

# UN Global Compact

First Communication on Progress (COP) from VS Furniture

Vereinigte Spezialmöbelfabriken GmbH & Co. KG  
October 2009

Dear employees and stakeholders of VS Furniture,

on September 22, 2008 VS Furniture joined the UN Global Compact. We are a medium-sized company, manufacturing only from one factory site at Tauberbischofsheim in Germany with a high percentage of local production. We mainly sell to the German and European market. Nevertheless, by joining the UN Global Compact we wish to underline the importance of global corporate responsibility. We see the 10 principles of the UNGC as a benchmark to this task.

On the occasion of the 60<sup>th</sup> Anniversary of the Universal Declaration of Human Rights on December 10, 2008 VS has signed an appeal of 156 enterprises from all over the world, which was published in the Financial Times on the same day.

Despite the economic crisis in the reporting period, VS could maintain its social commitments with regard to its employees and we could avoid operational layoffs as well as short-time work.

In the field of climate and environment protection VS has further intensified its efforts, improving its energy efficiency in particular. We are in the process as well to increase substantially the rate of renewable energy in relation to our overall energy consumption. Since one has to fear that the results of the forthcoming summit on climate protection in Copenhagen may fall short of the necessity to keep global warming beneath two degrees centigrade by 2050, VS wants to set a sign targeting a reduction of the company's CO<sub>2</sub> emissions in relationship to revenues by 30% by the year 2015. The goal will be achieved primarily with the use of renewable energies, which VS itself, will produce: the burning of saw dust and the use of solar energy collector systems on VS rooftops. Should the revenues drop off markedly during this time, the goal might not be achieved due to a core amount of energy use, independent of the scale of production.

Joining the UNGC VS has decided to strengthen its measures to fight corruption within the company as well as regarding its relations to its customers and suppliers.

VS Furniture will continue to support the principles of the UN Global Compact and implement them within the sphere of its influence.

Prof. Dr. Thomas Müller



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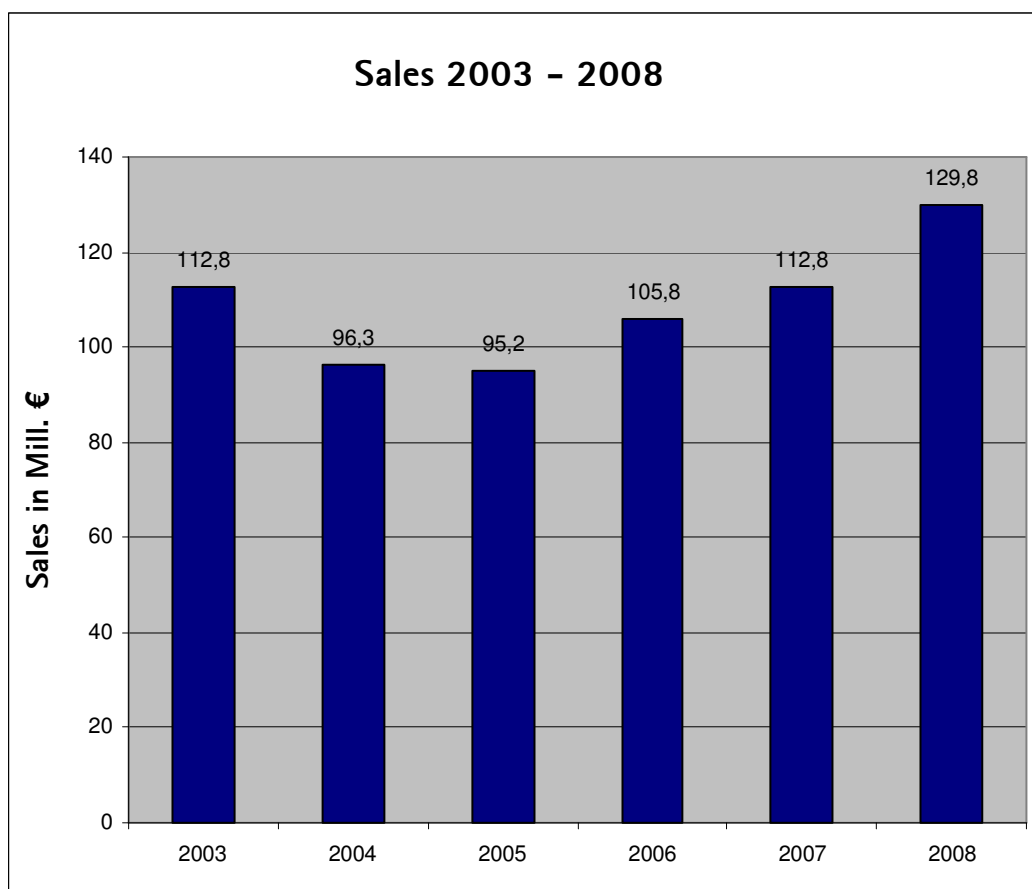
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## VS at a Glance

Year	Sales	annual percentage change
	[Mill. €]	
2003	112,8	
2004	96,3	-14,6%
2005	95,2	-1,1%
2006	105,8	11,1%
2007	112,8	6,6%
2008	129,8	15,1%



# I. Human Rights and VS

## I.1 Goals

The organizational strategy of VS includes the protection and support of human rights within the framework of our sphere of influence. We are referencing, above all, the International Human Rights Charter which is composed of the "Universal Declaration of Human Rights" from 1948 and the International Civil, Political, Economic, Social and Cultural Covenants from 1966. For the most part, these human rights standards are regulated by the laws in Germany. We acknowledge, with respect to the charter, the universality and indivisibility of human rights.

**Principle 1** Businesses should support and respect the protection of internationally proclaimed human rights; and  
**Principle 2** make sure that they are not complicit in human rights abuses.

We do not just consider our core business at our production site in Tauberbischofsheim, Germany, our German branches and our daughter businesses in the USA, France and Sharga (VAE), but also our chains of suppliers. Furthermore, we refuse to have a role in any direct or indirect abuse of human rights, above all should this be in states where we are developing or nurturing business relationships.

## I.2 Measures and Results

The management of VS is responsible for establishing the ground rules and goals of the organization and to oversee that human rights standards are maintained. In this sense, it is a 'matter of fact' for VS that all governmental regulations are not just to be maintained but also to be improved upon.

In order to underline the acknowledgment of the enormous importance of human rights and to make it clear to the public, the management of VS signed a public commitment together with 155 companies throughout the world which was initiated by the UN Global Compact Secretariat and the United Nations Commissioner for Human Rights on the occasion of the 60th anniversary of the Universal Declaration of Human Rights.

From the assessment of the enormous significance of human rights, we have researched whether the organization, which was founded in 1898, had taken part in war crimes or human rights crimes during the nazi dictatorship of WWII.

The results of the research are on exhibit in the company's own museum, "School Furniture of the 20<sup>th</sup>/21<sup>st</sup> Century", which opened in 1998 and is a source of information for numerous professionals and school classes. Regardless of the fact that VS had to close down its' production and the building in Tauberbischofsheim was confiscated and used by other businesses which were more appropriate for the war economy, VS participated with a 100,000 DM payment in 2001 to the Compensation Fund of the Foundation "Memory, Responsibility and Future" for having taken part in forced labour in the times of the Third Reich. Since their entry in the UN Global Compact, the organizations' management has taken measures to identify areas of the organization where it could come to human rights abuses.

In the foreground is the initiation of a dialogue with the supply companies to find out how one can determine if human rights are being abused within their organization. There should be a code of behaviour developed for this. We will communicate the results in the next Annual Progress Report.

## II. Social Standards and VS

### II.1 Goals

The business policy of VS is based on the acknowledgment of the employee participation in the management policies of the company. This acknowledgment of the employees' opinions more effectively enables the employees to identify with the goals of the company, to develop a vested interest in the success of the company and to assume a sense of responsibility for the company in good times as well as in bad times. Freedom of association is a prerequisite for having a voice in decisions. Independent from the existing laws in Germany, for VS the right to collective bargaining, the elimination of forced labour and child labour as well as the intentional discrimination of employees are a matter of course.

Principle 3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
Principle 4	the elimination of all forms of forced and compulsory labour;
Principle 5	the effective abolition of child labour; and
Principle 6	the elimination of discrimination in respect of employment and occupation.

### II.2 Measures and Results

There are always new awareness's and learning processes in the area of discrimination which VS is fundamentally open to and actively participating in. This includes the equal employment regardless of sex, the non-discrimination based on religion, the national origin (employee with immigrant background), or culture, age or sexual orientation. VS does not consider a physical or mental handicap to be an initial hindrance for employment.

The regulations in the VS Management Policies are reflected in the following socio-structural elements.

#### - Employment of Women

The workers by VS come, for the most part, from the nearby rural areas. In these areas are mostly families where the woman take care of the household and raise the children while the men work for their wages and salaries. That is why the percentage of women employed at VS, especially women workers, is comparatively low, and possibilities are limited to increase the number of female employees. The amount of male job applicants outnumbers the amount of female applicants by a ratio of more than ten to one. The amount of female employees with respect to the entire workforce was 14 percent on July 14, 2009. Of the office workers the proportion was 28 percent; of the workers it was at 6 percent. Again, the amount of female part time workers was only 9 percent. While on the other hand, this amount reaches 41 percent among the part time female office workers.

Table 2: Gender ratio of employees at VS

Staff on July 14, 2009	Gender	Part time	Full time	total
Employees	male	4	238	242
	female	39	56	95
Employees Total		43	294	337
Workers	male	13	577	590
	female	3	33	36
Workers Total		16	610	626
<b>Total</b>		<b>59</b>	<b>904</b>	<b>963</b>

#### - Employment of Handicapped Individuals

The percentage of severely handicapped staff at VS with respect to the entire workforce is almost twice as high as the legal requirement of a minimum of 5%. This is exceptional in comparison to the average in the private business sector.

There are 57 employees at VS who are handicapped. Six of them are assigned to specific workplaces – among them a severely handicapped apprentice. Twenty-seven (27) employees are considered to require special care (i.e. low productivity, high maintenance and care) as well as 3 employees with mental disabilities.

The ratio of severely handicapped employees has almost doubled due to the crisis in the furniture industry in 2003 – 2004 in which VS was, because of a decline in business, forced to reduce its' work force by 20%.

This is due to the commitment of the extremely active Representative Council of the Severely Handicapped (SBV). At VS the severely handicapped have their own board for the representation of their interests. There is also a spokesperson in the VS management for the opportunities for persons with disabilities (BAG). It was only through the activity of SBV and BAG that one half of the employees who were originally meant to be fired, were able to remain at their jobs.

Even in the more prosperous business years as of 2006 the quota could continually be improved from 8,37% 2006, 8,78% 2007, 9,22% 2008 to 9,69% 2009.

This result was achieved through the following measures:

- An "Integration Agreement" was signed on December 20, 2000 between the management, the Severely Handicapped Representatives and the Spokesperson for the Opportunities for Persons with Disabilities as well as the general Worker's Council.

- Regarding the filling of job vacancies VS first checks in co-operation with the public Employment Office or with Integration Services (IFD) whether these positions can be occupied by persons with handicaps.
- All severely handicapped applicants who are qualified in their area will be invited for a job interview.
- The Worker's Council and the SBV (Representative for the Severely Disabled) are informed about job-applications by persons with disabilities (sbM) and take part in decision process within the framework of the legal requirements.
- Since 2006 there has been only one incident where, approved by the Office for Integration of the local authorities, an employee was discharged on the basis of behavioural reasons.
- Five severely handicapped persons have been hired since 2006.
- The creation of seven new job positions is planned for realization in 2009. These new job openings are being developed on a new production line. Severely handicapped persons, whose jobs are threatened, can now continue to be employed. The total investment for this amounts to approximately 730.000 € (initial estimate) and could possibly rise above the million mark.
- Six work places have been equipped and designed for handicapped employees since 2006.
- Prevention Discussions are carried out as well as an Integrations Management (§ 84 SGB IX) by an absence of more than six weeks per year.
- The co-operation between the Representative of Severely Disabled Persons and the staff doctor is especially close.
- VS places a high value on training and qualification within the company, so the employee can be as versatile as possible. This also helps to ensure the employees' job security.
- Regardless of their high employment quota for severely handicapped persons, VS is concerned with giving as many job contracts as possible to workshops and institutions employing severely handicapped persons (WfvM). The contracts VS has given to such institutions has risen from 98,000€ in the year 2000 to 167,000€ in August of 2008. (compare Table 3)

**Table 3: Volume of orders to institutions for handicapped**

Year	Amount
2000	97.627 €
2007	125.036 €
2008	124.613 €
2009 to August	166.841 €

## - Training

VS traditionally places a high value on the internal training of their employees. VS is currently working with 42 trainees. Between 6 – 7% of our employees are being trained and by the workers it is at 4%.

VS is being used by academies of vocational education for the practical part of their dual training in the areas of Business Management, Woodworking and Mechanical Engineering.

### III. VS and Environmental-/Climate Protection

#### III.1 Goals

Environmental policies are an important element in the management strategy at VS. VS operates an environmental management system, which is an integral part of the business activities. This is how we secure a continuous improvement process for the protection of the environment.

Principle 7	Businesses are asked to support a precautionary approach to environmental challenges;
Principle 8	undertake initiatives to promote greater environmental responsibility; and
Principle 9	encourage the development and diffusion of environmentally friendly technologies.

VS views the responsible use of natural resources as an important principle of the company. The goals of the environmental policies by VS are to minimize the environmental side effects in the supply chain and at the production site in Tauberbischofsheim, as well as offering our customers products that are made at most environmentally friendly standards. VS is also concerned about minimizing the environmental side effects with respect to waste disposal.

As our commitment to the natural environment, we at VS understand this to include:

- The protection of the environment, our employees and our customers by not allowing any harmful influences by the production, the use or the disposal of our products,
- Elimination or minimizing of emissions and waste.
- To use the least amounts of the natural resources water, earth and air.
- A conservative use of energy and materials in all areas of production.
- Support for the use of regenerative energy,
- and unusually long life expectancy, an environmentally oriented selection of materials and a recyclable, modular construction of the VS products.

#### Climate Goal of VS

VS sets a goal of reducing the company's CO2 emissions in relationship to revenues by 30% by the year 2015. The goal will be achieved primarily with the use of renewable energies, which VS itself, will produce: the burning of saw dust and the use of solar energy collector systems on VS rooftops. Should the revenues drop off markedly during this time, the goal might not be achieved due to a core amount of energy use, independent of the scale of production.

#### III. 2: Measures and Results

Trained and qualified personnel carry out the required work in all areas of the company. The environmental policies of VS, with their principles and goals, are valid and mandatory for all employees within the framework of their individual responsibilities. We support our employees

and avoid a possible waste of resources already in its formation through an organization that is needs oriented and entails a precise interface description. Above and beyond that, all employees are required to report all incidences of resource wasting and environmental pollution to their superiors immediately. We support environmental awareness and conduct in all areas through training of our employees with respect to direct or indirect effects of their work on the environment. The management of VS is convinced that the conservation of resources is a business case. Environmental protection contributes to the survival of the company.

The certification of our environmental management system according to the requirements of the DIN EN ISO 14001 documents the efficiency of our environmental management measures.

The specific areas of environmental management at VS show the following picture.

**III. 2.1. Energy Consumption**

In order to increase the energy efficiency the use of oil in favour of gas was reduced to a minimum in recent years. The energy consumption on the whole could be reduced from 217 MWh per one Million Euro in revenues in 2005 to 151 MWh per one Million Euro in revenues, i.e. by app. 30% compared to 2005.

**Diagram 2: Total energy consumption**

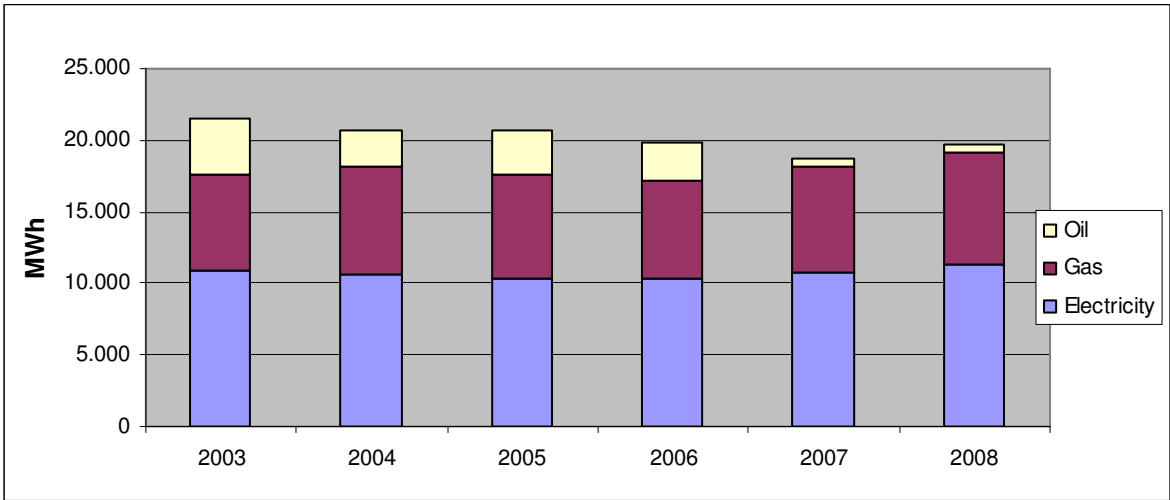
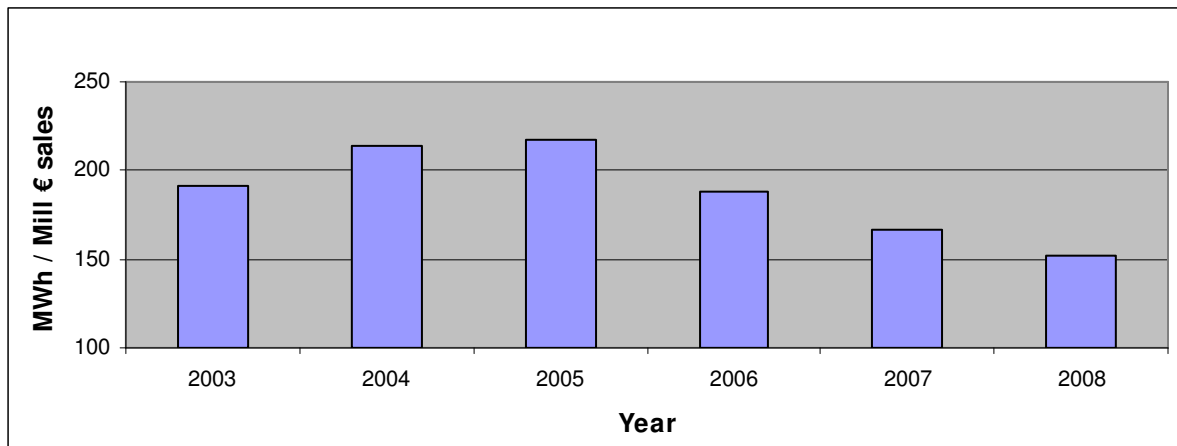


Diagram 3: Index of Total energy consumption



This was achieved by no longer donating the sawdust, a by-product in our production process, to third parties, but rather using it since 2008 to reduce the consumption of oil and gas. (See the following table).

Table 4: Use of sawdust

Year	2007			2008		
	Steam [t]	Hot Water [t]	[kWh]	Steam [t]	Hot Water [t]	[kWh]
January	n.a.	n.a.		117	325	1.651
February	n.a.	n.a.		98	280	1.411
March	n.a.	n.a.		95	239	1.250
April	n.a.	n.a.		163	175	1.261
May	n.a.	n.a.		37	7	161
June	n.a.	n.a.		173	0	648
July	n.a.	n.a.		195	0	729
August	n.a.	n.a.		173	0	646
September	n.a.	n.a.		180	87	995
October	n.a.	n.a.		88	99	696
November	n.a.	n.a.		102	294	1.479
December	n.a.	n.a.		75	333	1.523
<b>Total</b>				<b>1.496</b>	<b>1.837</b>	<b>12.451</b>

A three step project was decided upon to further reduce the oil and gas consumption:

1. Construction of a sawdust silo: completed in the first half year of 2009.
2. The construction of a long distance heating pipe system between the buildings of the company in 2010.
3. Expanding the capacity for generating heat in 2010/2012.

Independently of this project, the efficiency of the existing systems is continually being optimized to reduce energy consumption. The following measures were realized mainly in 2008, the year under review.

### III.2.1.1 Lighting Concept

In the assembly 1 for office furniture the lighting was optimized. At VS there is the hall lighting installed directly on the ceilings. Also the work areas of the employees have lighting, installed at app. 2.5 meters above the work area

The optimization encompassed the following points:

- The reduction of the number of fluorescent tubes: 118 unnecessary fixtures were removed.
- Colour-coded light switches.
- The posting of lighting diagrams.

This optimizing measure was able to save 2,100€ annually. This is equivalent to the average yearly energy costs for 1.6 households.

### III.2.1.2 Heating Concept

There is no generally applicable norm for the temperature settings of the heating system during the heating period. In part, the room temperatures of certain areas during the transition period are 22 – 23°C.

The following optimizing measures have been carried out:

- Standardizing the room temperatures:  
17 – 19 °C during working hours  
14 – 16 °C during non-working hours
- The installation of data loggers, which record the temperatures over a given period of time.
- Labelling the heat control panels (thermostats)
- Including the heating control locations in the floor plans.
- Installing thermometers in the assembly area as visual reminders.
- Regulating the heating temperature through the factory security

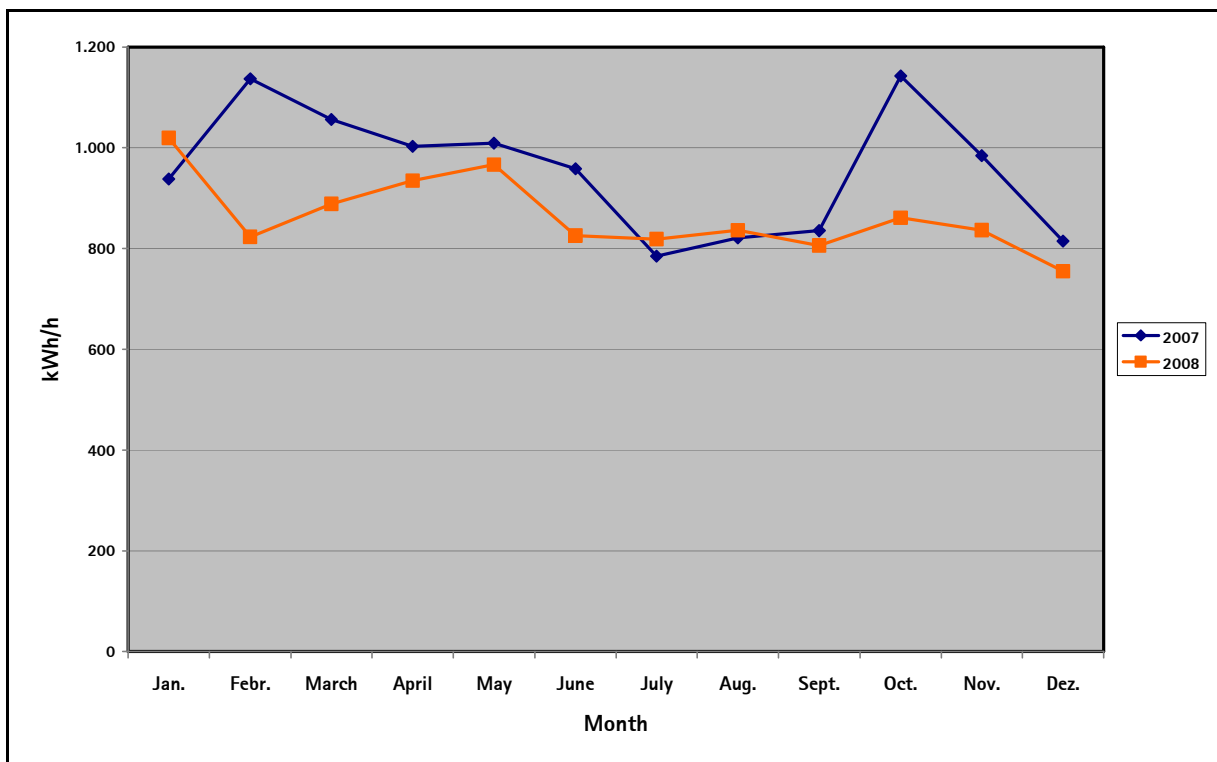
The room temperatures could be lowered by app. 2 centigrade in about 15% of the production areas This represents a savings on heating energy of about 12 percent in these rooms, or of app.2 percent with respect to the entire company.

### III.2.1.3 Energy Assessment and optimization in the Powder Coating Area

Energy consumption data has been gathered since 2007 on the high energy consumption Powder Coating System (PCS) - a system for lacquering the surfaces of steel pieces. When comparing 2008 to 2007, the energy required to heat the washing system and the burning ovens was reduced through:

- Elimination of only one shift production
- New burner furnace in KH3
- Circulating pumps on the washing facility are connected to the main control system. (Up until now, this was carried out on the weekends and not turned off.)

Diagram 4: Relative energy consumption PCS, comparison with heating energy



**Calculation of Savings:**

Average relative energy consumption 2007: 957 kWh / hr.  
 Average relative energy consumption 2008: 864 kWh / hr.

Difference from 2008 to 2007 93 kWh / hr.

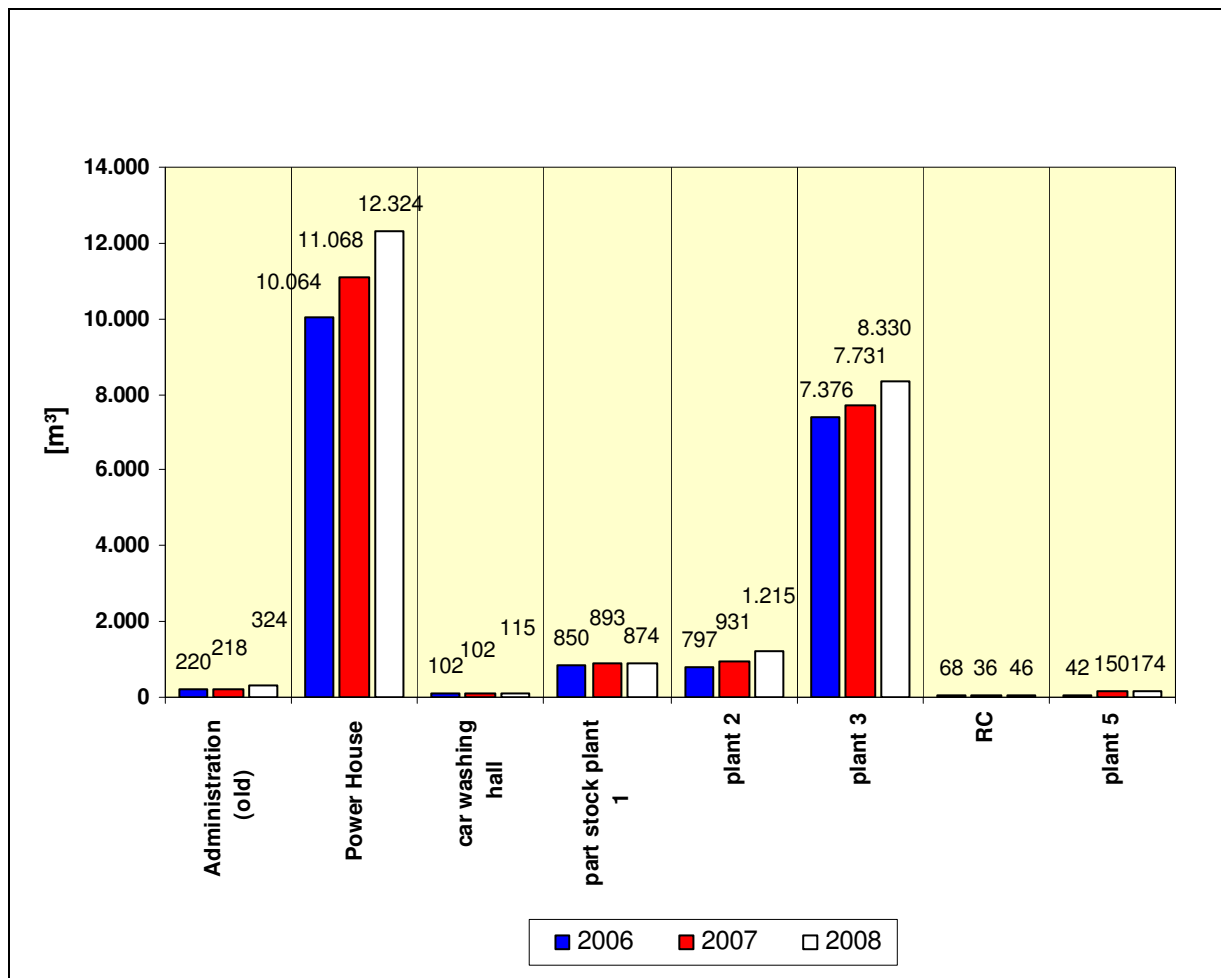
Production hours 2008: 4.396 hr.

Energy Conserved = 4.369 hr. x 93 kWh/hr. = 408.828 kWh

This represents the average annual energy consumption of 16 households and a savings of app. 21,000 €.

**III.2.2 Water Consumption**

**Diagram 5: Annual water use**



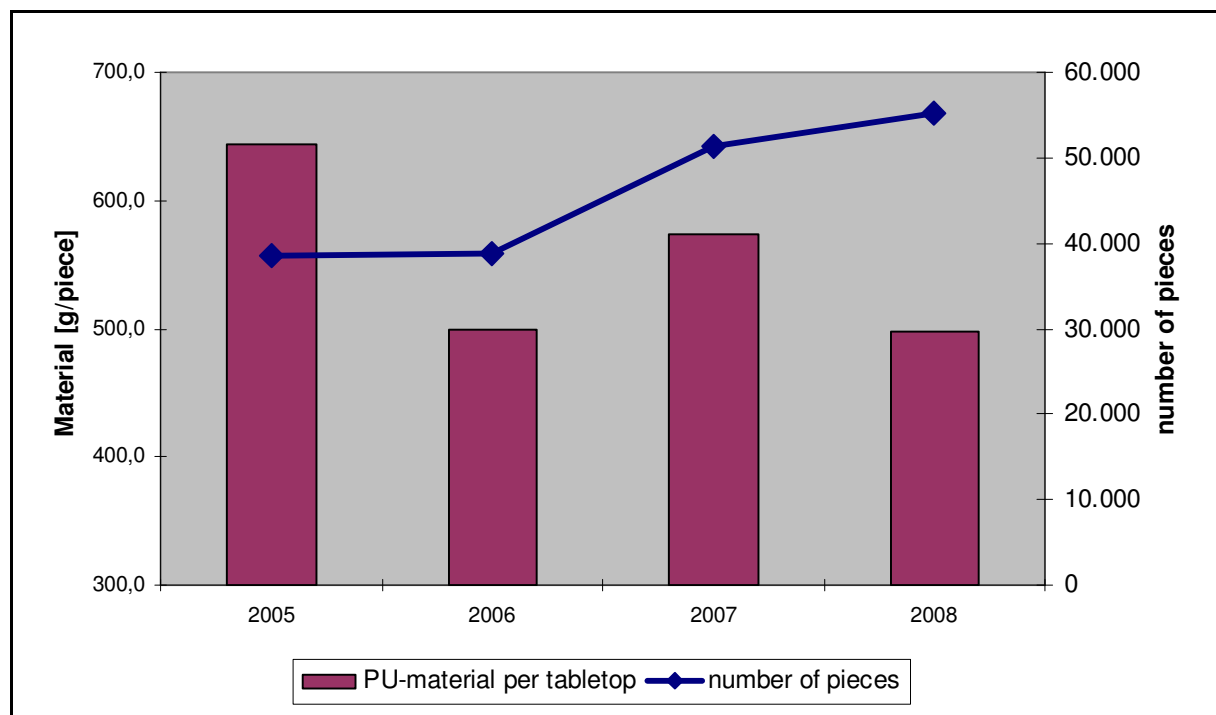
The water consumption increased in 2006 – 2008 by 20%, closely paralleling the increase in revenues of 23% during this same time period. It is notable, that the water gathered from the rooftops in a collection pool was used for cleaning purposes and also for flushing the toilets.

### III.2.3 Wood waste

The use of sawdust to produce heat is presented in Section III. 2. 1

VS is also concerned with conserving material. The waste by the production of tabletops has been reduced (see diagram 6).

Diagram 6: Use of PU-Material per tabletop



#### Calculation of Savings on Materials:

Nr. of Pieces in 2009: 55.000 pcs.

Savings on Material: 120 g / pc.

Sum of Savings on Materials: 6.600 kg/a

Savings on Costs:  $6.600 \text{ kg/a} * 2,5 \text{ €/kg} = 16.500 \text{ € / Annually}$

### III.2.4 Scrap Metals

The waste of scrap metals correlates strongly with the scale of production (revenues) and is about 4.5 t per one million Euros revenue (comp. Table 5). All scrap metals, such as aluminium, copper and steel scrap get 100% recycled, which is why the recycling process has been introduced.

Table 5: Old metals

Scrap Metals	unit	2003	2004	2005	2006	2007	2008
	t/Mill €	3,32	4,73	4,45	4,69	4,60	4,22
<b>Total</b>	t	375	455	424	496	519	548
thereof aluminium	t						7,6
thereof CU cable	t						4,4
thereof mixed scraps	t						123
thereof steel tube scraps	t						413

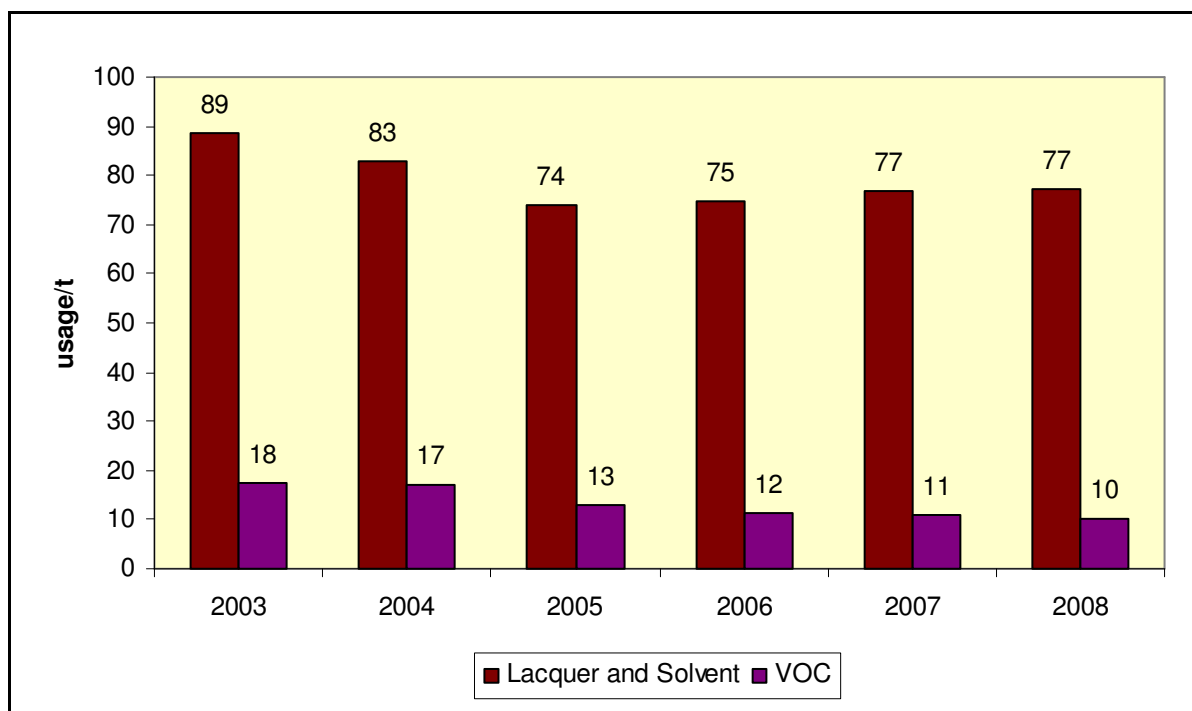
### III. 2.5 The Use of Solvents and VOC

#### Reduction of Solvent Emissions

The basic elements of lacquers and cleaning solvents are volatile organic compounds (VOC). These are to be classified as environmental and health hazards, as they take part in the development of the health and environmental hazards of the ozone hole (Summer smog).

VS is committed to underscoring the legal limits of 15 t/a. Diagram 7 shows the development over the recent years, which is the result of an increased use of water based lacquers (with a low percentage of solvents) and the minimal use of solvents by the cleansing process.

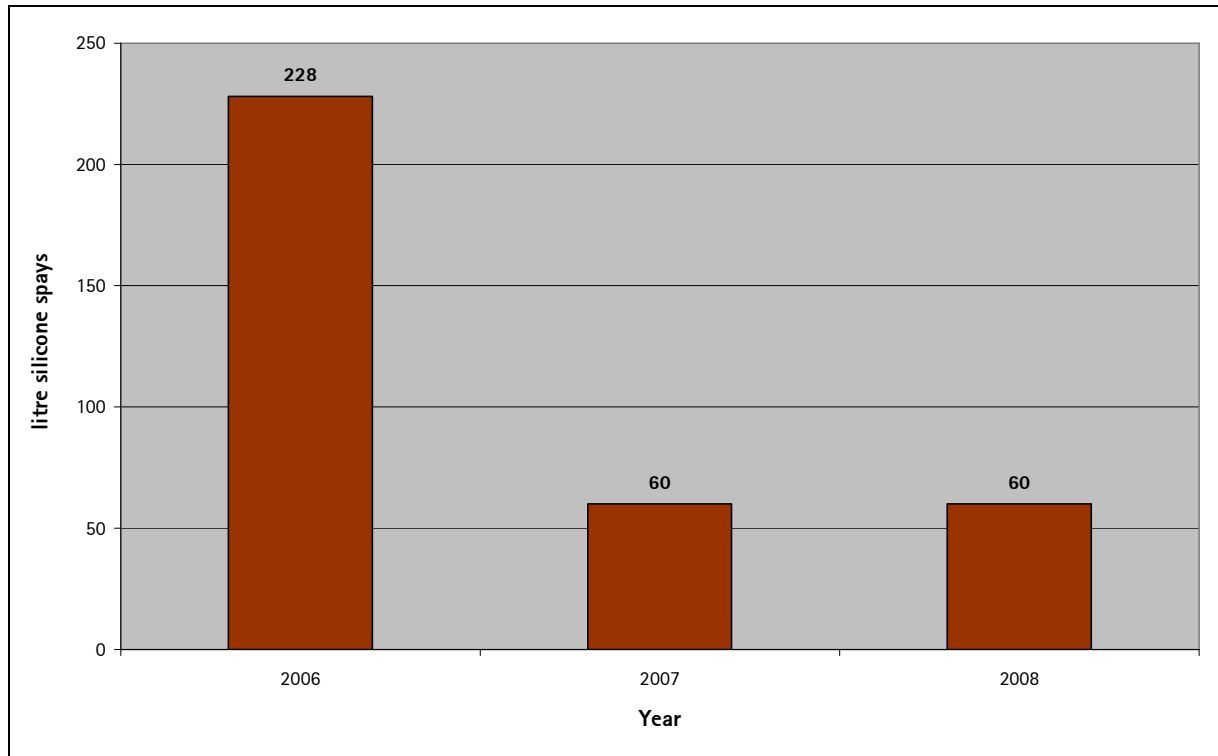
Diagram 7: Lacquer- and solvent consumption and VOCs



## Reusable Containers for Silicon Spraying

Silicon spray is used on products with moveable elements. The annual consumption was 456 cans in 2006, or the equivalent of 228 litres. Through the use of refillable containers, the consumption in 2007 and 2008 was reduced considerably. Aside from that, the aerosol pressure used is pure air pressure. The use of fluorocarbons is eliminated as well as the problem of the disposal of the empty cans.

Diagram 8: Use of silicone sprays



### III.2.6 Use of Hazardous Materials

#### Cosmofen Consumption

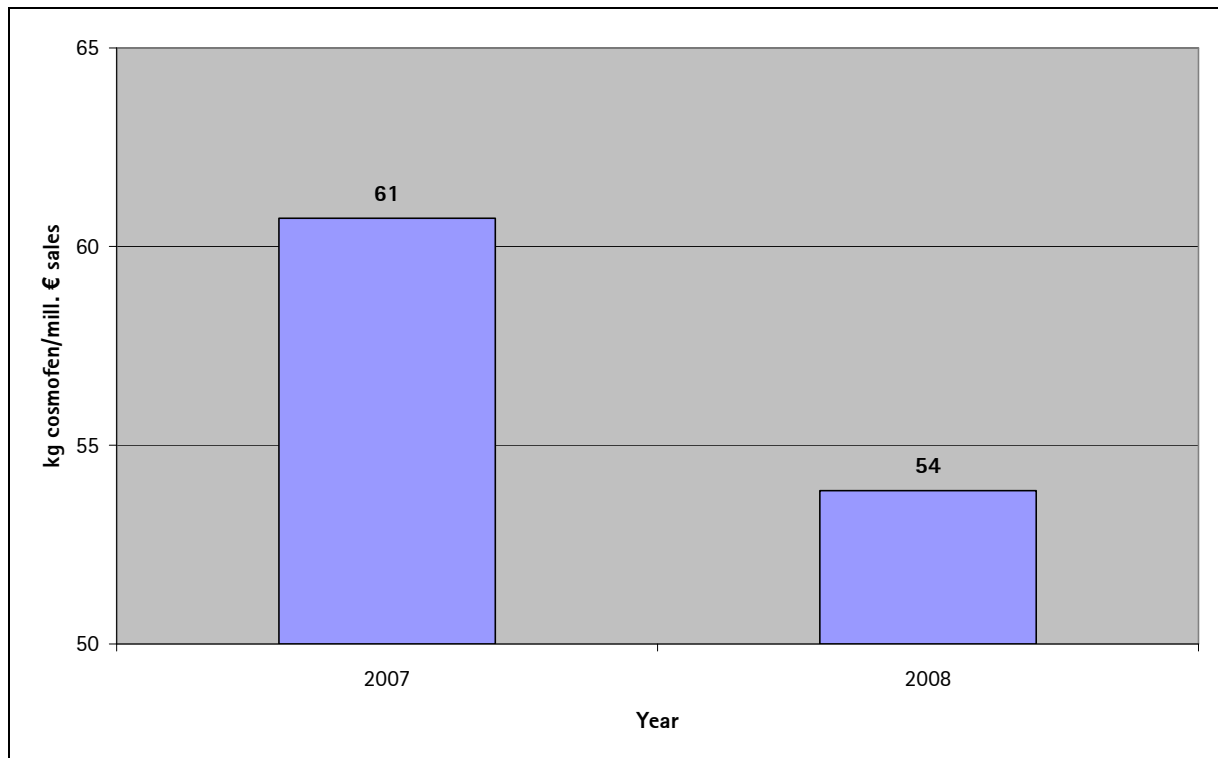
##### *Substituting a Hazardous Material*

The surfaces of the furniture get cleaned before delivery to the customers. Two different cleansers were being used in these end production areas until mid 2008. Following an intensive testing phase, one of the products was chosen to be better.

##### *Reducing the Consumption*

A damp cloth is all that is now being used to remove the coating of dust. Only stubborn blemishes like the remains of hot glues on the edges will be removed using Cosmofen cleaners. The consumption could be therefore reduced.

Diagram 9: Relative cosmofen consumption (in ratio to revenues)



### III.2.7 Recycling of Packaging

#### The recycling of Styrofoam Blocks

The styrofoam blocks are used to prevent damages and as stacking supports when packing the furniture for shipment. When working on larger projects, the persons delivering the furniture are instructed to gather and return the Styrofoam blocks to our company for recycling. An analysis of the quantities from 2007 and 2008 demonstrated a return quota of about 6% and thereby an approximate annual savings of 1,700 €.

### III.2.8 Environment Relevant Suggestions for Improvements from employees

The innovation and competence of the VS employees represent a considerable contribution to the securing of a long lasting existence for the company. It is exceptionally important for the company to use the Continual Improvement Process (KVP) in its various forms, along with the active participation of the employees and through the implementation of appropriate measures to establish and systematically expand procedures.

The improvement management (VBM) allows in this respect, for a continuous bid for the inclusion and consideration of the employees in the KVP. The problems and suggestions of our employees in their daily work life are to be acknowledged and assessed. Solutions are then created together with them and then expedited.

This takes place in a so called KVP Workshop, where, with the help of the employee, many initially small incidences of waste are discovered, improvements which can be quickly realized are found and appropriate measures are defined and implemented as quickly as possible.

The thoughts about continual improvement, also with respect to the everyday work life and in all areas of the company are meant to be lived out.

Hereby, the system „VSfix" was brought to life. It stands for one of the primary "small" ideas, inspirations and aides, which can, for the most part, be dealt with independently within each department. Yet also for the processing of all other suggestions and ideas the employees might have, which do not directly affect, or affect only marginally, their own work area or department. Environmentally relevant suggestions, among others, are considered. For especially good suggestions, the idea giver can receive a personal premium of up to 50% of the first year benefit, which can be a maximum of 25,000 €.

### Example from Workshops:

By workplace analyses and the redesigning of the workplace, the employees repeatedly mentioned that several workplaces in many areas in the company were illuminated even though no one was working at the workplaces. This was justified by so-called „central hall switches" and after testing, they were reworked in the organisation's own workshop. In the meantime, almost every workplace in the finishing areas has separate lighting fixtures for the individual conveyor belt places/workplaces and the hall lighting was reduced to a minimum.

### Example of a Single Entry:

Larger quantities of lacquer are processed in water misted spraying walls, or spraying booths. The job of these spraying walls is to catch the lack overspray with a stream of air, to carry it to the water phase, and then to eliminate it from the water phase. For this, an additive which is normally known as a coagulant gets added, so the elimination system isn't disrupted by the clogging of pipes and pumps. In the area of spraying and lacquering of plywood seat casings, VS has worked for years on the spraying booths by the addition of coagulants, flaking additives and defoamer in cycles of 10-15 seconds. The reason for this was an incorrectly regulated recovery system.

The process was observed more closely due to the suggestion of one of the employees and the system was readjusted. Result: By priming and lacquering, the spray booths functioned in a 45 second tact after the adjustment. This brought about a 65% savings on additives with it, and is that much better for the environment, because the disposal of the waste product is especially complicated.

### **a) Saving on Electricity by Turning PCs Off:**

Two days per week a nightly antivirus scan runs on all PC's, which is why they needed to be left on. The virus scan takes place at night to avoid interrupting the daily business activities. After adjusting the programming, the computers were turned off after the anti-virus scan was completed and the computers' energy consumption was reduced significantly.

The energy savings amounted to:  
This represents a savings of:

15.390 kWh / annually  
app. 1.500 € / annually

## **b) Replacement of Pattex Glues**

A cork strip gets glued onto the stacking carts for folding tables with a Pattex adhesive. Pattex adhesive is a dangerous substance and can cause intoxication if inhaled. That is why a self-adhesive felt layer has been used since 2008. Aside from the environmental concerns, the labour times could be reduced by the self adhesive felt layer. The savings amount to app. 500 € annually.

## IV. No Tolerance for Corruption at VS

### IV. 1: Goal

*Principle 10* *Businesses should work against corruption in all its forms, including extortion and bribery.*

At VS, the standards for fighting corruption are established and are binding, namely those to combat bribery in the Convention of the United Nations Against Corruption and in the Convention

of the Organisation for Economic Cooperation and Development (OECD) and which are called for by the nongovernmental organisation „Transparency International“.

### IV. 2: Measures

The management of VS decided on a ruling in 2004, according to which employees in sales can only bring to account a small allowance for customer services. Independent contractors of VS Furniture are also prevented from acquiring contracts through bribery. VS cannot, however, monitor whether individual instances by independent contractors within the framework of their business transactions are involved in bribery. If such cases become known, the business relationship will be reconsidered in a dialogue with the goal of eliminating such practices.

## V. Partnership Projects

In the sense of the UN Global Compact, VS understands its corporate responsibility as extending beyond the core business area of school and office furniture and is therefore engaged in partnership projects. VS is hereby concentrating on the areas in which the company has a special competence and capacities. In the following, three examples are briefly sketched out.

### V.1 School Architecture, Ergonomics and Education

Since the founding of VS in the year 1898, the company has engaged itself with determining the effects of the interior designs in schools and school architecture on the learning capacity of the pupils. VS has worked since the beginning of the 20th century together with the German Work Federation (Werkbund) which was founded in 1907. In the process of industrialization the German Work Federation was a leader in form design and industrial design. The founder of VS, P. Johannes Müller, was a member of the German Work Federation and together with Bruno Paul, was contracted by the Prussian government to make a design for the ideal classroom and for a drawing hall for the 1910 Worlds Fair in Brussels. His motto was "Germany's future is sitting on the school bench!" P. Johannes Müller cooperated with the pedagogic reformist, Maria Montessori, and produced the Montessori Learning Materials under license.

VS recently became involved in a cooperative project together with the U.S. architects „OWP/P Architects" and the Design firm „Bruce Mau Design, Inc." and published „The Third Teacher" in Spring 2009 with „79 Ways You Can Use Design to Transform Teaching & Learning". The project concentrated on the complexity of learning and the recognition that "learning is the result of a complex interplay between the child's body, diet, family life, security, neighbourhood, teachers, school, peers, access to information, and a great deal more." (David W. Orr in his preface). A central element of the project were workshops with school children in the USA, England and Germany, in which their „user's experiences" were discussed, i.e. the needs, experiences, perspectives, desires and dreams of the students with respect to their learning environment. The title of the book developed out of this: the environment as the third teacher, after the parents and the school teachers as first teachers and the peer students raising each other as second teacher.

Some of the acknowledgements which were gathered together and then further developed within the framework of the project, above all, those affecting VS area of responsibility, are recapitulated. The interior design of the school as well as the architecture of the school affect the students in three ways; for one, it affects their health during the school years and later on in life (long term effects), and secondly it affects their capacity to learn; and thirdly, it affects, in the end, their environmental consciousness and their identity.

- **Health:** the ergonomics of the chairs and tables influences the health more extensively in correlation to the greater amount of time spent sitting in the classroom (full day classes). Some statistics demonstrate how dramatic this problem is: over 83 percent of the grade school students in Germany are sitting at tables and chairs which are not suited to their body size. An investigation of 500 US teenagers came up with the results that 56% of the male students and 30% of the female students were suffering from a degeneration of the spinal cord. European studies show that 60% of the school children between the ages of 15 and 16 years old have back problems. One third of the students between 7 and 17 years old complain of having "school headaches". The long term

effects of incorrect seating and posture during and after youth are notable. That is how in the course of one year in the 90's, 15 million workdays were lost among office employees due to "backaches". Twenty seven percent of all medical excuses during this period were attributed to „skeletal, muscle, and joint afflictions." This resulted in costs for the employers due to back related injuries and illnesses in the amount of up to almost 6 billion € in the same year.

- **Learning Capacity:** Static, passive sitting can have long term effects on the student's ability to concentrate. Exclusively passive and static sitting can lead to physical and mental impairment due to an oxygen deficit, which causes the students to have headaches. Inadequate circulation combined with not enough sensory- and motor stimulation results in a condition of lowered activation of the brain's physiology. This results in the sitting person not only giving up on his outer posture, but also on his inner posture, or the organism sought additional stimulation (compensatory bodily activity). The negative results of the inadequate ergonomics of school furniture on the learning capacity of students can be helped in that they do not inhibit the movement of the children, they rather enable it. Movement is important, because already by 25 Watts of bodily exertion the brain circulation increases by 13.5%. The school architecture has an effect on the learning capacity. A study in the USA proved that students with limited amounts of daylight in their classrooms were surpassed by 20% in mathematics and 26% in reading tests by students that had classrooms with mostly daylight. The importance of these factors of learning capacity are pointed out by the fact that one third of the students in the USA do not achieve a school diploma.
- **Social behaviour and identity:** The school reformation movement at the beginning of the 20th century had already postulated the holistic school. It was not only to educate the students intellectually, but also with respect to ethical values, social behaviour and a sense of community amongst the students. In „The Third Teacher" the long-lasting school is propagated, one that would be a comparison table for the values and philosophy that the school was supposed to be. There are many examples of this in schools that were designed by architects who were aware of these problems. One example of this is the „Thomas Deacon Academy", a reform school which was designed by the renowned British architectural offices of A. Foster and Partner. It was determined there that the architecture instilled the students with a feeling of pride. Some of the students would be excited about revisiting the school.

## V.2 School Furniture Museum "The Classroom"- School furniture in the 20<sup>th</sup> Century"

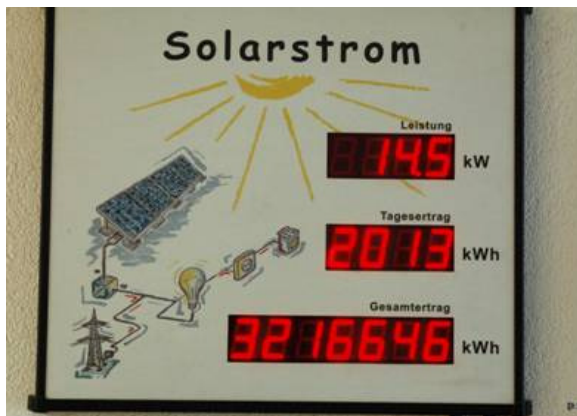
In 1998 VS opened a school furniture museum in their premises in Tauberbischofsheim to honour the 100 year anniversary. It encompasses the areas of architecture and school furniture design. It addresses the themes being dealt with in „The Third Teacher", and demonstrates the development of school furniture as an industrial product in a time period that strongly correlates to the first existence of VS. It demonstrates the changes in the philosophy about schools and their effect on the design of schools, as well as the many design challenges facing manufacturers of school furniture and architecture. The museum shows the variety of designs from over 100 years of school furniture production all over the world and the influence which the classic furniture designs of Marcel Breuer, Mart Stam and Mies van der Rohe had on the

design of class room furniture. The works of the most significant school furniture designers like Jean Prouvé, Charles Eames and Verner Panton are exhibited. It is also explained that famous architects, such as Eero Saarinen and Arne Jacobsen did not only design exemplary schools, but also the school furniture that went with it. The museum refers to the professionals (designers, architects and teachers) as well as to the students, who, through this exhibition, are being shown the background of the school environment, which is a major part of their socialization and education

### V.3 Solar Electricity Production on Rooftops of VS Factories

In 2001, as the Tauber Solar business established the idea of renting rooftops of buildings to use them for the production of solar energy, VS was immediately ready to offer 38 of their rooftops of Factory I at no cost for the pilot project of solar energy panels. The largest solar energy production system in Europe was created on 4,500 sq. meters. It had a peak capacity of up to 500 kilowatts. On sunny days the solar electricity production covered 20 percent of the energy consumption in the halls of Factory I, and even on cloudy days it still produces a good 5 percent. By 2009, the solar energy system produced 3.2 million kilowatt hours (3.2 gigawatts) of electricity. That represents the annual consumption of about 800 four person households in Germany.

Since that time, Tauber Solar has realised many more projects, some even much larger that are realised in southern Germany and in Spain. The company is now one of the largest solar energy businesses in Germany having also gained awards.



Solar electric meter in Factory I at VS Tauberbischofsheim



View on rooftops of VS Factory I