

Progetto
Risparmio Energetico
I.T.G. "Palladio"

3Bgeo - 3Biet

Anno scolastico 2009-2010

Our school: ISIS “A.Palladio”-Treviso

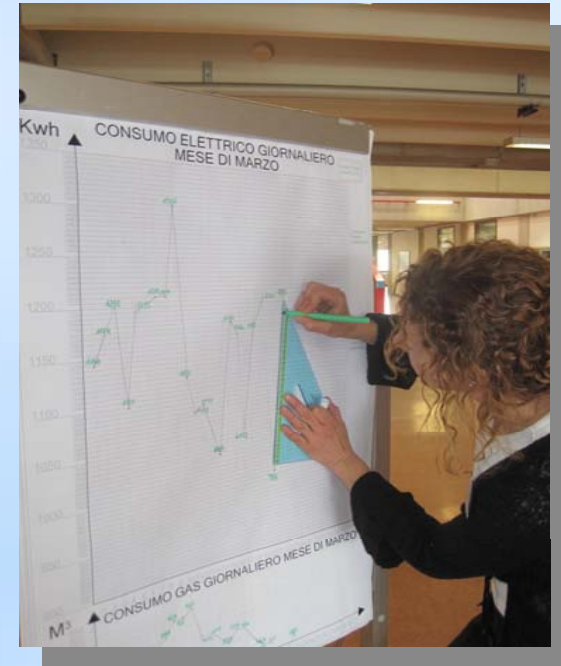
**Institute for Building and Land Surveyors and
Graphic Arts and Communication Technicians**



Our energy team – 3Bgeo - 3Biet



Student & teachers - M.Loviscek G.Sartorello



Graph with daily consumption of energy in the entrance hall



1. Check up of the school



daily control of consumption of methane



daily check of all electrical consumption



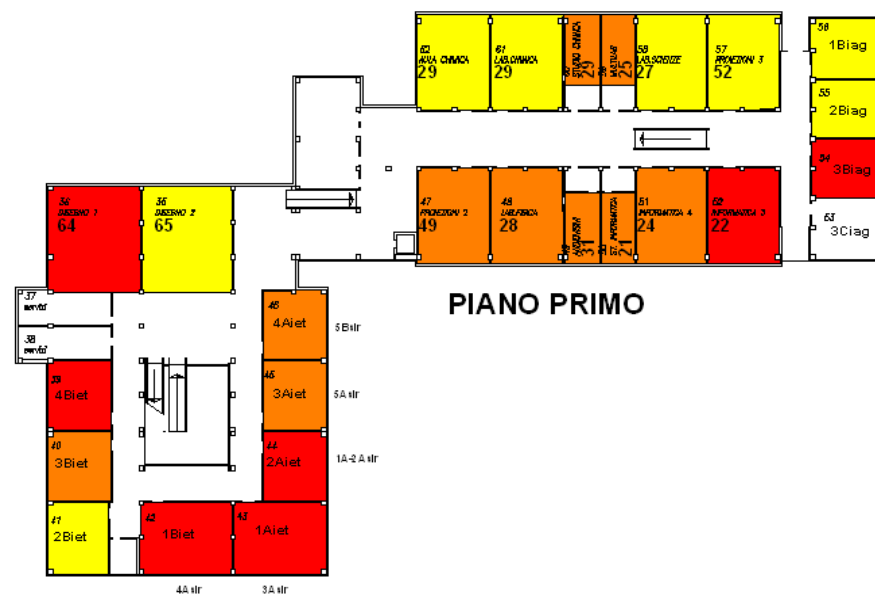
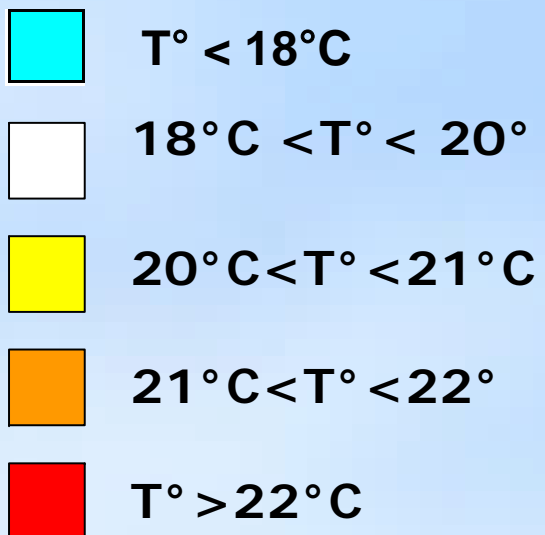
temperature control in an empty class



inventory of electrical equipment

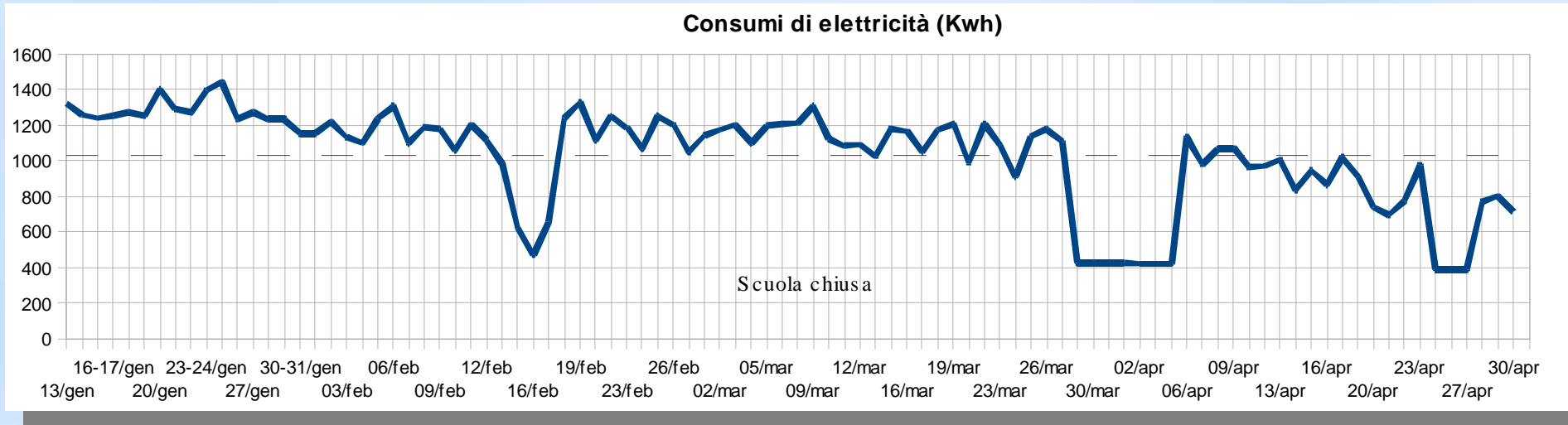
TEMPERATURE before educational work

Legenda:

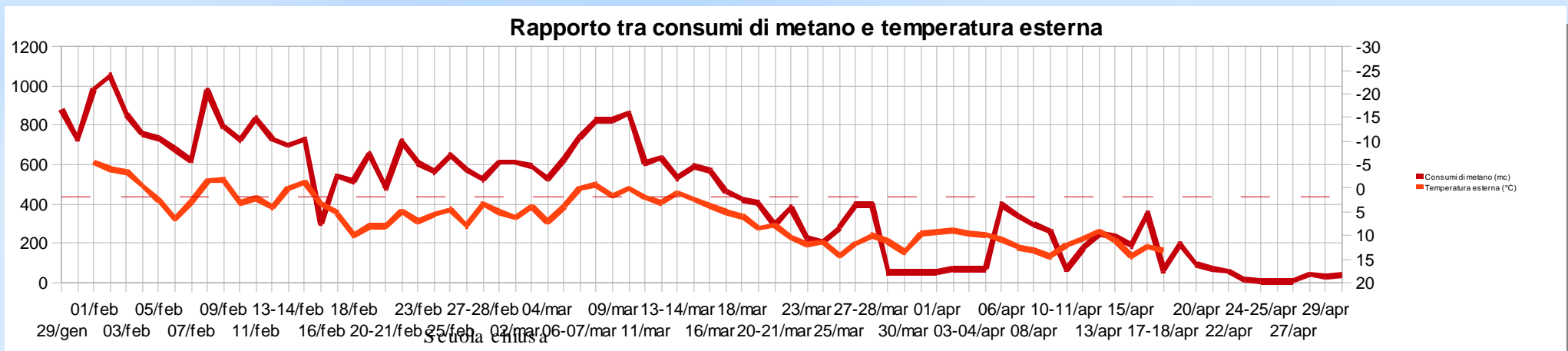


Daily measures of electricity and fuel:

Evolution of electricity consumption from January to April: reduction achieved is clearly visible



Consumption trends of methane: the reduction can be seen but also the relation to external temperature



Consumi energia elettrica 'Palladio'

La tabella riporta i consumi orari – o giornalieri - dei vari ambienti della scuola, espressi in Kwh, e poi tradotti in kg di emissioni di CO₂

N.B. Il consumo giornaliero medio (su base annua) di un'abitazione di 100m² è di 5-8 kwh/gg.

Consumo Lampada (w)	36
Kg CO2/Kwh	0,5387

Consumi Totali						
Piano	Tipo Locale	N° Locali	N° Lampade	Ore/gg	kwh/gg	Kg CO ₂ /gg
Interrato	Corridoio	1	22	6	4,75	2,56
	Aule Speciali	11	103	6	22,25	11,98
Piano Terra	Aula Magna	1	91	12	39,31	21,18
	Corridoio Est	1	42	12	18,14	9,77
	Atrio	1	143	12	61,78	33,28
	Aule	6	#NOME?	12	#NOME?	#NOME?
	Uffici	2	60	12	25,92	13,96
	Aule Speciali	12	196	12	84,67	45,61
Piano Primo	Corridoio Est	1	38	12	16,42	8,84
	Corridoio Sud	1	31	12	13,39	7,21
	Aule	12	80	12	34,56	18,62
	Aule Speciali	14	46	12	19,87	10,71
Piano Secondo	Corridoio Est	1	45	12	19,44	10,47
	Corridoio Sud	1	46	12	19,87	10,71
	Aule	21	201	12	86,83	46,78
	Aule Speciali	3	44	12	19,01	10,24

Consumi Altre Apparecchiature					
Computer	Consumo(w)	N°	Ore/gg	Kwh/gg	kg CO ₂ /gg
Info 1	90	25	6	13,50	7,27
Info 2	90	25	6	13,50	7,27
Info 3	90	25	6	13,50	7,27
Info 4	90	26	6	14,04	7,56
Docenti	90	8	6	4,32	2,33
Segreteria e Presidenza	90	19	6	10,26	5,53
Altri	90	32	6	17,28	9,31
Altro	Consumo(w)	N°	Ore/gg	Kwh/gg	Kg CO ₂ /gg
Fotocopiatrici	250	4	6	6,00	3,23
Stampanti	350	32	0	0,00	0,00
Scanner	90	8	6	4,32	2,33
Macchinette Bibite	750	3	12	27,00	14,54
Bar	da quantificare			70,00	37,71
Caldie	3000	1	12	36,00	19,39
Macchine ventilazione aule	26000	1	6	156,00	84,04
Aerotermi palestra	350	12	9	37,80	20,36
Luci palestra	400	42	10	168,00	90,50
Aerotermi aula magna	13000	1	6	78,00	42,02
Pompe centrale termica	21000	1	6	126,00	67,88
Lampioni	125	20	12	30,00	16,161
Fanali parcheggio	100	2	12	2,40	1,293
Fari corridioio est	100	2	12	2,40	1,293

Consumo Totale (Kwh/Giorno)	1.340
Kg CO₂/Giorno	722
Totale €/Giorno	201

N.B. Il consumo giornaliero medio (su base annua) di un'abitazione di 100m² è di **5-8 kwh/gg.**

2. Discussion on the energy audit



Empty classroom with windows open for t°

Actual Organization:

1. **Environmental Commettee**
4 students, 2 teachers, 2 technicians, Headmaster
2. **Energy team**
E.C + other students
3. **Environment guards**
2 student/class



3. Preparing materials for peer education



Brain storming for the rules to spare energy



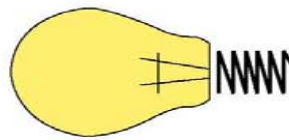
Working on the “decalogo”

The Decalogue

10 rules for correct behavior in energy are the result of the activity of brain storming kept in four classes.

The layout has been chosen –with attention to the quality of the message but also to the quantity of toner –from a selection of posters prepared by the students of the 3Ciag – course for Grafic Art.

[Apri il decalogo](#)



1. arieggia per pochi minuti le aule aprendo porte e finestre
2. spegni sempre le luci quando non sono necessarie
3. usa la luce naturale! Alza le tendine invece di accendere la luce
4. spegni un termosifone se la temperatura supera i 22°C
5. spegni tutti i termosifoni quando non sono necessari
6. posiziona le valvole termostatiche dei termosifoni a 20°C
7. spegni i computer quando non vengono utilizzati per almeno un'ora
8. spegni le luci superflue nelle zone sovra illuminate
9. stampa e fotocopia meno che puoi... usa le tecnologie informatiche!
10. e per i fortunati con aria condizionata: non superare 5°C di sbalzo termico con l'esterno.



Decalogo del Risparmio Energetico

andreapalladio
Istituto Tecnico Statale per Geometri

Palladio
ARTI GRAFICHE

Visentin Christian - 3C iag

4 - Dissemination

From February to April 2010 all the students and employees of the school have been involved in different ways. The last were 10 classes of the “Scientific Lyceum “Da Vinci” that are hosted in some classrooms of the building.

(in total: **960 students, 60 teachers, plus 30** employees (ATA, assistants and technicians))



Presentation of the project to some classes, dissemination and Decalogue delivery

5. Materials for discussions

Some students choose to know better the energy problems to be prepared to discuss them with the schoolfellows

Documents:

[apri EFFETTO SERRA](#)



[apri ENERGIA E FUTURO](#)



[apri COP15](#)

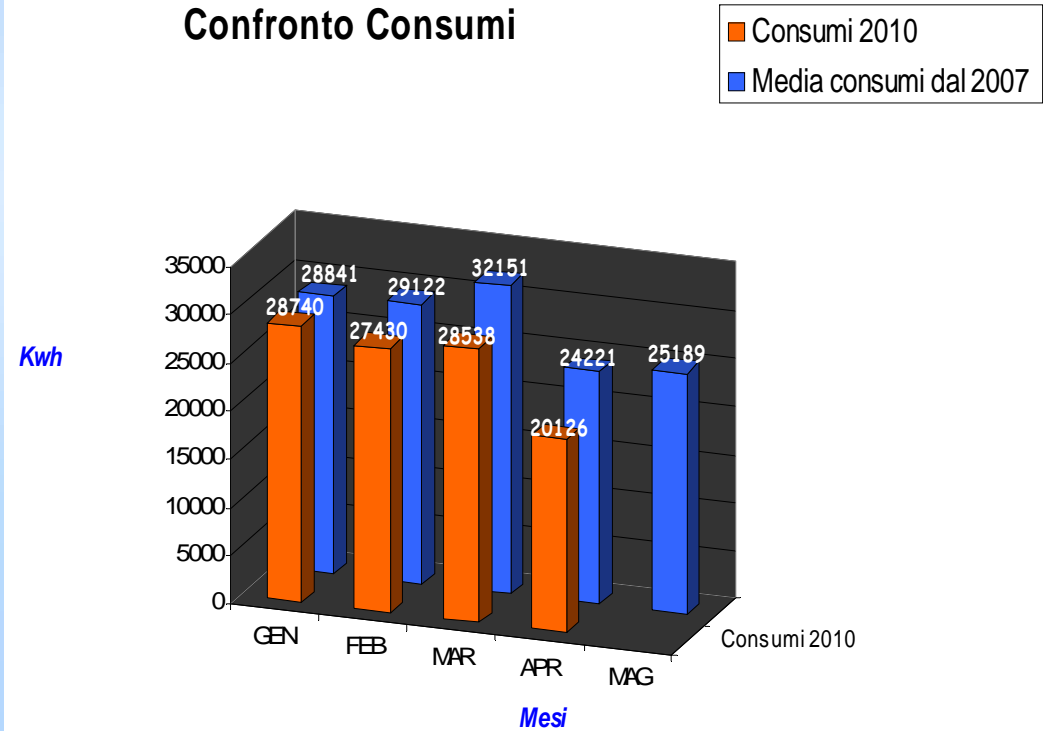


The results

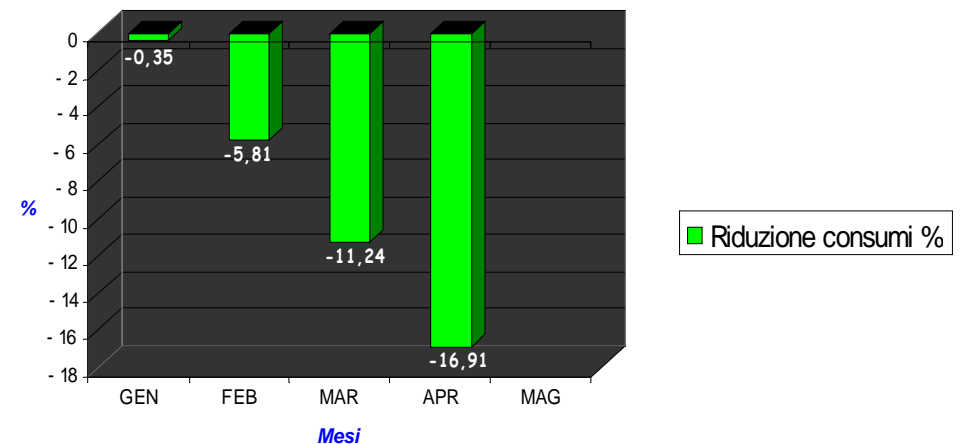
The graphs show the decline in consumption as the involvement of the students and the teachers in energy-saving activities went on.

The decrease in energy consumption, compared to the average of three years, was **5,8%** in February, **11,2%** in March and **16,9 %** in April (very good results considering that the winter has been much more colder and rainy than usually)

Confronto Consumi



Riduzione consumi %



The results: which result in environmental education?



The Energy team

Short information about school Palladio

Population: Total = 952 students
Surface Gross M² = 15,066.40 Net M² = 13,666.47

Energy

For total surface - 1 year

Heating = 94,204 M³ 739,501 Kwh 398,388 Kg CO₂
Electricity = 292,456 Kwh 157,545 Kg CO₂

For net m2 :

Heating = 7 M³ /mq = **54 Kwh /m²** 29 Kg
Electricity = **21 Kwh/m²** - 11 Kg CO₂ /mq

Energy class: D

75 kwh/m²

