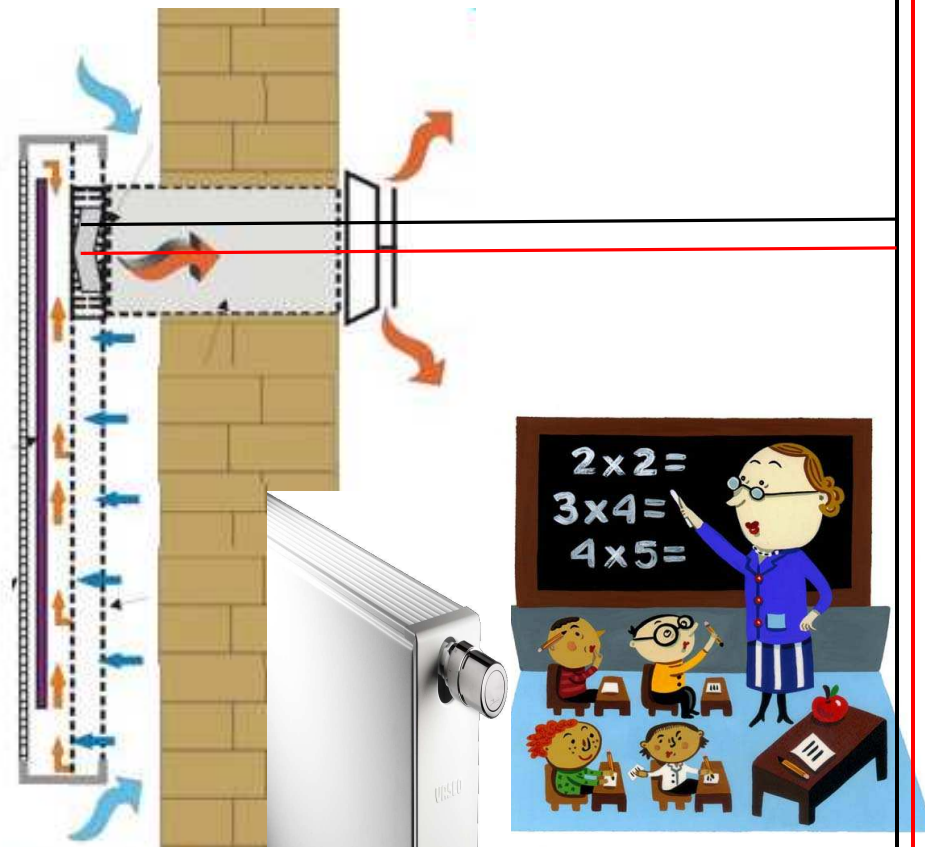
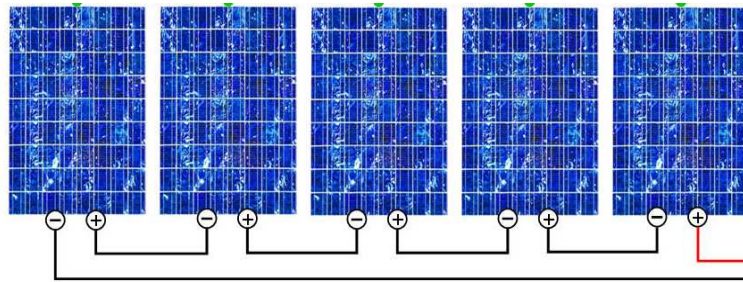


B

Community Fund for the Promotion of Basic Education and Community Infrastructure

Energy Efficiency and renewable Energies

Value Increase by SolarCollectors and installation of circulating heating system





No.	Point	Declaration	Comment
1.1	Measure	<p>Two independently working systems will be installed:</p> <ul style="list-style-type: none"> ➤ Solar collector for basic warming of classrooms ➤ Conversion of gravitational heating system to circulation heating system to reduce loss of the line. 	
1.2	Idea	<p>Because Sun is intensively shining during the days in winter and can bring a direct solar yield, the solar radiation should be used as well as possible.</p> <p>The lines of distribution network are unfavourable due to technical conditions: most of distribution is placed in the cold zones of the building; there are big losses of energie outside. After installation of a circulation pump, the pipes may be installed more flexibly, their dimensions can be reduced.</p> <p>For operation of heating circulation pump there is required electricity; it can be produced relatively easily and cost-effectively by a small photovoltaic system as island solution.</p>	
		<p>Photovoltaic system can be built so that it produce electricity for both system.</p>	
1.3	Effect	<p>Classrooms will be warmed up sufficiently on not too cold days. Controlled fresh air blow-in reduces ventilation losses resulting from shock airing.</p> <p>The continuous supply of fresh air guarantees pleasant air conditions.</p> <p>The effective installation of pipes brings a lower need for energy. Lesser dimension of heating (water, components) and circulation of water results also to faster reaction of heating.</p>	
1.4	Limits	<p>A stand-alone Solar-collector are not able to warming up the classrooms during cold days. A backup heating is required.</p> <p>The facade-collectors must not be shadowed (mountains, plants, buildings, etc.). They may are not far from the blow-in-slappings.</p>	
1.5	Realization	<p>Air collectors are easy to build, will produced by local craftsmen in the department. Steps are easy to understand. No special materials required. As approbiate used parts can (fan) can be installed.</p> <p>Heating system by air is depending on of sunshine. In sunshine, the air can be heated up to 55°. Yield can be carried at ap prox. 1,600 watts.</p>	



		<p>As usual, the modified heating system can be built by the craftsmen, the installation makes it easier. Use of the pump and the operation of a PV-system is not difficult. System can be build by men in the departement..</p> <p>Controllers and PV-elements are now relatively cheap. No major changes in existing planning to the buildings are required.</p>
1.6	Impact	<ul style="list-style-type: none"> ➤ In transition time (summer/winter) temperature in classrooms will climb by using simple technology. ➤ Technique of solar-modules can be copied and used. The system can be installaed also for the private residential sector. ➤ Facilities of the schools serve as a model system. ➤ Capacity-building for local craftsmen. ➤ Circulation based heating distribution is a material-saving variant.
1.7	Operation	<p>Solar collectors work largely maintenance-free. From time to time, a cleaning of collectors is required.</p> <p>An complex controller and automatically operating system will be not installed, circulation pump must be switched on/ switched off during operation of heating. In addition, pump is to maintained at regular intervals.</p>
1.8	Time	<p>Planning time: 30 days Building licence: done Bidding: 14 days Realization: 30 days</p>
1.9	Value	+

без похвалой

ESTIMATED COST

Measure B - Support by Heating "facadecollectors"

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND
COMM

client: NSIFT

planing: ba-K

supplier: _____

Total offer netto: _____

0%% charge: _____

brutto: _____

Total approved netto: _____

0%% charge: _____

brutto: _____

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
client: NSIFT
planing ba-K
LV: Measure B - Support by Heating "facadecollectors"

Pos.Nr.	Einheitspr.	Gesamtp.
	<p data-bbox="336 309 1318 349">Lv: Measure B - Support by Heating "facadecollectors"</p> <p data-bbox="336 365 520 394">Calculation for:</p> <ul data-bbox="336 396 595 568" style="list-style-type: none"><li data-bbox="336 396 440 425">- School<li data-bbox="336 427 483 456">- Classes: 8<li data-bbox="336 459 459 488">- Floors: 1<li data-bbox="336 490 539 519">- Width: 14.56 m<li data-bbox="336 521 549 551">- Length: 39,36 m<li data-bbox="336 553 595 582">- Gross floor area: 57	

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom

Pos.Nr.	Einheitspr.	Gesamtp.
<p>1.</p>	<p>Bereich: 1 Classroom</p> <p>in "Bereich 1" is calculated following: costs of the individual components for a classroom. It should thus be represented as the cost of 1 ventilation element, consisting of:</p> <ul style="list-style-type: none"> - Earth collector - Air collector - Power supply - Structural changes made up. <p>In Bereich 2, the cost of calculation identified in Bereich 1, are used for the additional components.</p> <p>Reason: Through naming of "unit price for 1 air heater" is increased the pre-requisites and and you can quickly calculate changes (e.g. 10-class school instead of 8 classes)</p>	

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing: ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.1. Facade installed Air-Collector**

Pos.Nr.		Einheitspr.	Gesamtpr.
1.1.	Titel: Facade installed Air-Collector		
1.1.1.	material for construction, wooden	1,00 piece	
1.1.2.	material, suction tubes, screws, ventilator, etc	1,00 piece	
1.1.3.	material, coverpanel transparent board in glass or polycarbonat	1,00 piece	
1.1.4.	absorber	1,00 piece	
1.1.5.	others	1,00 piece	
1.1.6.	working capacity produced in series, 12 h/piece	1,00 piece	
	Summe Titel 1.1. Facade installed Air-Collector		

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.2. electricity**

Pos.Nr.		Einheitspr.	Gesamtpr.
1.2.	Titel: electricity		
1.2.1.	control system	1,00 piece	_____
1.2.2.	control system, temperature	1,00 piece	_____
1.2.3.	pv-modul ca.135 W	1,00 piece	_____
	Summe Titel 1.2. electricity		=====

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.3. works around**

Pos.Nr.		Einheitspr.	Gesamtpr.
1.3.	Titel: works around		
1.3.1.	customiz facade	1,00 piece	_____
1.3.2.	slapping to classroom	1,00 piece	_____
1.3.3.	ventilation grid	1,00 St	_____
	Summe Titel 1.3. works around		=====
	Summe Bereich 1. 1 Classroom		=====

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

2. additional 7 classrooms

Pos.Nr.		Einheitspr.	Gesamtp.
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2.	Bereich: additional 7 classrooms		
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2.1.	work explaind above		
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	7,00 piece	_____	_____
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	Summe Bereich 2. additional 7 classrooms	_____	=====
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project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. additional 2 rooms, teacher, Director

Pos.Nr.	Einheitspr.	Gesamtp.
3.	Bereich: additional 2 rooms, teacher, Director	
3.1.	work explaind above	
	2,00 piece	_____
	Summe Bereich 3. additional 2 rooms, teacher, Director	
		=====

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. rearrangement: gravity heating system --> circulated system

Pos.Nr.		Einheitspr.	Gesamtpr.
3.	Bereich: rearrangement: gravity heating system --> circulated system		
3.1.	lay pipes in warm rooms more slapping, less installation in roof and basement; no importance of slope	1,00 piece	
3.2.	elimination of expansion tank in roof	1,00 piece	
3.3.	expansion tank, pressurized	1,00 St	
3.4.	reduction of material reduction of tubes	136,00 m	

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. rearrangement: gravity heating system --> circulated system

3.1. electricity

Pos.Nr.		Einheitspr.	Gesamtp.
3.1.	Titel: electricity		
3.1.1.	circulation pump	1,00 piece	_____
3.1.2.	installation of circulation Pump	1,00 piece	_____
3.1.3.	control system	1,00 piece	_____
3.1.4.	control system, temperature	1,00 piece	_____
3.1.5.	pv-modul	1,00 piece	_____
3.1.6.	buffer batterie, accumulator	1,00 piece	_____
	Summe Titel 3.1. electricity		=====
	Summe Bereich 3. rearrangement: gravity heating system --> circulated system		=====
	Summe Lv Measure B - Support by Heating "facadecollectors"		=====

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
client: NSIFT
planing: ba-K
LV: Measure B - Support by Heating "facadecollectors"

Zusammenfassung

Titel 1.1. Facade installed Air-Collector _____

Titel 1.2. electricity _____

Titel 1.3. works around _____

Bereich 1. 1 Classroom _____

Bereich 2. additional 7 classrooms _____

Bereich 3. additional 2 rooms, teacher, Director _____

Titel 3.1. electricity _____

Bereich 3. rearrangement: gravity heating system --> circulated system _____

Gesamt netto _____

zzgl. 0 % MwSt _____

Gesamt brutto _____

Lv Measure B - Support by Heating "facadecollectors"..... 2

Bereich 1. 1 Classroom..... 3

 Titel 1.1. Facade installed Air-Collector..... 4

 Titel 1.2. electricity..... 5

 Titel 1.3. works around..... 6

Bereich 2. additional 7 classrooms..... 7

Bereich 3. additional 2 rooms, teacher, Director..... 8

Bereich 3. rearrangement: gravity heating system --> circulated system..... 9

 Titel 3.1. electricity..... 10.

с похвалой

ESTIMATED COST

Measure B - Support by Heating "facadecollectors"

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND
COMM

client: NSIFT

planing: ba-K

supplier: _____

Total offer netto: _____

0%% charge: _____

brutto: _____

Total approved netto: _____

0%% charge: _____

brutto: _____

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
client: NSIFT
planing ba-K
LV: Measure B - Support by Heating "facadecollectors"

Pos.Nr.	Einheitspr.	Gesamtp.
	<p data-bbox="336 309 1318 349">Lv: Measure B - Support by Heating "facadecollectors"</p> <p data-bbox="336 360 523 389">Calculation for:</p> <ul data-bbox="336 394 596 568" style="list-style-type: none"><li data-bbox="336 394 443 423">- School<li data-bbox="336 423 485 452">- Classes: 8<li data-bbox="336 452 461 481">- Floors: 1<li data-bbox="336 481 539 510">- Width: 14.56 m<li data-bbox="336 510 549 539">- Length: 39,36 m<li data-bbox="336 539 596 568">- Gross floor area: 57	

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom

Pos.Nr.		Einheitspr.	Gesamtp.
1.	<p>Bereich: 1 Classroom</p> <p>in "Bereich 1" is calculated following: costs of the individual components for a classroom. It should thus be represented as the cost of 1 ventilation element, consisting of:</p> <ul style="list-style-type: none"> - Earth collector - Air collector - Power supply - Structural changes made up. <p>In Bereich 2, the cost of calculation identified in Bereich 1, are used for the additional components.</p> <p>Reason: Through naming of "unit price for 1 air heater" is increased the pre-requisites and and you can quickly calculate changes (e.g. 10-class school instead of 8 classes)</p>		

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.1. Facade installed Air-Collector**

Pos.Nr.		Einheitspr.	Gesamtp.
1.1.	Titel: Facade installed Air-Collector		
1.1.1.	material for construction, wooden		
	1,00 piece	120,00	120,00
1.1.2.	material, suction		
	tubes, screws, ventilator, etc		
	1,00 piece	85,00	85,00
1.1.3.	material, coverpanel		
	transparent board in glass or polycarbonat		
	1,00 piece	220,00	220,00
1.1.4.	absorber		
	1,00 piece	140,00	140,00
1.1.5.	others		
	1,00 piece	50,00	50,00
1.1.6.	working capacity		
	produced in series, 12 h/piece		
	1,00 piece	20,00	20,00
	Summe Titel 1.1. Facade installed Air-Collector		635,00

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.2. electricity**

Pos.Nr.		Einheitspr.	Gesamtp.
1.2.	Titel: electricity		
1.2.1.	control system	1,00 piece	35,00
			35,00
1.2.2.	control system, temperature	1,00 piece	40,00
			40,00
1.2.3.	pv-modul ca.135 W	1,00 piece	450,00
			450,00
	Summe Titel 1.2. electricity		<u>525,00</u>

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

1. 1 Classroom**1.3. works around**

Pos.Nr.		Einheitspr.	Gesamtp.
1.3.	Titel: works around		
1.3.1.	customiz facade	1,00 piece	30,00
			30,00
1.3.2.	slapping to classroom	1,00 piece	15,00
			15,00
1.3.3.	ventilation grid	1,00 St	20,00
			20,00
	Summe Titel 1.3. works around		65,00
	Summe Bereich 1. 1 Classroom		1.225,00

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
client: NSIFT
planing ba-K
LV: Measure B - Support by Heating "facadecollectors"

2. additional 7 classrooms

Pos.Nr.		Einheitspr.	Gesamtp.
2.	Bereich: additional 7 classrooms		
2.1.	work explaind above		
		7,00 piece	1.225,00
			8.575,00
		Summe Bereich 2. additional 7 classrooms	<u>8.575,00</u>

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. additional 2 rooms, teacher, Director

Pos.Nr.		Einheitspr.	Gesamtp.
3.	Bereich: additional 2 rooms, teacher, Director		
3.1.	work explaind above		
		2,00 piece	1.225,00
			2.450,00
	Summe Bereich 3. additional 2 rooms, teacher, Director		<u>2.450,00</u>

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. rearrangement: gravity heating system --> circulated system

Pos.Nr.		Einheitspr.	Gesamtpr.
3.	Bereich: rearrangement: gravity heating system --> circulated system		
3.1.	lay pipes in warm rooms more slapping, less installation in roof and basement; no importance of slope		
		1,00 piece	-300,00
			-300,00
3.2.	elimination of expansion tank in roof		
		1,00 piece	-50,00
			-50,00
3.3.	expansion tank, pressurized		
		1,00 St	250,00
			250,00
3.4.	reduction of material reduction of tubes		
		136,00 m	-0,20
			-27,20

project: 110601-A COMMUNITY FUND FOR THE PROMOTION OF BASIC EDUCATION AND COMM
 client: NSIFT
 planing ba-K
 LV: Measure B - Support by Heating "facadecollectors"

3. rearrangement: gravity heating system --> circulated system

3.1. electricity

Pos.Nr.		Einheitspr.	Gesamtp.
3.1.	Titel: electricity		
3.1.1.	circulation pump	1,00 piece	150,00
			150,00
3.1.2.	installation of circulation Pump	1,00 piece	40,00
			40,00
3.1.3.	control system	1,00 piece	40,00
			40,00
3.1.4.	control system, temperature	1,00 piece	60,00
			60,00
3.1.5.	pv-modul	1,00 piece	650,00
			650,00
3.1.6.	buffer batterie, accumulator	1,00 piece	200,00
			200,00
	Summe Titel 3.1. electricity		<u>1.140,00</u>
Summe Bereich 3. rearrangement: gravity heating system --> circulated system			<u>1.012,80</u>
Summe Lv Measure B - Support by Heating "facadecollectors"			<u>13.262,80</u>

Lv Measure B - Support by Heating "facadecollectors"..... 2

Bereich 1. 1 Classroom..... 3

 Titel 1.1. Facade installed Air-Collector..... 4

 Titel 1.2. electricity..... 5

 Titel 1.3. works around..... 6

Bereich 2. additional 7 classrooms..... 7

Bereich 3. additional 2 rooms, teacher, Director..... 8

Bereich 3. rearrangement: gravity heating system --> circulated system..... 9

 Titel 3.1. electricity..... 10.