

Context/Intro:

In the framework of the ICaRE4Farms project, this document aims at reviewing the theoretical inner potential of Feng Tech STE system within the agricultural sector of dairy farms.

The current academic example focus on a holding without on-farm processing and set in Pays de la Loire. The assumptions are that it owns a herd of 100 cows for which it needs around 24 000 kWh of energy supply per year in order to clean its milking parlours and milk tanks.

After enumerating the main characteristics of this typical and fictional dairy farm, a simulation with the Feng Tech STE system illustrating expected results will be tackled.

This file will be completed and crossed with a real-life case with similar attributes.

PART I: ACADEMIC CASE

- | | |
|--|--|
| ▶ <i>N°/Nickname:</i> N°1 / French Dairy Case | ▶ <i>Location (Country/Region):</i>
France / Pays de la Loire |
| ▶ <i>Type of holding:</i>
Dairy Farm (without on-farm processing) | ▶ <i>Date:</i> 26th June 2021 |

1 Initial characteristics of the installation: (Use Market Analysis + Technology Assessment)

- **Number of cows:** 100 cows
- **Type of production:** Milk
- **Water Use (frequency, quantity, timeframe, etc):** Cleaning of Milking Parlours & Milk tanks
- **Frequency:** 2 times a day
- **Quantity:** 600-700L at 70°C per day
- **Version of FT STE system:** ETF 2 (version with pressure)
- **Temperature needed (in °):** 70°C
- **Standard fossil energy used:** Electric Boiler (2 units of 3kW and 300L)
- **Price per kWh:** 0.14 EXCL. TAX/€/kWh
- **Energy consumption for the activity (in kWh):** 23781 kWh/year
cf. with energy waste and to heat 600L of water, the energy need accounts for 100 cows x 120 kWh/year/cow = 23781 kWh/year
- **Expenditure of energy consumption (in €/kWh):** 3329 € EXCL. TAX/year
cf. 0.14€/kWh x 23781 kWh/year = 3329 € EXCL. TAX/year
- **Available subsidies for STE:** between 20 and 40% of the equipment cost (*Fonds Chaleur*)
- **Amount of CO2 emission:** 2378 kg CO2/year
cf. given that 1kWh produces about 0.1kg CO2(eq), 0.1kg CO2/kWh x 23781kWh/year = 2378 kg CO2/year

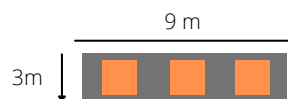
Prerequisites of installation:

- Located on floor or roof
- Preference = South-West facing
- Not far from the holding to avoid additional energy needs for re-heating

Employed Version of the matrix = V11 Lilles Study Case

2 Simulation with a Feng Tech STE system:

- **Coverage Rate of the installation (Share of utilisation in %):** 50% at least - HERE = 56%
cf. precisising when the farmer wanted willingly a restricted share of power supply + Depending on location and weather + the value is imposed as it is the hypothetical reference we want to check after with the field application case
- **Number of STE units to reach the energy needs:** 3 units
cf. potential energy savings = 13 282 kWh/year
- **Overall front surface of capture:** 12 m²
cf. 1 FT = 4m² ; 4m²/unit x 3 units = 12 m²
- **Maximum attainable temperature with the current solution (in °):** 100°T (optimal conditions)
- **Power (kW/unit):** 2.5kW/unit
- **Number of sensors needed for remote surveillance and monitoring:**
Commercial scope = 2 thermometers + 2 flowmeters
- **Surface requirement for the equipment:**
- **Irradiance & Cold Water Measurements:**



Solar irradiance value (Calsol INES)	Lille 45°	Albedo	0,8											
Unit (kWh / m ² / day)	January	February	March	April	May	June	July	August	September	October	November	Décember	Year	
Direct irradiance	0,57	0,96	1,61	2,11	2,21	2,36	2,13	2,11	2,05	1,43	0,72	0,45	1,56	
Diffus irradiance	0,45	0,79	1,29	1,87	2,29	2,49	2,4	2,05	1,53	0,97	0,54	0,36	1,42	
Cold water temperature (°C)	6,2	6,5	8,1	9,5	11	13	14	14	13	10	8,1	6,7	10	

- **Solar energy contribution (in kWh):** 13 282 kWh/year
 - Yearly Basis: 3 FT STE units' full potential = **13 282 kWh/year** (relating to a specific simulation case)
cf. it corresponds to 8368 kWh/year useful solar energy (depends on distance, insulation etc. / simulation from an average case)
 - Daily Basis: 13 282kWh / 365 days = **36.38 kWh/day**
- **Savings on energy consumption (in €):** 1859.48 € EXCL. TAX/year
cf. Given that, with energy waste and to heat 600L of water, the energy saving accounts for 13 282 kWh/year x 0.14€ = 1859.48 €/year
- **Remaining share of the standard energy used (per year):** 1469.86 €/year (44% ; 10 499 kWh/year)
 - In %: solar thermal energy represents 56% here so, remaining share of **44%**
 - In kWh: 23781 - 13282 = **10 499 kWh/year**
 - In €: 10 499 kWh/year x 0.14€/kWh = **1469.86 €/year**
- **Remaining emission of CO₂:** 1049.9 kg CO₂ (CO₂ reduction up to 1328.1 kg CO₂)
cf. 10 499 kwh/year x 0.1kg CO₂ = 1049.9 kg CO₂

WITH AIDS

- **Provisionnal Cost (total - subsidies): 11 750 €**

cf. cost of equipment & installation + site preparation - potential aids = provisional cost

- **Cost of the equipment & installation: 15000 €**

Notes: 3829€ for one stainless steel unit & 3480€ for one basic unit + installation expenses = 5000€/unit / 3 units x 5000€/unit = 15 000€

- **Cost of the site preparation: 2000 €**

cf. in average if not done personally by the holder

- **Aids and subsidies available: 5250 €**

cf. average grant = 35% ; 15000 x 0.35 = 5250 € *in the event of approval by regulating authorities*

OPTIONAL COST: monitoring = 1200€ (equipment) + 1200€ (installation) + 38 €/year (RESOL subscription)

- **Financial Package : 1266 €/year for 10 years (in average)**

cf. Total - subsidies ; cash + financial loan (= duration + annuity)

◦ Provisionnal cost = financial loan = **11 750€**

◦ Duration: **10 years** / Loan rate = **1.50%** (with yearly increase) / STE Durability = **+30 years**

=> **11750 € / 10 years = 1175 €/year** ; taking into account the loan rate: **1266 €/year** (in average)

- **Return on investment (global expense / annual savings): 6 years & 4 months**

◦ Global expense = **11750€**

◦ Annual energy savings = **1859.48 € per year** during 20 years so in total : 1859.48 €/year x 30 years = **55 784.4 €**

◦ ROI = 11750 € / 1859.48 € = **6 years and 4 months**

◦ ROIC = 1859.48 € / 11750 € = **15.82%**

- **Yearly Earnings (Annual savings and yearly loan payment): +1021€/year (for 10 years, then 2576€/year)**

cf. good if savings > loan

◦ Annual savings = **1859.48 €**

◦ Yearly loan payment = **1266 €**

◦ Difference = 1859.48 - 1266 = **593.48 €/year of earnings on the 10 year-loan period / after = 1859.48 €/year**

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Costs without STE	3329	3496	3670	3854	4047	4249	4462	4685	4919	5165	5423	5694	5979	6278	6592	6921	7267	7631	8012	8413
Loan repayment	1266	1266	1266	1266	1266	1266	1266	1266	1266	1266	0	0	0	0	0	0	0	0	0	0
Gas remaining to buy	1470	1543	1620	1701	1786	1876	1970	2068	2171	2280	2394	2514	2639	2771	2910	3055	3208	3369	3537	3714
System maintenance	0	0	0	0	0	200	206	212	219	225	232	239	246	253	261	269	277	285	294	303
Costs with STE	2736	2809	2886	2967	3053	3342	3442	3546	3656	3771	2626	2753	2885	3025	3171	3324	3485	3654	3831	4016
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy saving (1-5) €HT/Y	593	686	784	887	994	1020	1138	1263	1394	2797	2942	3093	3253	3421	3597	3782	3977	4181	4396	
Energy saving €HT/m	49	57	65	74	83	76	85	95	105	116	233	245	258	271	285	300	315	331	348	366

- **Network of installers:** Ets LEFORT / Solair3Tech / Elevance (groupe Agriale) / Pineau Thermic System / MAES Ets / Lacta Services / INOVIA (Ancien du Groupe Terrena) / SARL TESSIER / Comptoir machine à traire (CMT) / CES Tardy - EMERAUDE ELEVAGE EQUIPEMENT / Energies libres
- **Legislation for installation/Procedures and precautions:** rural environment so few restrictions ; when roof, request for work to municipality / when on the floor, nothing needed as long as within property

RELEVANT REMARKS & COMMENTS

NB 1: what about simulating another model where only the service of energy is sold, not the device?

NB 2: is Liquin a subcontractor of the installers or reverse?

NB 3: for each set of case study (academic + field application), making a review of conclusions (approximatively 1p)

NO AIDS

• **Previsionnal Cost (total - subsidies): 17 000 €**

cf. cost of equipment & installation + site preparation - potential aids = previsionnal cost

◦ **Cost of the equipment & installation: 15 000€**

Notes: 3829€ for one stainless steel unit & 3480€ for one basic unit + installation expenses = 5000€/unit / 3 units x 5000€/unit = 15 000€

◦ **Cost of the site preparation: 2000€**

cf. in average if not done personally by the holder

◦ **Aids and subsidies available: 0€**

cf. average grant = 35% in the event of approval by regulating authorities

OPTIONAL COST: monitoring = 1200€ (equipment) + 1200€ (installation) + 38 €/year (RESOL subscription)

• **Financial Package : 1555 €/year for 10 years (in average)**

cf. Total - subsidies ; cash + financial loan (= duration + annuity)

◦ Previsionnal cost = financial loan = **17000€**

◦ Duration: **10 years** / Loan rate = **1.50%** (with yearly increase) / STE Durability = **+30 years**

=> **17000 € / 10 years = 1700 €/year** ; taking into account the loan rate: **1832 €/year** (in average)

• **Return on investment (global expense / annual savings): 9 years & 2 months**

◦ Global expense = **17 000€**

◦ Annual energy savings = **1859.48 € per year** during 30 years so in total : 1859.48 €/year x 30 years = **55 784.4 €**

◦ ROI = 17000 € / 1859.48 € = **about 9 years and 2 months**

◦ ROIC = 1859.48 € / 17000 € = **10.94 %**

• **Yearly Earnings (Annual savings and yearly loan payment): +1021€/year (for 10 years, then 2576€/year)**

cf. good if savings > loan

◦ Annual savings = **1859.48 €**

◦ Yearly loan payment = **1832 €**

◦ Difference = 1859.48 - 1832 = **27.48 €/year of earnings on the 10 year-loan period / after = 1859.48 €/year**

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Costs without STE	3329	3496	3670	3854	4047	4249	4462	4685	4919	5165	5423	5694	5979	6278	6592	6921	7267	7631	8012	8413
Loan repayment	1832	1832	1832	1832	1832	1832	1832	1832	1832	1832	0	0	0	0	0	0	0	0	0	0
Gas remaining to buy	1470	1543	1620	1701	1786	1876	1970	2068	2171	2280	2394	2514	2639	2771	2910	3055	3208	3369	3537	3714
System maintenance	0	0	0	0	0	200	206	212	219	225	232	239	246	253	261	269	277	285	294	303
Costs with STE	3301	3375	3452	3533	3618	3908	4007	4112	4222	4337	2626	2753	2885	3025	3171	3324	3485	3654	3831	4016
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy saving (1-5) €HT/Y	28	121	218	321	428	542	661	785	914	1048	1187	1331	1480	1634	1792	1955	2122	2294	2470	2650
Energy saving €HT/m	2	10	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171

• **Network of installers:** Ets LEFORT / Solair3Tech / Elevance (groupe Agriale) / Pineau Thermic System / MAES Ets / Lacta Services / INOVIA (Ancien du Groupe Terrena) / SARL TESSIER / Comptoir machine à traire (CMT) / CES Tardy - EMERAUDE ELEVAGE EQUIPEMENT / Energies libres

• **Legislation for installation/Procedures and precautions:** rural environment so few restrictions ; when roof, request for work to municipality / when on the floor, nothing needed as long as within property

RELEVANT REMARKS & COMMENTS

NB 1: what about simulating another model where only the service of energy is sold, not the device?

NB 2: is Liqun a subcontractor of the installers or reverse?

NB 3: for each set of case study (academic + field application), making a review of conclusions (approximatively 1p)

Context/Intro:

In the framework of the ICaRE4Farms project, this document aims at reviewing the theoretical inner potential of Feng Tech STE system within the agricultural sector of dairy farms.

The current academic example focus on a holding without on-farm processing and set in Pays de la Loire. The assumptions are that it owns a herd of 70 cows for which it needs around 13 056 kWh of energy supply per year in order to clean its milking parlours and milk tanks.

After enumerating the main characteristics of this typical and fictional dairy farm, a simulation with the Feng Tech STE system illustrating expected results will be tackled.

This file will be completed and crossed with a real-life case with similar attributes.

PART II: FIELD APPLICATION CASE

- | | |
|---|---|
| <ul style="list-style-type: none"> ▶ <i>N°/Nickname:</i> N°1 / French Dairy Case ▶ <i>Type of holding:</i> ▶ Dairy Farm (without on-farm processing) | <ul style="list-style-type: none"> ▶ <i>Location (Country/Region):</i> France / Pays de la Loire ▶ <i>Date:</i> October 2021 |
|---|---|

1 Initial characteristics of the installation: (Use Market Analysis + Technology Assessment)

- **Number of cows:** 70 cows
- **Type of production:** Milk
- **Water Use (frequency, quantity, timeframe, etc):** Cleaning of Milking Parlours & Milk tanks
- **Frequency:** 2 times a day
- **Quantity:** 600-700L at 70°C per day
- **Version of FT STE system:** ETF 2 (version with pressure)
- **Temperature needed (in °):** 65°C
- **Standard fossil energy used:** Electric Boiler (2 units of 3kW and 300L)
- **Price per kWh:** 0.15 EXCL. TAX/€/kWh
- **Energy consumption for the activity (in kWh):** 13 056 kWh/year
cf. with energy waste and to heat 600L of water, the energy need accounts for 13 056 kWh/year
- **Expenditure of energy consumption (in €/kWh):** 1958.4 € EXCL. TAX/year
cf. 0.15€/kWh x 13 056 kWh/year = 1958.4 € EXCL. TAX/year
- **Available subsidies for STE:** between 20 and 40% of the equipment cost (*Fonds Chaleur*)
- **Amount of CO2 emission:** 1306 kg CO2/year
cf. given that 1kWh produces about 0.1kg CO2(eq), 0.1kg CO2/kWh x 13 056kWh/year = 1306 kg CO2/year

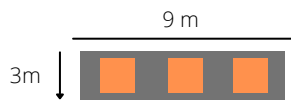
Prerequisites of installation:

- Located on floor or roof
- Preference = South-West facing
- Not far from the holding to avoid additional energy needs for re-heating

Employed Version of the matrix = V11 Lilles Study Case

2 Simulation with a Feng Tech STE system:

- **Coverage Rate of the installation (Share of utilisation in %):** 50% at least - HERE = 68%
cf. precisising when the farmer wanted willingly a restricted share of power supply + Depending on location and weather + the value is imposed as it is the hypothetical reference we want to check after with the field application case
- **Number of STE units to reach the energy needs:** 2 units
cf. potential energy savings = 8 859 kWh/year
- **Overall front surface of capture:** 12 m²
cf. 1 FT = 4m² ; 4m²/unit x 2 units = 8 m²
- **Maximum attainable temperature with the current solution (in °):** 100°T (optimal conditions)
- **Power (kW/unit):** 2.5kW/unit
- **Number of sensors needed for remote surveillance and monitoring:**
Commercial scope = 2 thermometers + 2 flowmeters
- **Surface requirement for the equipment:**
- **Irradiance & Cold Water Measurements:**



valeurs d'irradiation (Calsol INES)	Le MANS	Albedo	0,8											
Unité (kWh / m² / jour)	Janvier	Février	Mars	Avril	Mai	Juin	Juillet	Août	Septembre	Octobre	Novembre	Décembre	Année	
Irradiation Direct	1,09	1,25	2,43	3,09	2,43	2,43	2,87	2,66	2,3	2,1	1,3	0,78	2,06	
Irradiation Diffus	0,58	0,9	1,38	1,87	2,31	2,48	2,36	2,07	1,59	1,07	0,68	0,48	1,48	
Température eau froide °C	7,5	7,8	9,4	11	12	14	15	15	14	11	9,3	7,8	11	

- **Solar energy contribution (in kWh):** 8 859 kWh/year
 - Yearly Basis: 3 FT STE units' full potential = **8 859 kWh/year** (relating to a specific simulation case)
cf. it corresponds to 6 202 kWh/year useful solar energy (depends on distance, insulation etc. / simulation from an average case)
 - Daily Basis: 8 859 kWh / 365 days = **24.3 kWh/day**
- **Savings on energy consumption (in €):** 1328.85€ EXCL. TAX/year
cf. Given that, with energy waste and to heat 600L of water, the energy saving accounts for 8 859 kWh/year x 0.15€ = 1 328.85 €/year
- **Remaining share of the standard energy used (per year):** 630 €/year (32% ; 4 197 kWh/year)
 - In %: solar thermal energy represents 68% here so, remaining share of **32%**
 - In kWh: 13 056 - 8 859 = **4197 kWh/year**
 - In €: 4197 kWh/year x 0.15 €/kWh = **630 €/year**
- **Remaining emission of CO₂:** 420 kg CO₂ (CO₂ reduction up to 886 kg CO₂)
cf. 4197 kwh/year x 0.1kg CO₂ = 420 kg CO₂

NO AIDS

• **Previsionnal Cost (total - subsidies): 12 000 €**

cf. cost of equipment & installation + site preparation - potential aids = previsionnal cost

◦ **Cost of the equipment & installation: 10 000€**

Notes: 3829€ for one stainless steel unit & 3480€ for one basic unit + installation expenses = 5000€/unit / 2 units x 5000€/unit = 10 000€

◦ **Cost of the site preparation: 2000€**

cf. in average if not done personally by the holder

◦ **Aids and subsidies available: 0€**

cf. average grant = 35% in the event of approval by regulating authorities

OPTIONAL COST: monitoring = 1200€ (equipment) + 1200€ (installation) + 38 €/year (RESOL subscription)

• **Financial Package : 1292 €/year for 10 years (in average)**

cf. Total - subsidies ; cash + financial loan (= duration + annuity)

◦ Previsionnal cost = financial loan = **12 000€**

◦ Duration: **10 years** / Loan rate = **1.50%** (with yearly increase) / STE Durability = **+30 years**

=> **12 000 € / 10 years = 1200 €/year** ; taking into account the loan rate: **1292 €/year** (in average)

• **Return on investment (global expense / annual savings): 9 years**

◦ Global expense = **12 000€**

◦ Annual energy savings = **1328.85 € per year** during 30 years so in total : 1 328.85 €/year x 30 years = **39 865.5 €**

◦ ROI = 12 000 € / 1328.85 € = **about 9 years (7.6 years)** with the assumption of increasing energy price from 3 to 7%

◦ ROIC = 1328.85 € / 12 000 € = **11.07 % (13.9%)** with the assumption of increasing energy price from 3 to 7%

• **Yearly Earnings (Annual savings and yearly loan payment): 36.85 €/year (for 10 years, then 1329 €/year)**

cf. good if savings > loan

◦ Annual savings = **1328.85 €**

◦ Yearly loan payment = **1292 €**

◦ Difference = 1328.85 - 1292 = **36.85€/year of earnings on the 10 year-loan period / after = 1328.85 €/year**

	Année	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Charge sans solaire	1958	2056	2159	2267	2380	2499	2624	2756	2893	3038	3190	3349	3517	3693	3877	4071	4275	4489	4713	4949
2	Remboursement emprunt	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	0	0	0	0	0	0	0	0	0	0
3	Gaz restant à acheter	629	661	694	729	765	803	844	886	930	976	1025	1077	1130	1187	1246	1309	1374	1443	1515	1591
4	Entretien du système	0	0	0	0	0	200	206	212	219	225	232	239	246	253	261	269	277	285	294	303
5	Charge avec solaire (2+3+4)	1922	1954	1987	2022	2058	2296	2343	2391	2442	2495	1257	1315	1376	1440	1507	1577	1651	1728	1809	1893
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Eco d'énergie (1-5) €/HT/an	36	102	172	245	322	203	282	365	452	543	1933	2034	2141	2253	2370	2494	2624	2761	2904	3056
7	E d'énergie €/HT / mois	3	9	14	20	27	17	23	30	38	45	161	170	178	188	198	208	219	230	242	255

• **Network of installers:** Ets LEFORT / Solair3Tech / Elevance (groupe Agriale) / Pineau Thermic System / MAES Ets / Lacta Services / INOVIA (Ancien du Groupe Terrena) / SARL TESSIER / Comptoir machine à traire (CMT) / CES Tardy - EMERAUDE ELEVAGE EQUIPEMENT / Energies libres

• **Legislation for installation/Procedures and precautions:** rural environment so few restrictions ; when roof, request for work to municipality / when on the floor, nothing needed as long as within property

RELEVANT REMARKS & COMMENTS

NB 1: what about simulating another model where only the service of energy is sold, not the device?

NB 2: is Liqun a subcontractor of the installers or reverse?

NB 3: for each set of case study (academic + field application), making a review of conclusions (approximatively 1p)

WITH AIDS

- Provisionnal Cost (total - subsidies): 8 500 €**

cf. cost of equipment & installation + site preparation - potential aids = provisional cost

- Cost of the equipment & installation: 10 000 €**

Notes: 3829€ for one stainless steel unit & 3480€ for one basic unit + installation expenses = 5000€/unit / 3 units x 5000€/unit = 15 000€

- Cost of the site preparation: 2000 €**

cf. in average if not done personally by the holder

- Aids and subsidies available: 5250 €**

cf. average grant = 35% ; 10000 x 0.35 = 3500 € *in the event of approval by regulating authorities*

OPTIONAL COST: monitoring = 1200€ (equipment) + 1200€ (installation) + 38 €/year (RESOL subscription)

- Financial Package : 916 €/year for 10 years (in average)**

cf. Total - subsidies ; cash + financial loan (= duration + annuity)

o Provisionnal cost = financial loan = **8 500 €**

o Duration: **10 years** / Loan rate = **1.50%** (with yearly increase) / STE Durability = **+30 years**

=> **8500 € / 10 years = 850 €/year** ; taking into account the loan rate: **916 €/year** (in average)

- Return on investment (global expense / annual savings): 6 years & 4 months**

o Global expense = **8500 €**

o Annual energy savings = **1328.85 € per year** during 20 years so in total : 1328.85 €/year x 30 years = **39 865,5 €**

o ROI = 8500 € / 1328.85 € = **6 years and 4 months (5.7 years)** with the assumption of increasing energy price from 3 to 7%

o ROIC = 1328.85 € / 8500 € = **15.63% (19.7 years)** with the assumption of increasing energy price from 3 to 7%

- Yearly Earnings (Annual savings and yearly loan payment): +1021€/year (for 10 years, then 2576€/year)**

cf. good if savings > loan

o Annual savings = **1328.85 €**

o Yearly loan payment = **916 €**

o Difference = 1328.85 - 916 = **422.85 €/year of earnings on the 10 year-loan period / after = 1328.85 €/year**

	Année	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Charge sans solaire	1958	2056	2159	2267	2380	2499	2624	2756	2893	3038	3190	3349	3517	3693	3877	4071	4275	4489	4713	4949
2	Remboursement emprunt	916	916	916	916	916	916	916	916	916	916	0	0	0	0	0	0	0	0	0	0
3	Gaz restant à acheter	629	661	694	729	765	803	844	886	930	976	1025	1077	1130	1187	1246	1309	1374	1443	1515	1591
4	Entretien du système	0	0	0	0	0	200	206	212	219	225	232	239	246	253	261	269	277	285	294	303
5	Charge avec solaire (2+3+4)	1545	1577	1610	1645	1681	1919	1965	2014	2064	2117	1257	1315	1376	1440	1507	1577	1651	1728	1809	1893
6	Eco d'énergie (1-5) €HT/an	413	479	549	623	699	580	659	742	829	921	1933	2034	2141	2253	2370	2494	2624	2761	2904	3056
7	Eco d'énergie €HT/mois	34	40	46	52	58	48	55	62	69	77	161	170	178	188	198	208	219	230	242	255

- Network of installers:** Ets LEFORT / Solair3Tech / Elevance (groupe Agriale) / Pineau Thermic System / MAES Ets / Lacta Services / INOVIA (Ancien du Groupe Terrena) / SARL TESSIER / Comptoir machine à traire (CMT) / CES Tardy - EMERAUDE ELEVAGE EQUIPEMENT / Energies libres
- Legislation for installation/Procedures and precautions:** rural environment so few restrictions ; when roof, request for work to municipality / when on the floor, nothing needed as long as within property

RELEVANT REMARKS & COMMENTS

NB 1: what about simulating another model where only the service of energy is sold, not the device?

NB 2: is Liquin a subcontractor of the installers or reverse?

NB 3: for each set of case study (academic + field application), making a review of conclusions (approximatively 1p)