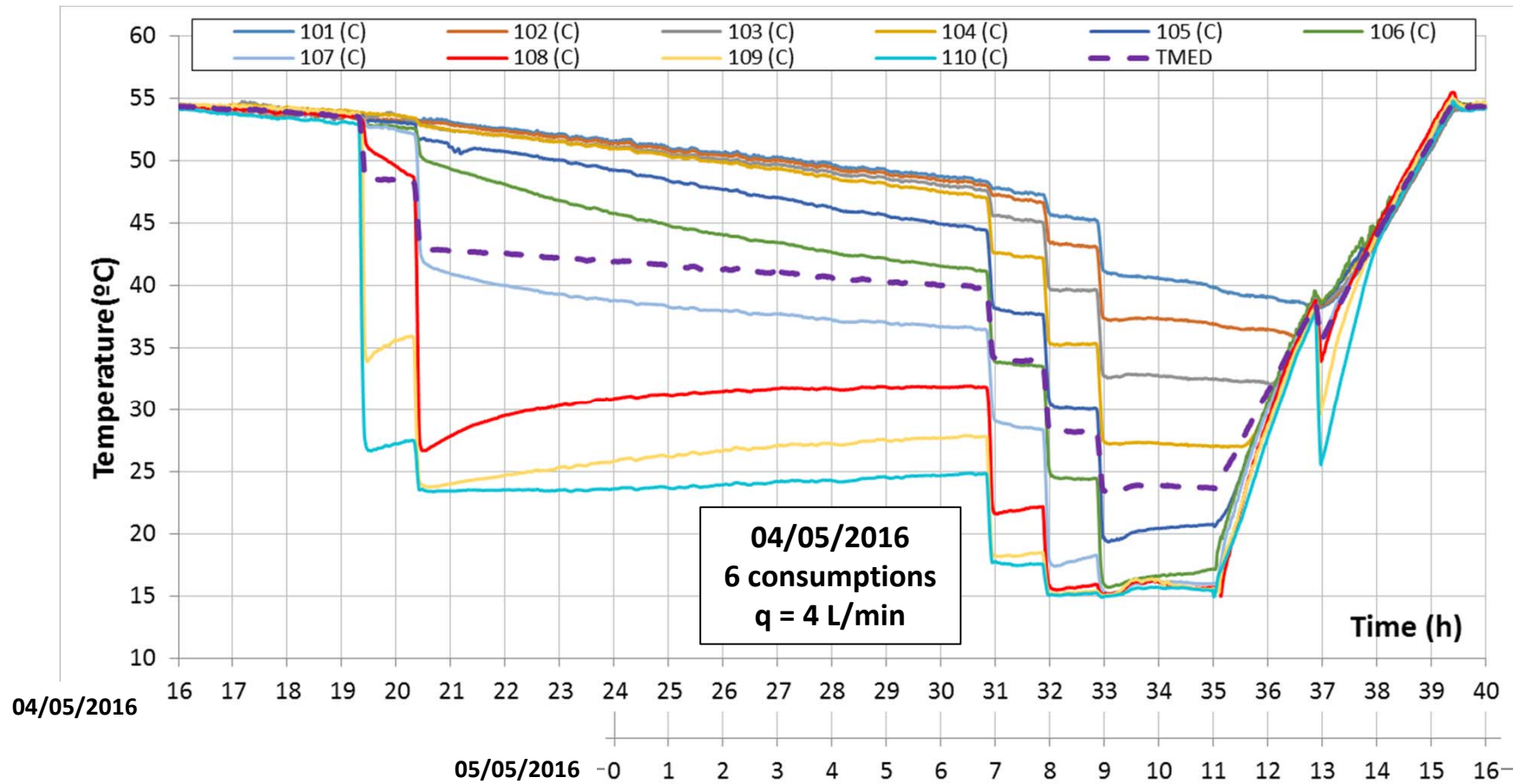


THERMAL STORAGE FOR DOMESTIC HOT WATER

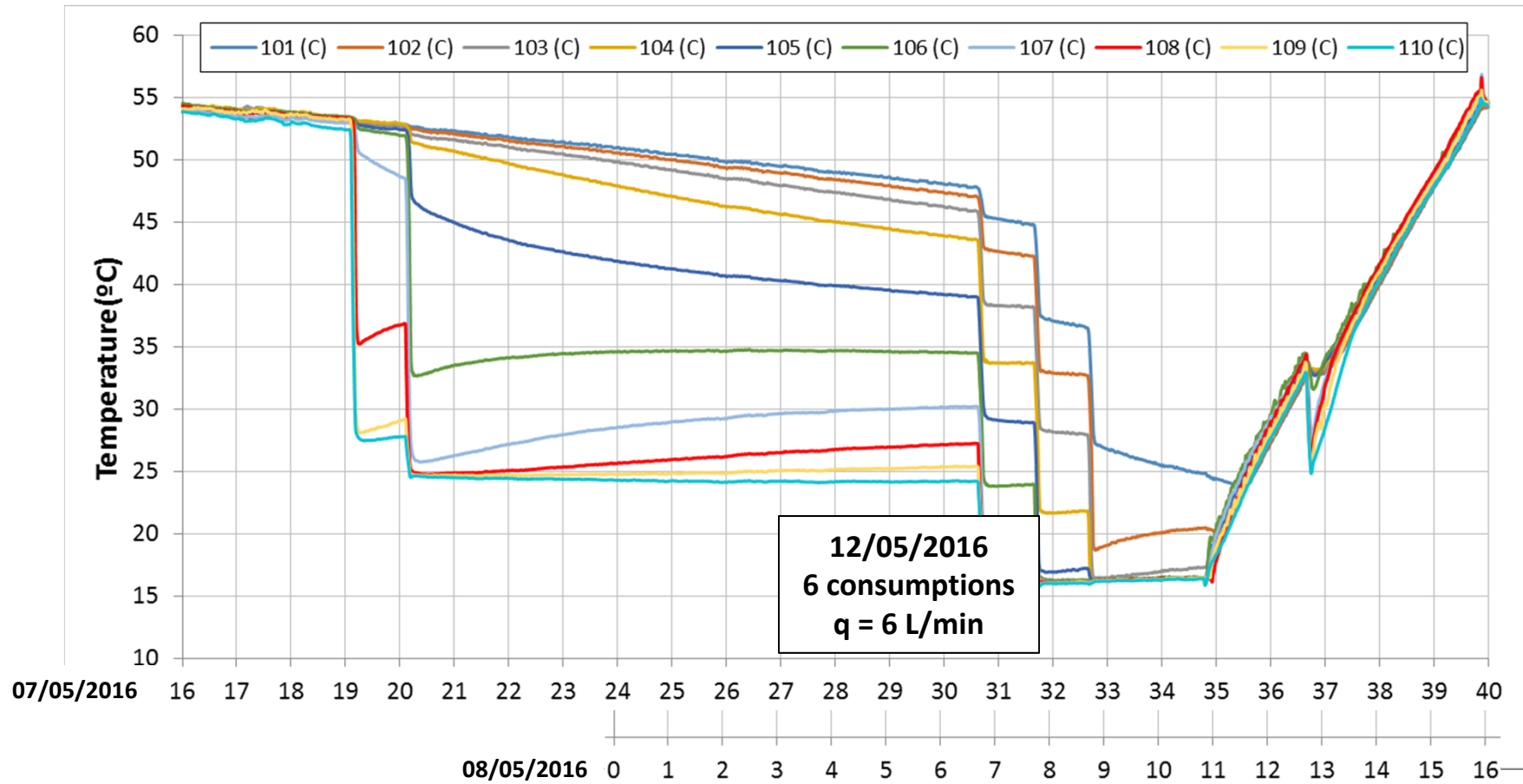




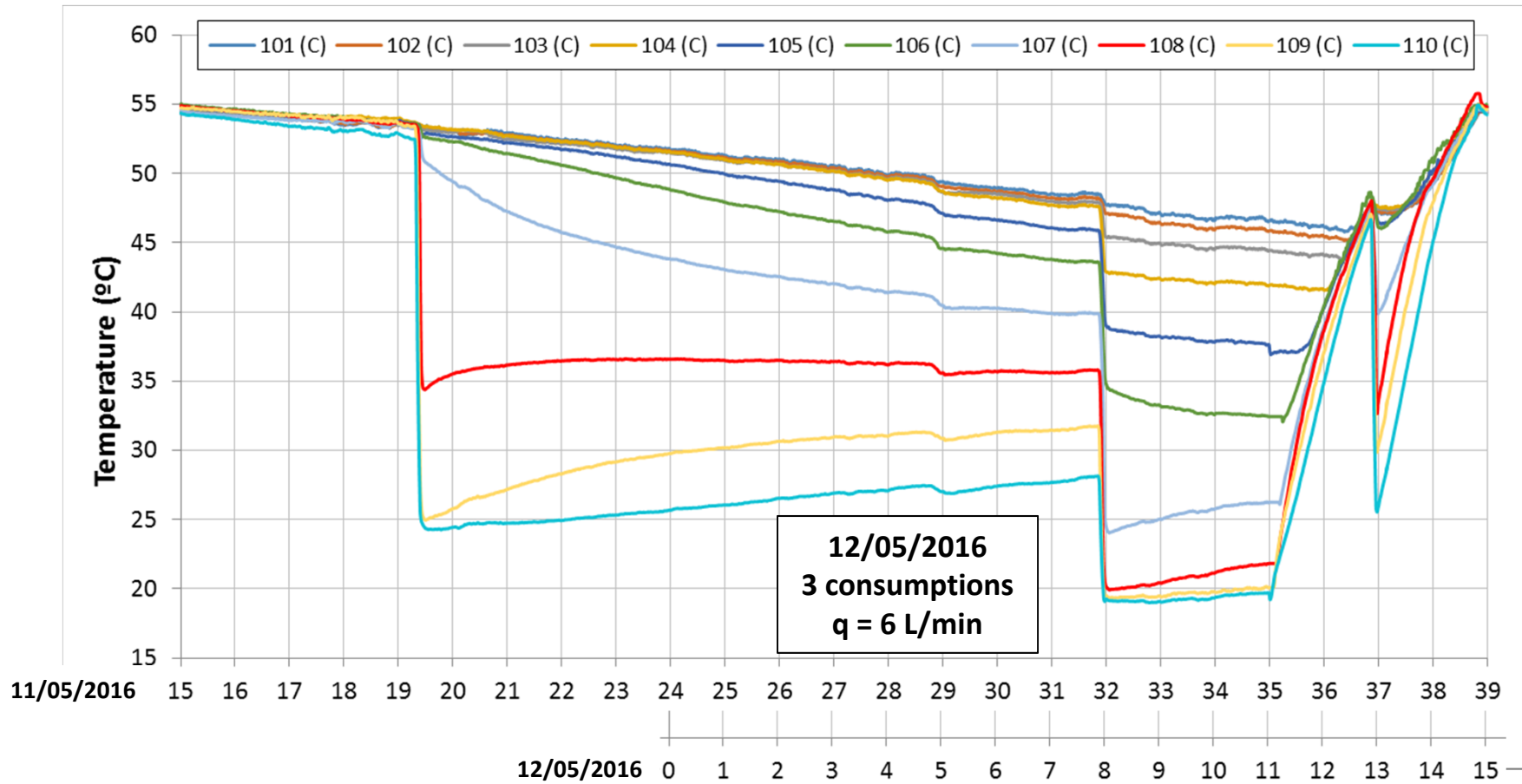
THERMAL STORAGE FOR DOMESTIC HOT WATER



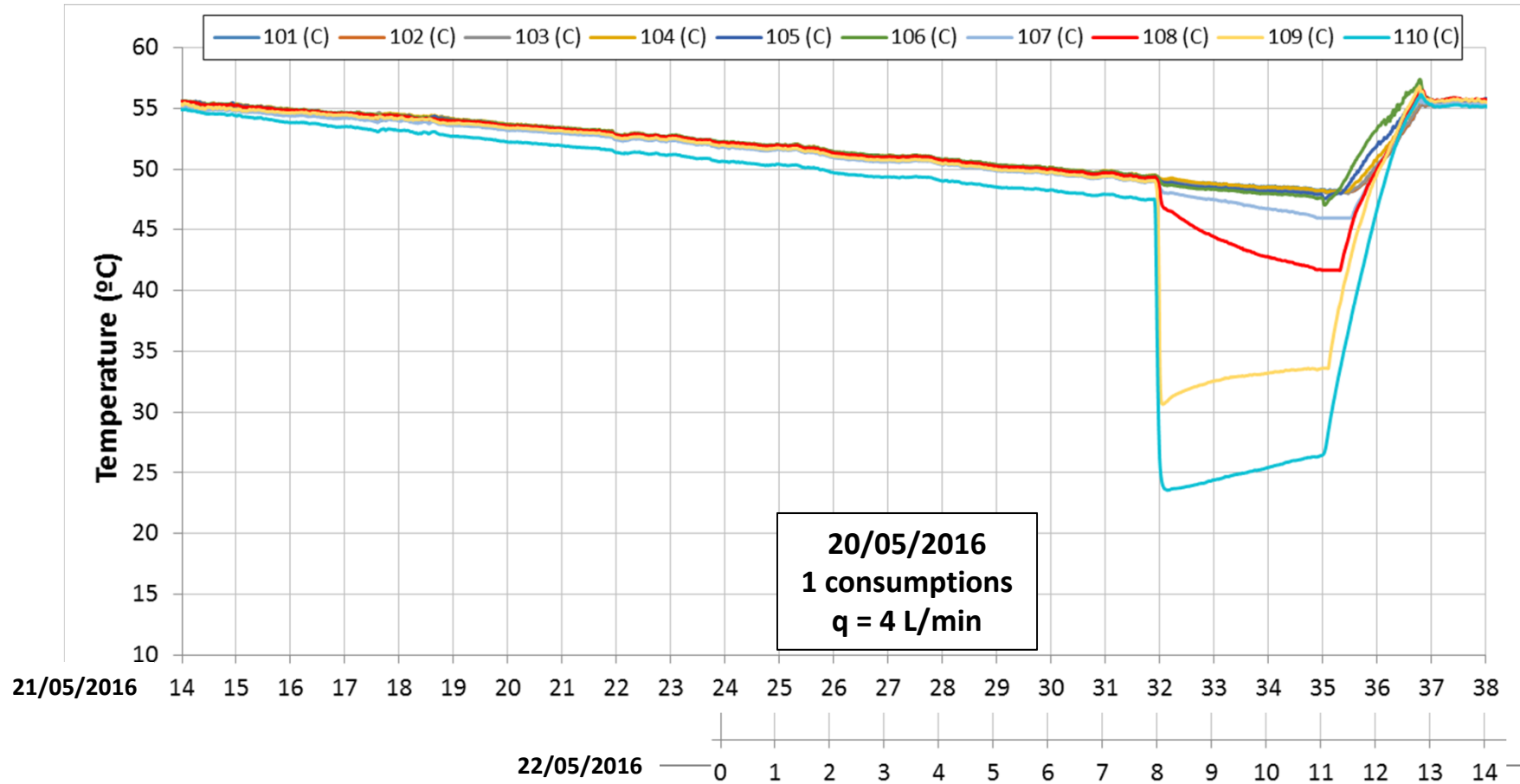
THERMAL STORAGE FOR DOMESTIC HOT WATER



THERMAL STORAGE FOR DOMESTIC HOT WATER



THERMAL STORAGE FOR DOMESTIC HOT WATER



COMMENTS ON STRATIFICATION

- Simulation is needed
- Affects on COP
- Affects on HP work

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