

VALLDA HEBERG

Initial experiences



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Introduction

- **Municipal housing company**
- **New small residential/mixed areas in large villages**
- **Block heating systems ..**
(Oil > Wood chips > W. Briquettes > W. Pellet)
- **First solar system in 1979**
- **Roof-integrated solar collectors**
- **Solar heat covers 10-40% of heat demand**



*The sun shines and
the wood grows !*

EKSTA/Åsa - 1984-92



EKSTA/Onsala - 1995



Vallda Heberg – 2012/13

- **Single family buildings – 1st time**
Two floor – 140 m² each ..
- **Row houses ..**
- **Multifamily buildings**
- **Home for elderly people**
- **(Future pre-school, etc.)**
- **Low heat demand/density**
- **Wood pellet + solar heat !**



ENBOSTADSHUS
NÄTVINGEVÄGEN



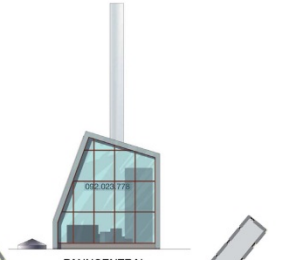
SENIORBOENDE
ROSENINGEVÄGEN



FYRBOHUS
BLAVINGEVÄGEN



GEMENSAMHETSLOKAL
BLAVINGEVÄGEN/FÄRILSVÄGEN



PANNOCENTRAL
FÄRILSVÄGEN



ENBOSTADSHUS
GULDVINGEVÄGEN



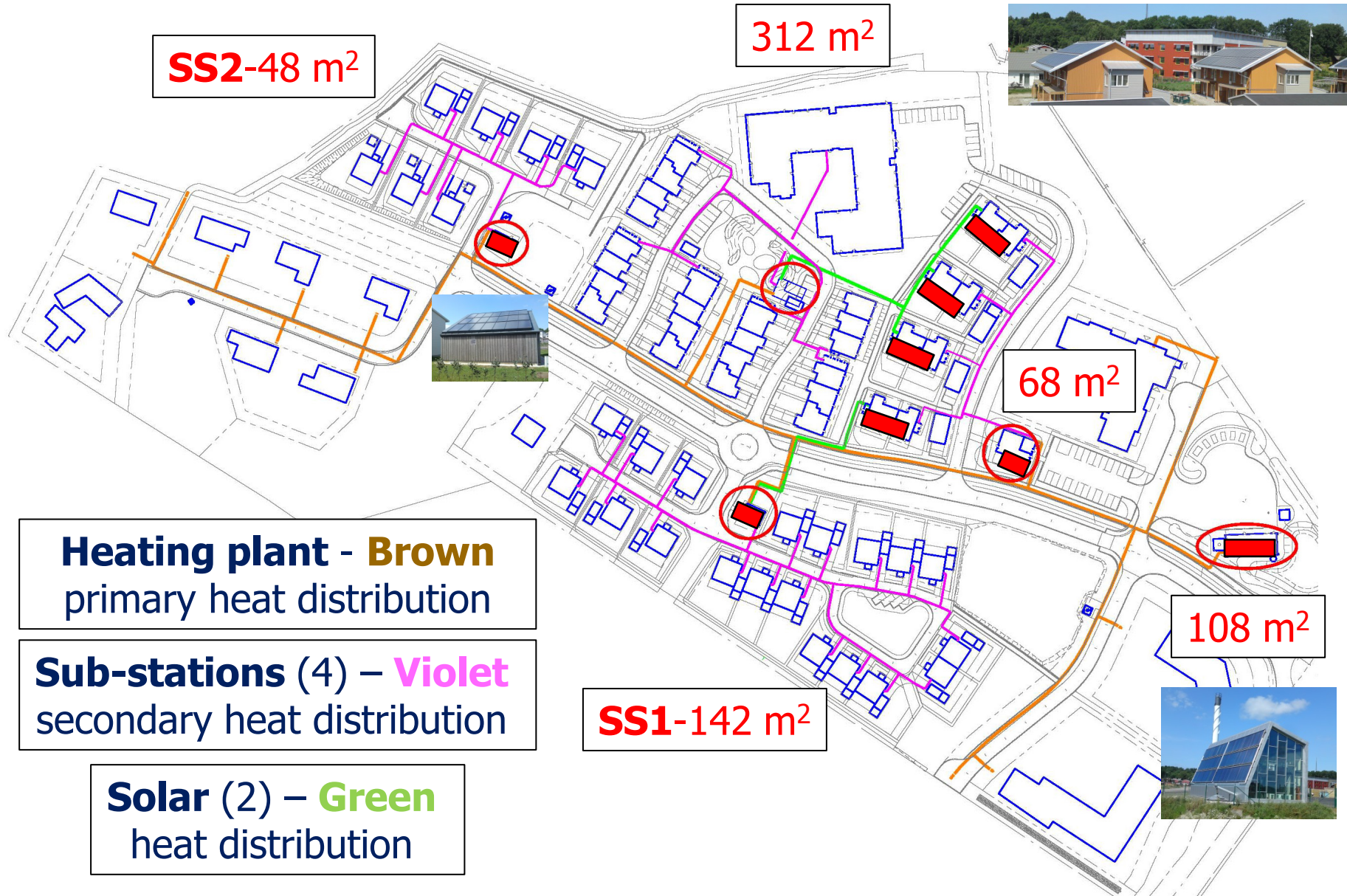
UNDERCENTRALER
GULDVINGEVÄGEN/NÄTVINGEVÄGEN



KEDJEHUS
GULDVINGEVÄGEN



VALLDA HEBERG





sekundärkulvert (varmvatten + VVC)



UC2 – Primärvärme- och sek.kulvert samt kallvatten in i UC



Sek.kulvert (plaströrskulvert) fram till villa

Secondary heat distribution

Hot water circulation
DHW + Washing mach.
Floor heating in bathroom
+ Air heater

ENBOSTADSHUS

Totalt 19 st hus

Atemp 140 m²/lgh

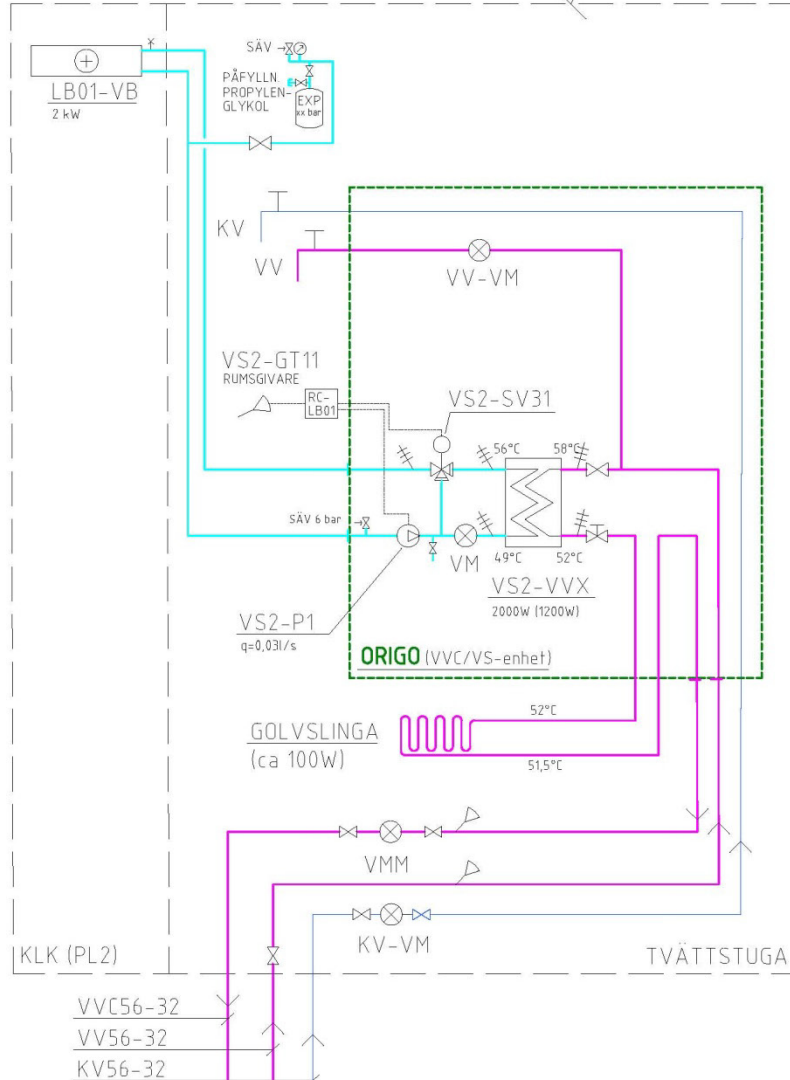
Effektbehov 12 W/m²

Antag normflöde vv 1 l/s.lgh

HUS TYP 3:1

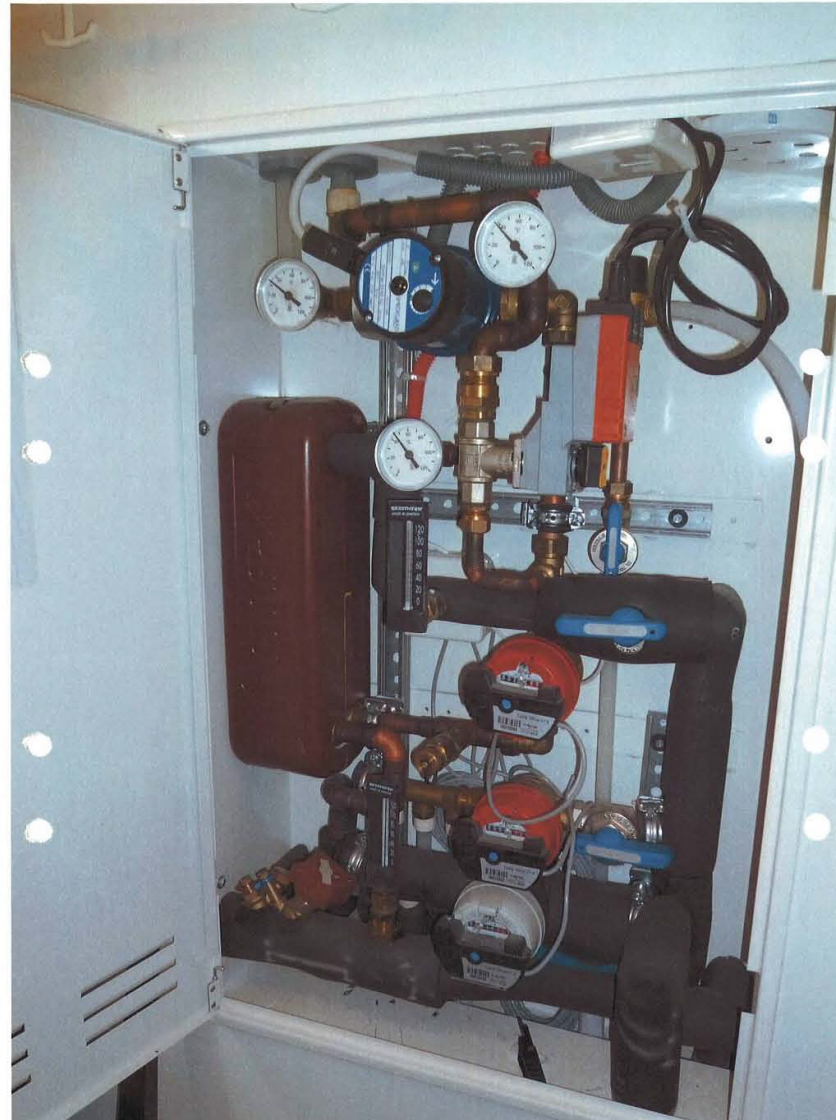
**House-unit
DHW system
(i.e. heating)
+DHW volume**

**Power
<2 kW
Flow
1 l/s**



House-unit
Prefabricated
Unit - ORIGO

ORIGO –
fördelar-, teknikskåp
i villor och lägenheter.
(850x600x200mm)



Power
<2 kW
Flow
1 l/s

Area development – 2012/13

- **Single family buildings – 2012**
- **ETC on heating plant – Spring 2013**
- **Row houses – Spring 2013**
- **Multifamily buildings – Autumn 2013**
- **Home for elder people – Autumn 2013**
- **Whole system heat balance – Spring 2014**
- **Sub-station 1 & 2 – April 13 – March 14**

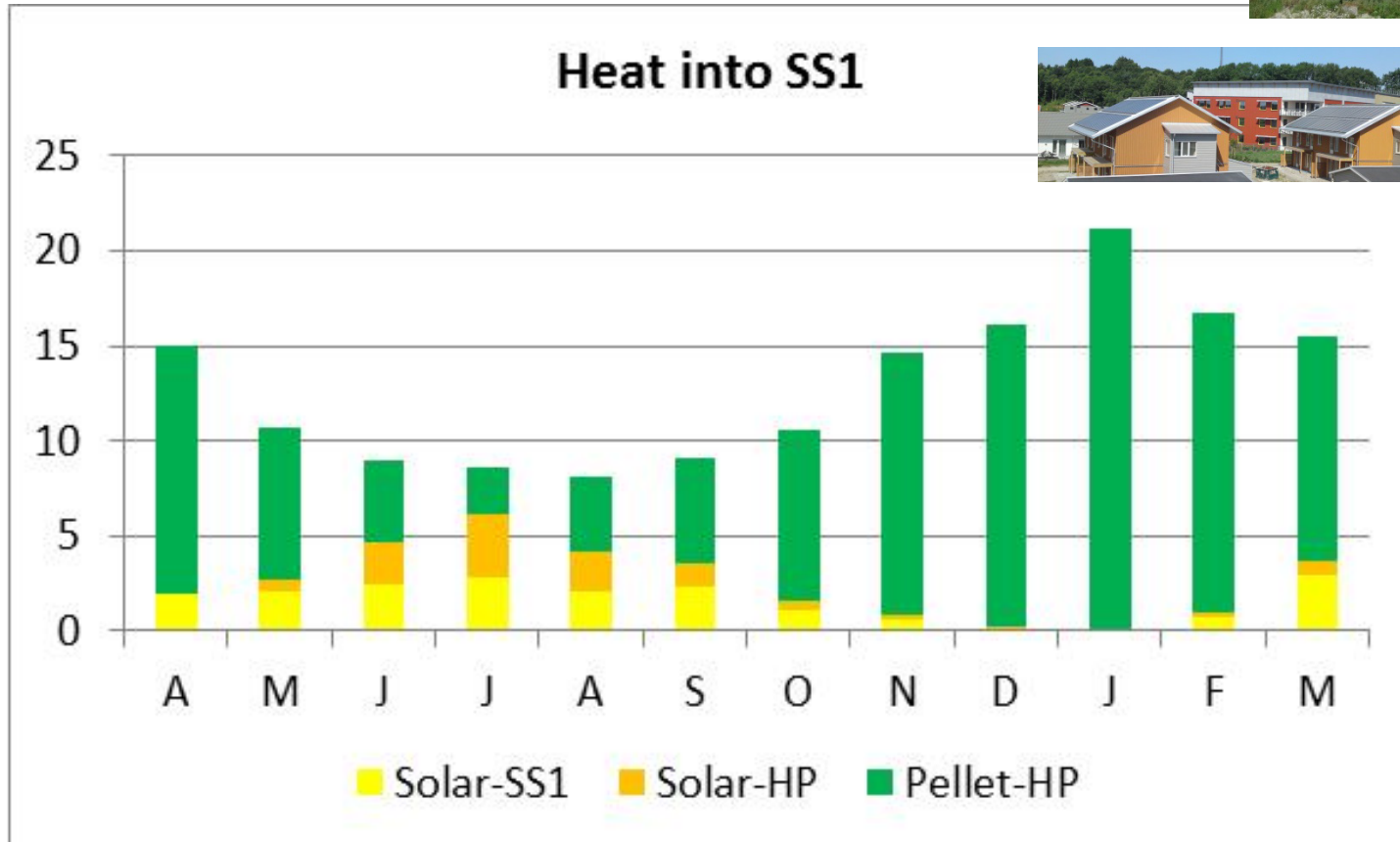
Calc. heat demands (14 000 m²)

	Heat [kWh/a]	Units [-]	Specific [kWh/a/m ²]	Total [kWh/a]
Single	7 800	26	56	202 800
Senior	3 400	22	52	74 800
Multi	15 400	4	48	61 600
Com.	12 700	1	62	12 700
Elder	269 000	1	37	269 000
Total			44	620 900

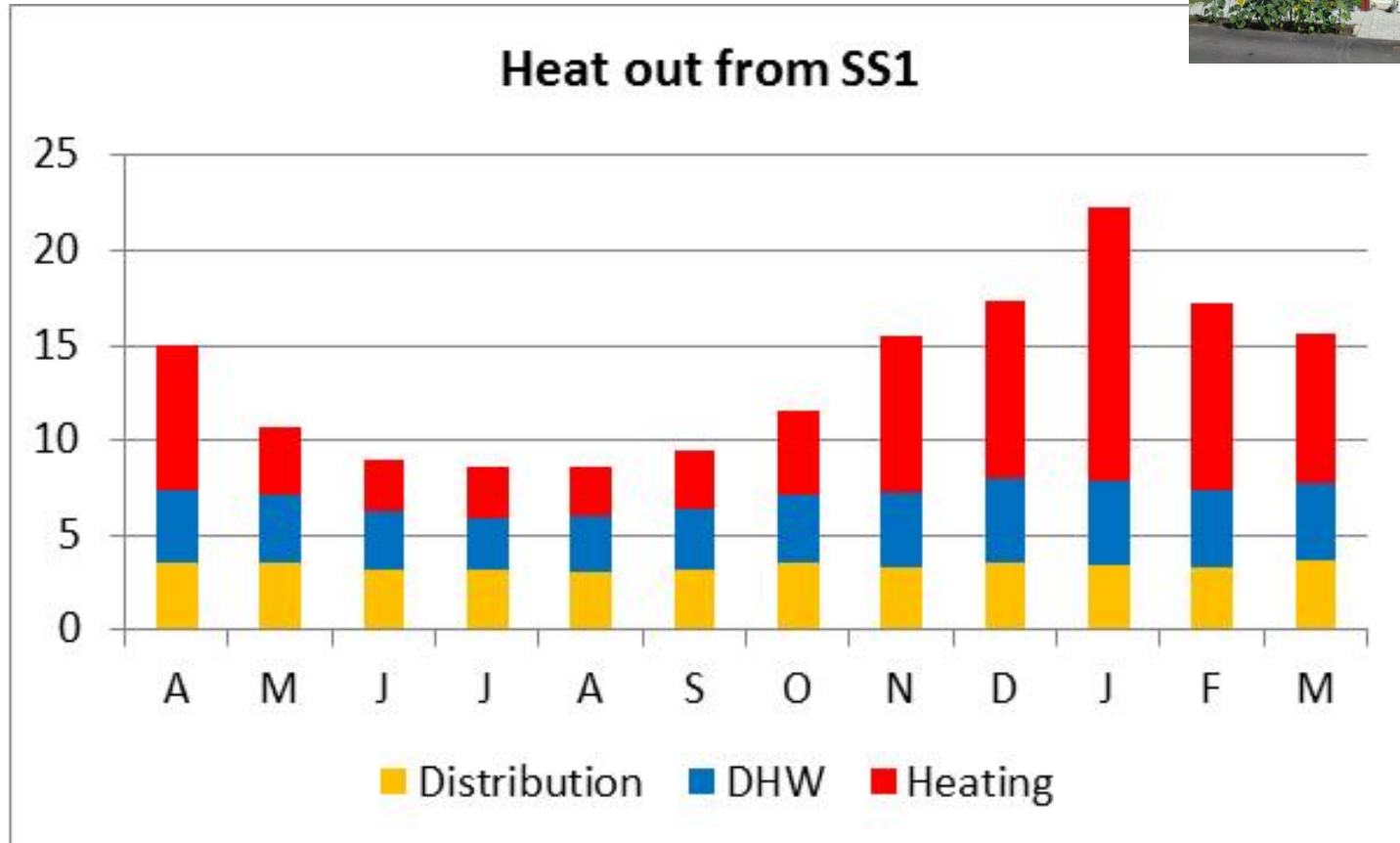
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Total			44	620 900
			Solar collectors [m ²]	
SS1	7 800	19	142	148 200
SS2	7 800	7	48	54 600

Meas. heat into SS1



Meas. heat out from SS1



Measurements SS1

	Heat [kWh/a]	Heat [kWh/a]	Share [%]
Heat supply	155 150		100
Pellet – HP		124 540	81
Solar – HP *		11 460	7
Solar – SS1 *		19 150	12

* Partly in operation

Measurements SS1

	Heat [kWh/a]	Heat [kWh/a]	Share [%]
Heat supply	155 150		100
Pellet – HP		124 540	81
Solar – HP *		11 460	7
Solar – SS1 *		19 150	12
Heat distributed	-161 020		100
Secondary distr.		-40 560	25
Heating		-76 450	48
DHW		-44 010	27
Difference	4%		

* Partly in operation

Evaluation - SS1

	Calculated [kWh/a]	Measured [kWh/a]	Calculated [kWh/a/m ²]	Measured [kWh/a/m ²]
SS1 (19)				
Heating		76 450		29
DHW		44 010		16
Heating+DHW	148 200	120 460	56	45

Evaluation - SS1 & SS2

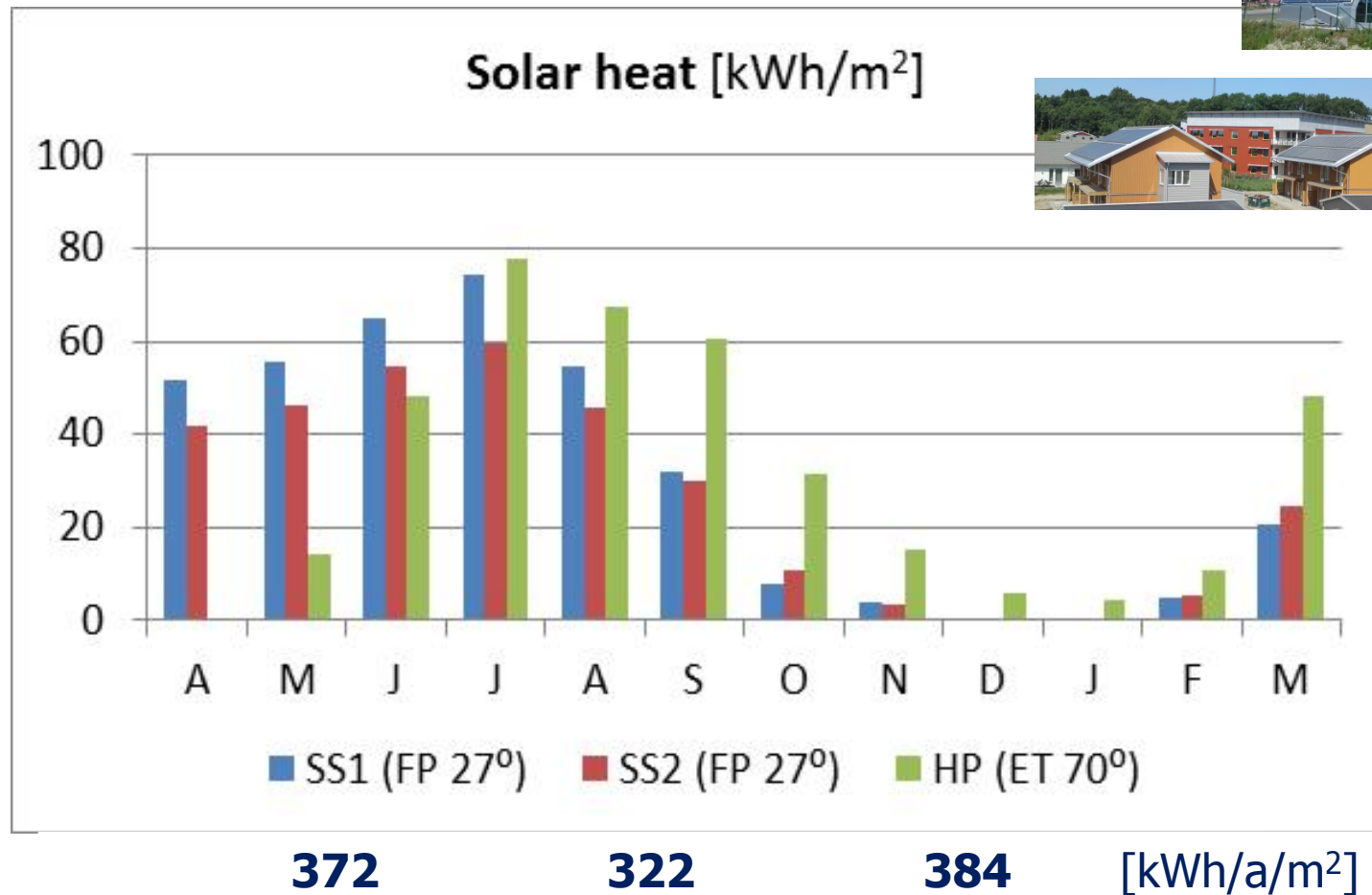
	Calculated [kWh/a]	Measured [kWh/a]	Calculated [kWh/a/m ²]	Measured [kWh/a/m ²]
SS1 (19)				
Heating		76 450		29
DHW		44 010		16
Heating+DHW	148 200	120 460	56	45
SS2 (7)				
Heating		26 140		27
DHW		15 660		16
Heating+DHW	54 600	41 800	56	43

Secondary distr. losses SS1 & SS2



	Length [m]	Length [m/unit]	Heat loss [kWh/a]	Heat loss [W/m]
SS1 (19)	469	24	40 560	9.9
SS2 (7)	215	31	18 350	9.7

Solar heat – SS1/SS2/HP



Summary – Vallda Heberg

- **Experienced developer and consultants ..!**
- **Wood pellet + solar heat = THE option**
(about 400 €/m² .. ~1% of total building cost)
- **Lower heat demand single fam. ..!?**
(Winter 2012/13 warmer than average ..)
- **Slightly higher heat distribution losses ..!?**
- **Low meas. accuracy DHW circulation ..!**
- **Solar heat as expected .. !?**

Thanks for your attention!