

Ferical



Efficient Heating Solutions

Business Plan

Ferical Gmbh Compact Floor Heating Panels

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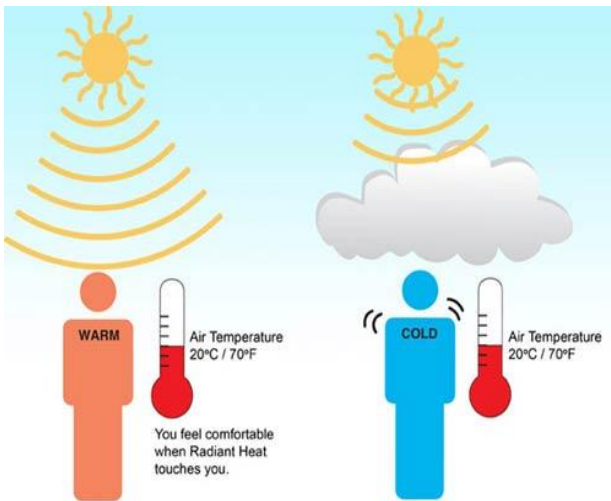
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1. Background Information for the Project

What is Floor Heating :

- Realized by installing tubes carrying heat exchange material under the floor
- Air, fluids or electricity can be used for heat exchange
- It uses radiant heating



Radiant Heating





1. Background Information for the Project

Types of Floor Heating:

- Air-Heated Radiant Floors: Air is used for heat exchange but air can not hold large amounts of heat so they are not mostly cost-effective
- Electric Radiant Floors: Uses electricity for heat exchange but cost of electricity can be a problem
- Hydronic Radiant Floors: Hydronic (liquids) are used for heat exchange. They are the most popular and cost-effective radiant heating systems



Hydronic Radiant Heating

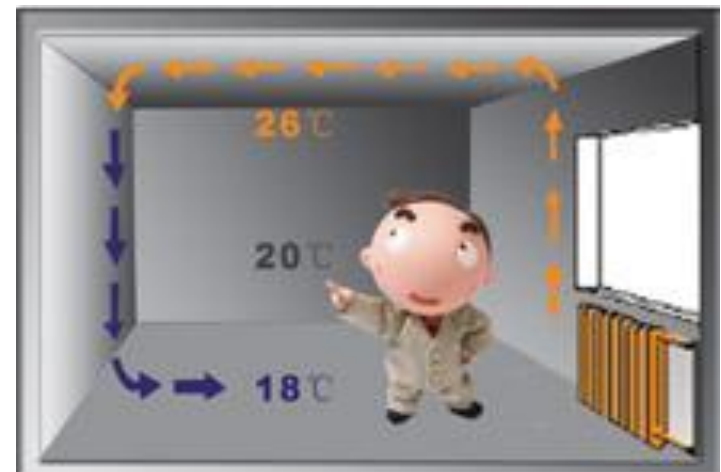


Electric radiant Heating

1. Background Information for the Project

What is the Advantage of Floor Heating :

- Lower operating temperatures for the same effect
- Less operating costs
- You save space in your area
- More comfortable and uniform temperature inside the room
- Because of the radiant heating less air movement so less dust and bacteria circulating in the air
- Radiant heat do not dry out your breathing passages

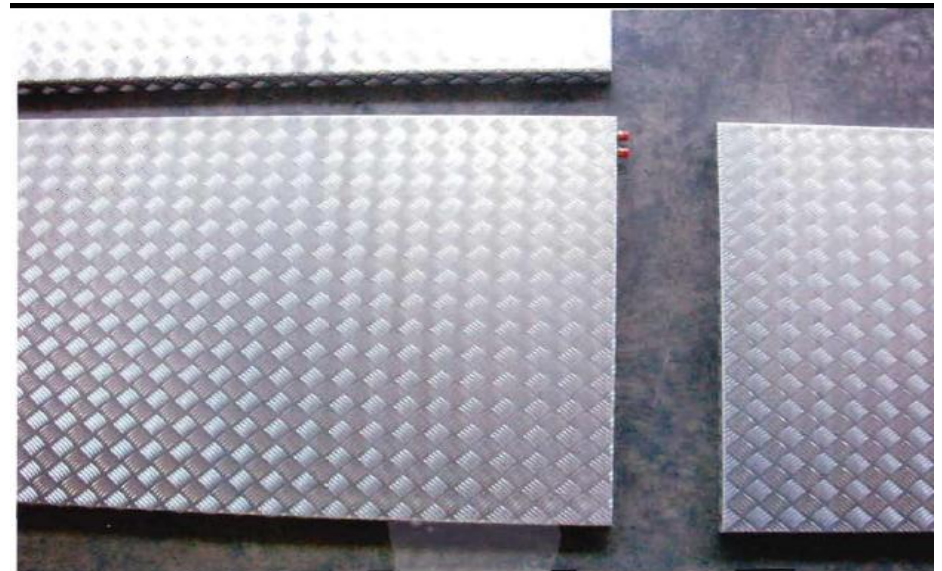
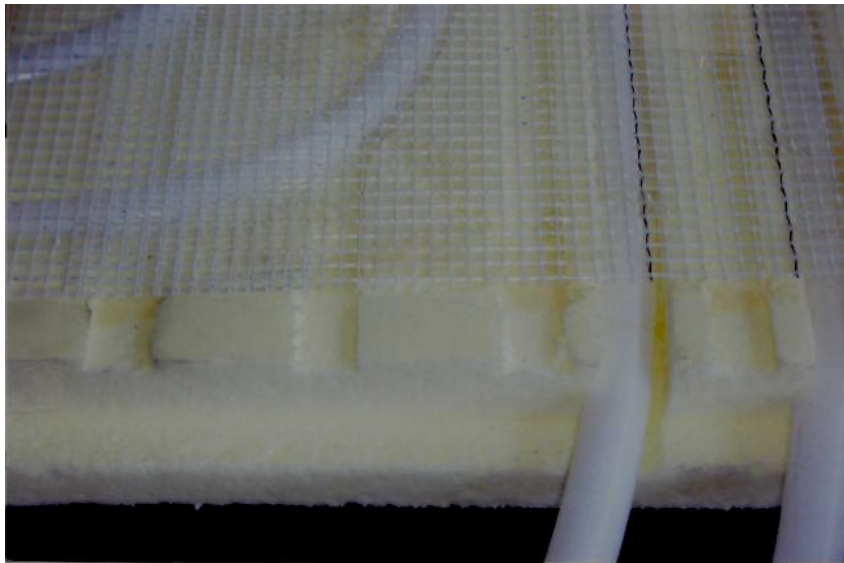




2. Description of the Product

What is Compact Floor Heating Panel:

- Our product, 2 x 1 m panel consists of hydronic tubes with its isolation and a metal covering





2. Description of the Product

What is the advantage of Compact Floor Heating Panel:

- You can install it without damaging your existing floor
- In case of a problem in the panel it is very easy to access
- You can implement it much more quicker
- You do not have to use ceramics tiles or concrete to cover it





3. Market Analysis

- Ferical GmbH is a limited company and has its head office in Aachen (Rothe Erde)
- Around Aachen ~40 million people are living in a distance of 2,5 h by car
- Region has a lot of manufacturing companies big halls for logistics, montage, or production
- These companies are potential clients due we can reach them easily via freeway for installation
- A marketing campaign in combination with a huge potential market will lead to sufficient sales to start up our company



4. Definition of Capacities

- Because of an unknown product, production capacity will be at a lower level in the beginning and will increase over time

First year

+ Less customers and smaller projects in the first years
→ more effort for planning because of individual design

+ Optimisation in manufacturing during the first year

= 50% of production capacity expected



- 100% capacity is reached probably after 3 years

Year	1	2	3	4
Production capacity [%]	50	65	80	100



4. Definition of Capacities

- Assembling the CFHPs is manual work, therefore the number of panels is limited by the number of workers
- The whole production process includes 10 different steps, which proceed in a row
- At every station two workers are needed for optimal efficiency
- Average time to produce one panel is about one hour per worker



→ 20 workers x 1 panel/h x 8h/d x 254 working days/a ≈ **40.000 panels/a**

That number of CFHPs is produced at 100% workload and defines the minimal output with optimal productivity

5. Calculation of Investment

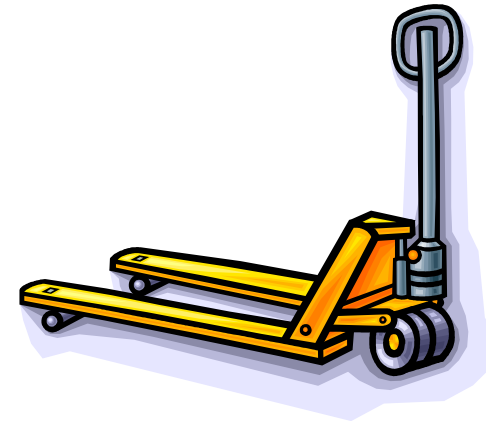
Installations	Expenditures [€]	Depreciation [a]	Depreciation costs [€]
Property (5000m ² to 200€/m ²)	1.000.000		
Office and conference rooms	300.000	20	15.000
Production hall	500.000	20	25.000
Storage building & Garage	75.000	20	3.750
Survey	10.000	20	500
Landscaping	30.000	20	1.500
Roads	25.000	20	1.250
Lightning	5.000	20	250
Fence	8.000	20	400
Drainage	15.000	20	750
Power installation	10.000	20	500
Planning	60.000	10	6.000
Water/sewage pipes	10.000	20	500
Total installations	2.048.000		55.400



Establishment of the company	Expenditures [€]
Limited company capital	25.000
Article of association	168
Certification of company general meeting	168
Commercial registration	42
Announcement in electronic federal gazette	100
Lawyer costs	500
Notary	300
Total Expenditures	26.278

5. Calculation of Investment

Machinery	Expenditures [€]	Depreciation [a]	Depreciation costs [€]
Crane system	20.000	10	2.000
Forklift truck (x2)	15.000	10	1.500
Hand forklift truck (x4)	2.000	10	200
Welding machine (x3)	4.500	10	450
Hand tools	10.000	10	1.000
Mobil workshop (x10)	5.000	10	500
Work bench (x10)	5.000	10	500
Spare Parts	5.000	10	500
Total machinery costs	66.500		6.650



Investments	Expenditures [€]	Depreciation [a]	Depreciation costs [€]
Land (5000m ² to 200€/m ²)	1.000.000	0	
Establishment of the Company	26.278	0	
Total installations	1.048.000	20	52.400
Machinery	66.500	10	6.650
Vehicles (2 cars, 1 Van, 1 truck)	110.000	5	22.000
Informatics (PC, Communication, Licenses)	30.000	4	7.500
Furniture (Office & Production)	40.000	10	4.000
Security System	10.000	11	909
Safety System	12.000	20	600
Unexpected	100.000	0	
Circulating capital	50.000	0	
Total Investment	2.492.778		94.059



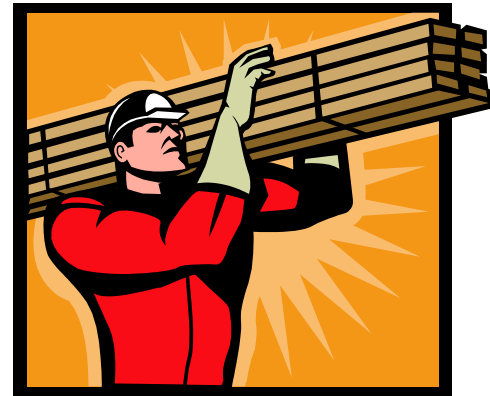
6. Costs

Consumption costs

Expendable materials	Costs per panel (2mX1m) [€]
Raw materials	
Aluminium panel	91,00
Polysterol milled	21,00
Fitting	7,00
Tube	18,00
Estriche	12,00
Glue	10,00
Welding dowel	6,00
Net	5,00
Utilities	
Electricity used	0,20
Selling	1,00
Maintenance	0,25
Packing	
Polystyrene	0,05
Packaging cover	0,01
Wood lath	0,20
Label	0,02
Total	171,73

Labor costs

Labor costs	Number	Costs [€]
Workers	20	960.000
Technicians	2	120.000
Secretary	1	40.000
Mechanic for montage	3	144.000
Staff	2	75.000
Engineers (Share Holders)	2	192.000
Total		1.531.000



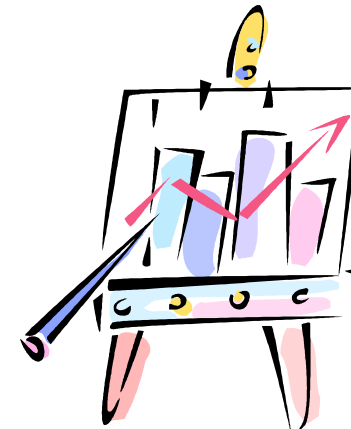
6. Costs

Marketing costs

Marketing	Costs [€/a]
Advertising	40.000
Printing	5.000
Exhibitions	45.000
Business trips	10.000
Total marketing cost	100.000

Administrative costs

Administrative costs	Costs [€]
Insurance for the factory	20.000
Insurance for the cars	5.000
Telecommunication	8.000
Books and newspapers	600
Total	33.600



6. Costs

Financing

Total investment [€]	2.492.778
40% own capital	997.111
60% outside financing	1.495.667



Bank loan repayment

Year	Balance of debt [€]	Interest rate [%]	Interest costs paid p.a. [€]	Repayment [€]
1	1.495.667	7	104.697	149.567
2	1.346.100	7	94.227	149.567
3	1.196.534	7	83.757	149.567
4	1.046.967	7	73.288	149.567
5	897.400	7	62.818	149.567
6	747.834	7	52.348	149.567
7	598.267	7	41.879	149.567
8	448.700	7	31.409	149.567
9	299.133	7	20.939	149.567
10	149.567	7	10.470	149.567
Total			575.832	1.495.667



7. Price Definition

Self Cost over 10 Years

	1. year per panel	1. year	2. year	3. year	4. year	5. year	6. year	7. year	8. year	9. year	10. year
Utilization of capacity(%)	50	50	65	80	100	100	100	100	100	100	100
Quantity in	20320	20320	26416	32512	40640	40640	40640	40640	40640	40640	40640
Costs											
Depreciation costs	4,63	94.059	94.059	94.059	94.059	86.559	64.559	64.559	64.559	64.559	64.559
Financing costs	5,15	104.697	94.227	83.757	73.288	62.818	52.348	41.879	31.409	20.939	10.470
Labour costs	75,34	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000
Raw material costs	171,73	3.489.554	4.536.420	5.583.286	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107
Administrative costs	1,65	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600
Marketing costs	4,92	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Sum of costs	263,43	5.352.909	6.389.306	7.425.702	8.811.054	8.793.084	8.760.615	8.750.145	8.739.675	8.729.206	8.718.736
Costs per panel		263,4306	241,8726	228,3988	216,8074	216,3653	215,5663	215,3087	215,0511	214,7934	214,5358



7. Price Definition

Revenues over 10 Years

Year	Output	Price per panel [€]	Revenue [€]
1	20.320	260	5.283.200
2	26.416	260	6.868.160
3	32.512	260	8.453.120
4	40.640	260	10.566.400
5	40.640	260	10.566.400
6	40.640	260	10.566.400
7	40.640	260	10.566.400
8	40.640	260	10.566.400
9	40.640	260	10.566.400
10	40.640	260	10.566.400

Our selling price per panel is 260€

8. Cash Flow

Cash Flow over 10 Years

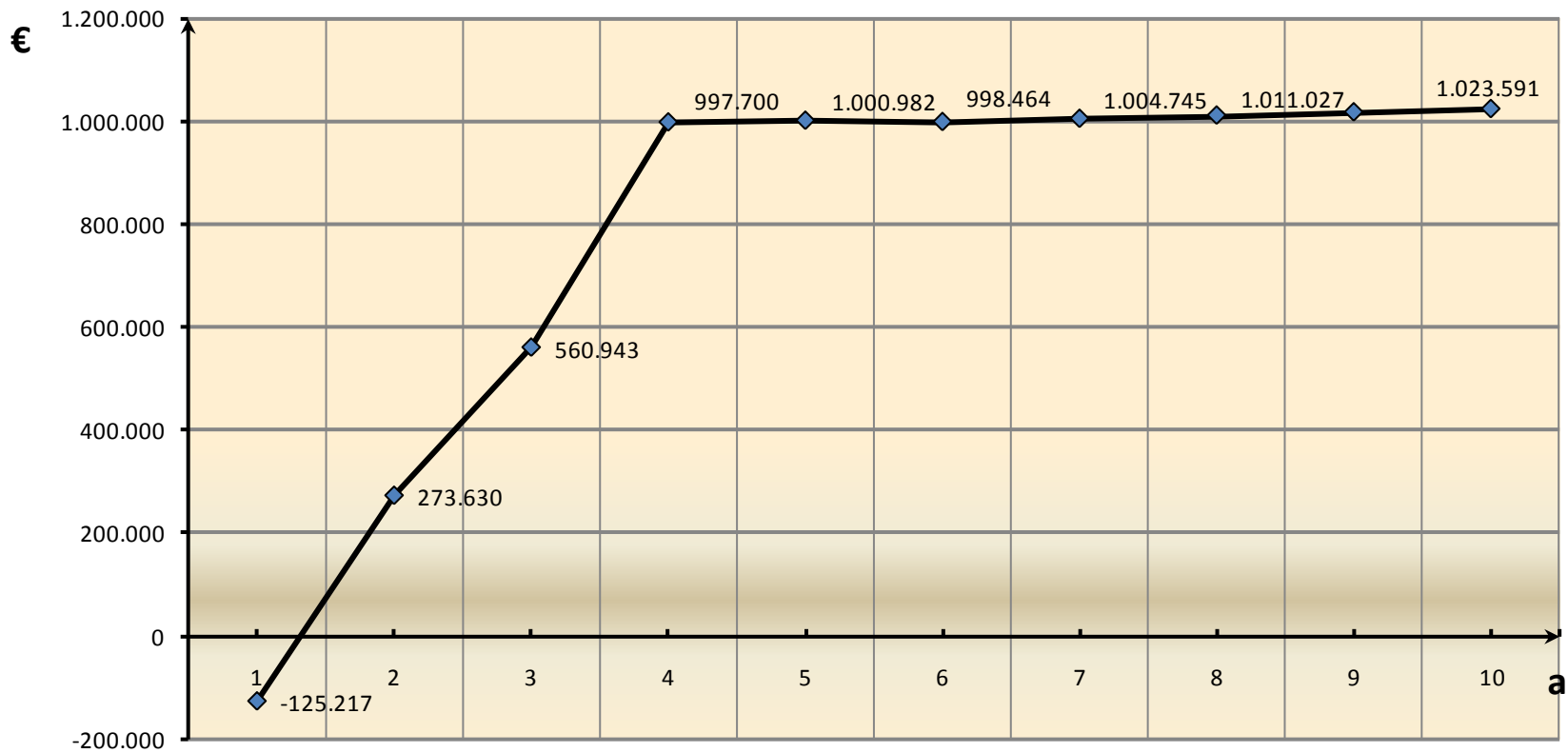
	1. year	2. year	3. year	4. year	5. year	6. year	7. year	8. year	9. year	10. year
Revenue [€]	5.283.200	6.868.160	8.453.120	10.566.400	10.566.400	10.566.400	10.566.400	10.566.400	10.566.400	10.566.400
Depreciation costs [€]	94.059	94.059	94.059	94.059	86.559	64.559	64.559	64.559	64.559	64.559
Labor costs [€]	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000	1.531.000
Raw material costs [€]	3.489.554	4.536.420	5.583.286	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107	6.979.107
Financing costs [€]	104.697	94.227	83.757	73.288	62.818	52.348	41.879	31.409	20.939	10.470
Administrative costs [€]	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600	33.600
Marketing costs [€]	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Loss carried forward [€]	0	-69.709	0	0	0	0	0	0	0	0
Profit before tax [€]	-69.709	548.563	1.027.418	1.755.346	1.773.316	1.805.785	1.816.255	1.826.725	1.837.194	1.847.664
Taxes (40%)	0	219.425	410.967	702.138	709.326	722.314	726.502	730.690	734.878	739.066
Profit after tax [€]	-69.709	329.138	616.451	1.053.208	1.063.989	1.083.471	1.089.753	1.096.035	1.102.317	1.108.598
Cash flow (Depreciation + profit) [€]	24.350	423.197	710.510	1.147.267	1.150.548	1.148.030	1.154.312	1.160.594	1.166.876	1.173.157
Repayment credit [€]	149.567	149.567	149.567	149.567	149.567	149.567	149.567	149.567	149.567	149.567
Dividend [€]	-125.217	273.630	560.943	997.700	1.000.982	998.464	1.004.745	1.011.027	1.017.309	1.023.591

Total Dividend over 10 years: 7.763.174€



8. Cash Flow

Dividend [€/a]





9. Conclusion

- Our product is different than other floor heating instruments and our clients are mainly industrial buildings. This means our target group is different than other floor heating companies'.
- Germany has numerous industrial buildings and they are our potential market
- Since we offer a totally new product we need some time to get reputation in the market

THANK YOU FOR YOUR ATTENTION