

INTRODUCTION

WHY THINKING ABOUT LIGHTING?

" *M o r e l i g h t* " - as Goethe said - is our wish for you. By "more light", we mean not only the amount (quantity, brilliance), but essentially also the quality of light. And today, quite often, this is either insufficient or even bad.

"Since about 100 years we have been creating light ourselves...

...but what does this man-made light do to us ?"

Bad visibility at the office or at home ?

Burning sensation in the eyes, headache, allergies, inexplicable fatigue, stress or even depressions are mostly unpleasant concomitant phenomena of often inadequate and unbalanced lighting. Reliable scientific studies have examined and proven this fact.

The solution: Viva-Lite® Healthy Light.

More akin to sunlight than any other artificial lighting.

S u n l i g h t

is the life-sustaining element for all humans. It has shaped us for millions of years and is perfectly balanced in its colour spectrum and attuned to nature and all living organisms. This balance descends also on our well-being, even if we spend less time outdoors. Surely, we feel how much our mind, body and soul yearn for light and sun and how a sunny day can make a world of difference for our well-being.

"Man needs light not only for illumination...

...but also as a nutrient !"

V i v a - L i t e®

Healthy lighting all over the house. Ideal for the workplace or the interior design. Gentle on the eyes and brightens the disposition. Splendid light contrast and excellent shadow formation. The colour spectrum corresponds to more than 90 % of the sunlight and has positive effect on the psyche and body. Above average lifespan. Different varieties available.

Healthy light for your vitality - whenever and wherever you wish.

THE ILLUMINATING IDEA

WHY IS HEALTHY LIGHT MEANINGFUL AND ESSENTIAL

INTRODUCTION

For the existence of man, *nourishment, water and air* alone are not enough. Another essential element that influences our psyche and health and is, at the same time, least perceptible to us, is *light*, because man is accustomed to a life under the daylight since millions of years. Whereas 100 years ago man spent every day of his life up to 90% under natural sunlight, today on average it is a mere 10%. Artificial light – above all at the place of work – dominates our modern lifestyle. The unpleasant concomitant symptoms are familiar to us and many investigations have affirmed it: **rapidly decreasing concentration**, feeling out of sorts, **inexplicable fatigue**, intense feeling of stress, **headache** or even **depression**.



All the same, today while we are relatively more conscious about our nourishment and there is much being done about the quality of air and water, we are mostly helpless against the phenomenon of "bad light". We feel it in us how the body and soul yearn for the sun. Probably, we sense it how the light on a sunny day lifts up our spirits. Also our body signals to us that *brightness alone is not sufficient*, more important is rather the quality of the light. A comparative study of the spectrum of the conventional artificial light with that of the sunlight gives us the explanation. Besides strong deviations in all visible colours, colours not visible to the human eye, namely ultraviolet and infrared, are missing in artificial light and, precisely these colours in correct doses play the decisive role as the actual health-giving constituent of the light.

The alternative solution is hence: **Viva-Lite®**.

SPECTRAL GRAPHS



Figures 1-3:

Spectral graphs of daylight, Viva-Lite® full spectrum light and conventional 3-band fluorescent tube lights.

HISTORY & DEVELOPMENT

As early as the 1930s, Dr. John Ott and Prof. Dr. Fritz Hollwich conducted research on sunlight-like light sources and carried out many experiments. Developed later in USA in order to counteract health related problems among submarine crews and astronaut teams successfully, Healthy Light increasingly gained recognition also at work and in homes and thereby contributed immensely to better well-being and higher levels of performance. Since the beginning of 1980s Healthy Light is being employed in light therapy, which meanwhile has full scientific backing.

Based on personal experience, we at Light-Office are determined to popularize and propagate Healthy Light. This intention of ours gave rise to the product range of Viva-Lite®.

Viva-Lite® Healthy Light is manufactured under strict quality controls employing the latest technologies. The wide range of lamps offers the ideal product for every occasion. Naturally, there are no limits to one's personal taste and, thanks to simple handling, your surroundings can be literally plunged into a new light: Bright white light to enhance concentration at work and for brilliant illumination ("Full spectrum light") or warm cosy light for a relaxing atmosphere in the morning or evening ("Natural spectrum"). Viva-Lite® has a solution ready for every situation.

VIVA-LITE® LIGHT BULB WITH THE NATURAL SPECTRUM



The unique colour characteristic of this bulb is lent by neodymium, a rare earth element.

In combination with oxygen it filters out the artificial yellow constituent of glowing light. Thanks to the glare-free, pleasant and warm light of this special type bulb, your eyes do not get tired so fast and you can attend to your work fully relaxed.

Advantages:

- Natural spectrum.
- Very warm colour shade. Totally cosy.
- True and brilliant colour reproduction.
- Superb contrastive vision and shadow formation.

VIVA-LITE® FULL SPECTRUM SPIRAL BULBS



Energy-saving lamp with the full colour spectrum of sunlight, including the vital UV constituents in homeopathic dose.

Economic and design-wise alternative to the conventional low-consumption lamps with the added healthful advantages in respect to performance, visibility and well-being. The brilliant white light (colour temperature 5500 Kelvin) radiates like a ball of light, similar to light bulb and offers excellent lighting values.

Advantages:

- Integrated electronic ballast.
- Flicker-free instant start, non-flaring operation.
- With pre-heating device a lifespan of approx. 8000 hours.
- Power saving up to 80%.
- Attractive and innovative design.
- Pleasant and brilliant light

VIVA-LITE® FULL SPECTRUM FLUORESCENT TUBES

The Viva-Lite® full spectrum tube lights were developed to simulate daylight in closed rooms.

First used in space flights and in submarines. Today they are seen also in Germany in many shops, companies, offices and in homes and every time they shine anew to reproduce colours true to nature, the continuous spectrum (including UV-A/UV-B) and their positive effects on the soul and body.

Advantages:

- Near identical spectrum of natural sunshine.
- Excellent colour reproduction true to nature due to colour temperature in optimum daylight range (5500 Kelvin).
- Biologically stimulating effect.
- Best contrastive vision and sunshine-like shadow formation.
- Fatigue-free vision. Less error rates and increased productivity of personnel.
- Less absenteeism due to illnesses.
- Average lifespan in conjunction with ballast: 24,000 hours.

VIVA-LITE® FULL SPECTRUM HALOGEN LAMPS

For using the full spectrum halogen lamps there are ample reasons: their colour spectrum resembles that of their sun up to 98%.

It means continuous and harmonious reproduction of colours and an optimum shadow formation. The light distribution is absolutely uniform and no spots and patterns as in other cold light reflectors. The illuminated objects present an outstanding display.

Compared to a standard halogen lamp, the Viva-Lite® full spectrum halogen lamp has 80% lesser infrared component in the beam of light which reduces heating considerably. It is guaranteed that it has neither a "braising" nor a "bleaching" effect on the illuminated objects.

Moreover, by means of an ingenious shielding, the so-called high degree of electrical pollution in the case of halogen lamps, which is caused by the transformers, can be restricted to a large extent. By using D.C. transformers amazing results can be achieved.



Advantages:

- Fits into any 12V-20W/35W/50W low-voltage – Halogen lamp (Reflector).
- Standard MR16 – socket. Also known under GU (GX) 5,3 or QRCBC 50/51.
- Experience colours true to nature. The best colour reproduction you have ever experienced.
- Soothing to the eyes, improves your performance.
- Best suited for illuminating images/objects directly.
- Excellent in infrared as well as ultra-violet range.
- Superb continuous and balanced spectrum.

RANGE OF APPLICATIONS

IN FACT VIVA-LITE® MUST BE THERE IN EVERY ROOM. BUT IN SOME ROOMS MORE SO!

ASPECT OF "COLOUR FIDELITY":

Target groups/Keywords: Illumination of displays at jewellers, display of crystal-ware, graphics, paintings, textiles, flower arrangements, cosmetics, museums, photo studios, food stores, lobby illumination, consultancy for colour in fashion and interior decoration enterprises and in every place where colour fidelity of illumination is essential.

Viva-Lite® offers a sensational colour reproduction that is up to 98% similar to the colour fidelity of natural sunlight. What is remarkable here is that on objects and materials containing fluorescent substances the colours are reproduced true to nature – as is often the case, for example, in clothes or in dental technology.

This is possible only with the right proportion of UV rays that are dosed correctly in Viva-Lite®. This is the reason why Viva-Lite® is so popular, for example, among dentists or in boutiques. Who would want to see that the colour selection of the own fabricated denture after all does not match 100% with the natural teeth?

And also when shopping it is certainly more practical not having to go out of the shop into daylight to examine each garment – just to be able to convince oneself about the actual colour of a pullover or a trouser that may appear interesting.

Through skillful lighting arrangement with Viva-Lite®, presentation of goods can achieve significant turnover growth. The result is, foodstuffs will appear more fresh or paintings shine more (after all, mostly, they would have painted under natural sunlight!), flowers and plants grow rapidly and are less susceptible to pests, jewelry items appear more expensive and high class, as they glitter and sparkle more than before.

These are just a few examples where presentation of articles can be a catalyst to customers' clinching decision for a purchase. Not to forget is the rewarding atmosphere that can be created through Viva-Lite®. Naturally, this too contributes unknowingly to an optimum presentation of goods and the best incentive to customers' purchases.

ASPECT OF "HEALTH":

Target groups/Keywords: Health care, light-therapy, better vision, counteractive to headaches, fatigue, stress, increased ability in learning and performance, medical clinics, special dental clinics, hospitals, kindergartens, schools, colleges, universities, institutions for the handicapped and all other public and private buildings.

Viva-Lite® takes up the health related benefits of sunshine optimally. The Viva-Lite® spectrum simply switches on good cheer and thus creates an ideal ambience in companies, offices and in homes for work & living. We enjoy working a little more than usual and become more productive and more creative.

Lack of concentration due to ill-lit rooms can always be counterbalanced! And Viva-Lite® can keep eyestrain, headache and fatigue at bay by minimizing the otherwise adverse effects of light and electro-magnetic pollution. In this regard, mostly ballast devices, D.C and shielded cables or electro-biological installations are the culprits. Stress, aggressiveness, hyperactivity and difficulty in learning are not uncommon due to flickering and bad lighting, which triggers off a permanent stress in the humans who then are often diagnosed wrongly. They can be treated properly only if the causative factors for such attacks are identified and eliminated. – Simply changing the lamp may be the right solution!

ASPECT OF "ECONOMY":

Target groups/Keywords: Large-scale enterprises, small and medium sized firms, social institutions, health insurance companies, business houses, and political and environmental organisations.

The initial investment for the acquisition or re-equipment with Viva-Lite® healthy lighting system may seem rather expensive at first. That is not so, if we consider the long-term benefits which would be enhanced productivity, decreased absenteeism due to illness and errors due to lack of concentration and an improved motivation for the employees - in short a direct influence over "economic efficiency".

And then there are the statistics. The Viva-Lite® full spectrum energy-saving bulbs (spiral bulbs) have, for example, an extraordinarily long lifespan (minimum 8000 hours) and are extremely low on power consumption – and that with a such a light output that is worth presentable (a 23 Watt bulb, for instance, has the same performance as two commonly available 60 Watt bulbs!). The same applies to Viva-Lite® full spectrum tube lights. If these are used in combination with the so-called electronic ballasts, besides mere savings on power of about 1/3 one can expect even a longer lifespan for the tubes – mostly double the normal lifespan, in other words, onetime less for change of tubes.

Wherever natural light is absent or inadequate, man tries to create a relatively well-lit ambience through artificial lighting. What is decisive for the right effect is, however, its **quality**.

Thanks to the technological development, especially aimed at such areas of usage, our Viva-Lite® full spectrum lamps provide near natural lighting for artificial illumination. Numerous statements and publications confirm this supported by investigations and reports of positive experience affirm this, as the following selection shows:

"In recent times, we have become aware that we breathe always polluted air, eat junk food and drink unclean water, but we seem to have overlooked the most obvious nutrient, namely, the light."

J. Liberman: The Healing Power of Light - The Influence of Light on our Psyche and Body. Piper-Verlag, Munich, 1996

"We have at last realised that light is a foodstuff like normal food and, just as unbalanced diet makes us ill, wrong lighting can also make us ill and only correct lighting can preserve our health. Research in this field has made significant strides, but there is still a lot to do."

J. Ott: Risk Factor Artificial Light - Stress due to incorrect illumination. Knauer-Verlag, Munich, 1989

"When we talk of health, balanced lifestyle and physiological regulation, we primarily mean the health-preserving factors in the body, namely the nervous system and the endocrine system. These important control centres of the body are stimulated and regulated directly by light, and this to such an extent that goes beyond what the modern science was willing to realise till recently."

J. Liberman: The Healing Power of Light - The Influence of Light on our Psyche and Body. Piper-Verlag, Munich, 1996



"Stress due to light is the sum of many a dysregulation of the nervous system, such as irritability, depending on the type aggression or melancholy, lethargy or lack of interest. The American space authority NASA drew consequences of these experiences. Towards end of the 1960s it initiated the development of full spectrum lamp, in which the spectrum has been improved in some important aspects as against the conventional fluorescent lamps: the colour of the light corresponds to that of sunlight and the radiation is distributed uniformly over the entire spectrum. The astronauts were able to adjust to this comfortably and, also normal users spoke about improved attention and lively disposition."

Johannes Holler: The New Brain. Junfermann'sche Verlagsbuchhandlung, Paderborn, 1996



"Numerous medical investigations have revealed that for a number of body functions human beings too depend on a minimum UV light radiation."

K. Staniäk: Twilight - the Ecology of Artificial Brightness. Rabenverlag, Munich, 1989

"The type of unnatural lighting has influence on the depressive behaviour of school-going children during the winter months (mood changes, lack of energy, increased appetite, irritability, increased feeling of apprehension as expression of season related emotional disorders - known as Seasonal Affective Disorder, SAD or winter depression), which affects their motivation to learn. Under full spectrum lighting, depressive symptoms among pupils showed significant regression as against under lighting with cold white fluorescent light."

W. Tithof: The Effects Of Full Spectrum Light On Student Depression As A Factor In Student Learning Dissertation. Walden University, 1998



"In America, even full spectrum light is registered as a medicinal product and is used in many therapies like treatment of winter depression, jaundice in newborn infants, insomnia, skin diseases and so on.

In Germany too during the recent years many health-care centres, hotels, enterprises and homes have switched over to near natural, health-promoting and energy-saving lighting systems."

E. Brandmayer, B. Köhler: Light bestows Life. fit fürs Leben Verlag, Ritterhude, 1997

"In a primary school in America the number of days of reported sickness became significantly less when full spectrum lighting was used in the rooms."

W. London: The Lancet. S. 1205, 1987

"In factories and schools, the rate of illnesses due to common cold fell down by more than 40% when UV enriched lighting was used."

Küller: Non-visual Effects Of Daylight. Daylight Symposium, CIE, Berlin, 1980



"During perception tests, students of an American university remained alert under full spectrum lighting and became tired at a slower rate."

Maas, Jayson, Kleiber: Effects Of Spectral Differences In Illumination On Fatigue. Journal of applied psychology 59, 1974

"Our positive experience with full spectrum lighting has meanwhile resulted in not only all American Polaris submarines being equipped with it, but it is used also in hospitals, sanatoriums, schools, universities, factories as well as in many workplaces and private rooms like the normal full day illumination."

E. Brandmayer, B. Köhler: Light bestows Life. fit fürs Leben Verlag, Ritterhude, 1997

"Among children who were working in rooms provided with full spectrum lighting, the incidence of dental caries was one-third lesser than among children studying in rooms with normal fluorescent light."

Sharon, Feiler, Burney: The Effects Of Lights Of Different Spectra On Caries Incidence. Archives Of Oral Biology 16. No. 12, p 1427, 1971

and J. Ott: Risk Factor Artificial Light - Stress due to wrong lighting. Knauer-Verlag, Munich, 1989

SURVEYS & INVESTIGATIONS

A SELECTION OF ARTICLES ON THE EFFECTS OF HEALTHY LIGHT

HEALTHY LIGHT - RESEARCH WORK BY JOHN OTT*

When we are concerned about the quality of light and the importance of light for the well-being of all living organisms, above all we must mention the pioneering research work by Dr. John Ott. His pioneering work on the effect of various sources of light on plants, animals and humans may be considered as one of the most important discoveries of last/this century.

On the quick-motion film shots** done on an assignment by Walt Disney Dr. Ott observed that the germinating pumpkin seeds under fluorescent light did not grow fully, whereas they **grew remarkably when ultra-violet light was supplemented to the source of light**. During investigations in the 1950s and 60s he measured the life expectancy of animals in the laboratory, which were kept under different forms of fluorescent light, as against animals that lived in natural, unfiltered daylight. Such experiments were conducted simultaneously in several renowned medical institutions and research clinics. Without exception, dramatic differences were observed in the life expectancy of the laboratory animals.

For example, mice kept under light from pink coloured or daylight-like white fluorescent tube lights, survived on average for 7.5 to 8.2 months. On the other hand, their cousins, allowed to live under natural, unfiltered light, were astonishingly healthier and lived on average for 16.1 months.

Based on the results of these studies and other experiments, Dr. Ott concluded that natural light is as essential for the life and health of animals as it is for plants. Consequently, he recommended designing of a modified fluorescent tube light that came closer to the full spectrum of natural sunlight. According to Dr. Ott's ideas this should be done by adding a phosphor compound that was capable of producing three types of ultra-violet radiation at almost the same ratio as is the case with sunlight. Dr. John Ott was the driving force behind the development of the so-called full spectrum fluorescent tube lights.

* Source: J. Liberman: The healing power of light - Influence of light on the psyche and body - on permission by Piper-Verlag, Munich 1996

/ This video is available with us in documentation form and can be ordered directly from ZDF (German TV broadcasting station) for a nominal fee.

THE EFFECT OF HEALTHY LIGHT ON HUMANS*

Now Dr. Ott studied further the adverse effects of incorrect lighting on human health and performance. In 1973 he conducted, in collaboration with the *Environmental Health and Light Research Institute in Sarasota/Florida*, an investigation in four classrooms for first grade pupils. None of the four class rooms had any windows and in two of these rooms full spectrum fluorescent lamps provided with special protective devices against radiation were installed and in the other two rooms normal cool white fluorescent tubes. Thereafter, using hidden quick-motion cameras*** the pupils and teachers were filmed in random sequences. The photographic documentation was unambiguous: Under the cool white lighting, the pupils showed symptoms of **hyperactivity, exhaustion, irritability and inattentiveness**. In the classrooms with full spectrum lighting, on the other hand, considerable improvement was noticeable in regard to **behaviour, participation and academic performance** within a month after installation of lighting systems. Moreover, thanks to full spectrum lighting some children with learning disorders and extreme hyperactivity became **perceptibly calm and overcame to some extent their difficulties in reading and learning**.

In children working in rooms equipped with full spectrum lighting system, the incidence of **dental caries one-third lesser** than in children, who were learning in rooms with normal fluorescent light. In regard to frequency of dental caries, I. M. Sharon, R P. Feiler and S. W. Burney arrived at the same results. These results were not surprising, because even during the 1930s observations were made on a large group of children that dental caries occurred more frequently during the school days (that is, during autumn, winter and spring seasons) than during the summer vacation months. Also there appeared to be a direct relationship between incidence of caries and sunlight radiation in the relevant geographical region where the children were living. *The more you have of sun the lesser caries to worry about.*

FULL SPECTRUM LIGHT AND CHOLESTEROL LEVELS*

Recently, the poultry industry became aware of the advantages on chicken breeding maintained under full spectrum lighting. Initial results indicated that chickens that were growing under full spectrum lighting, **developed much better** than their cousins bred under other artificial lighting. They **live twice as long**, lay **more eggs**, are **less aggressive** and, their **eggs contain approx. 25% less cholesterol**. The fact that the eggs of chickens living under full spectrum light contain less cholesterol need not surprise us if we consider that also *in humans the cholesterol levels decrease under the influence of sunlight*.

Perhaps even our **cholesterol levels would be lower** and our general health better if we spent **more time in vacation and used full spectrum lighting indoors**. Today we know that a moderate exposure to sun rays decrease the cholesterol levels rapidly and significantly. The importance of this information becomes evident if we consider the fact that nearly 50% of all deaths in some countries are due to cardiac and circulatory diseases which, as generally known, are linked in many cases to high cholesterol levels.

LIGHT AND HUMAN PERFORMANCE *

The most extensive investigation on the effects of light on the function and development of the human organism was perhaps the pioneering work by Dr. Darell Boyd Hannon within the framework of the project "The Coordinated Classroom" (ca. 1938). The objective of this project was to protect and promote awareness for health among school-going children.

What was investigated?

The first step in the investigation was to obtain a complete overview on the various physical and/or psychic disorders that the examined children were suffering from. During the first three years, more than 160,000 school children were monitored for health disorders and school related problems and the room conditions in more than 4000 classrooms were examined.

Outcome:

The outcome was that more than half the number of children were suffering on average from two identifiable nevertheless avoidable deficiencies at the end of primary school. When this was correlated with the factors of environs, it became evident that many problems were connected with certain body functions, which are influenced by incidence of light into eyes.

In the background of these findings, in 1942 further intensive research work was initiated. In 1946, on the basis of all collected data, plans were initiated to establish a technically excellently equipped research centre where it was to be investigated as to which type of **lighting, sitting posture and colour layout** were prerequisites for maximum academic performance at minimum effort. On completion of preliminary work, one of the investigated schools was redesigned accordingly and a **six-month test** was conducted.

Select health related complaints were evaluated - once at the beginning of the investigation and then at the end of six months. The outcome showed a **remarkable regression** in several typical problem areas:

<i>Problem areas</i>	<i>Degree of regression</i>
Vision impairment	65 %
Nutritional disorders	47.8 %
Chronic contagious diseases	43.3 %
Posture disorders	25.6 %
Chronic exhaustion	55.6 %

Besides these indications of obvious improvement in physical well-being, comparable results were observed in respect to the academic performance, although **no attempt was made to modify the curriculum or the teaching methodology**. Dr. Hannon's study is extremely significant, since it is concerned with the mostly overlooked organic needs of children in the learning stage. The investigation proved undoubtedly a correlation between the school environs, health and ability to learn.

SOURCES & FURTHER DOCUMENT RESOURCES

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Knaur-Verlag, München 1989

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Falken Verlag, Niedernhausen/Ts., 1998

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B. J. Oleiko: Mehr Licht - aus medizinisch-biologischen Gründen, der Gesundheit wegen

Lichtjournal 8, 1987

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Daylight Symposium, CIE Berlin 1980

W. London: The Lancet - 1987, S. 1205

Maas, Jason, Kleiber: Effects Of Spectral Differences In Illumination On Fatigue

Journal Of Applied Psychology 59, 1974

PROS FOR WELLNESS & HEALTH

HOW A BUSINESS IDEA EMERGED FROM THE ELEMENTS OF LIGHT, WATER AND SOUND

Winterbach, November 1999. After reading the book "Light – Medicine Of The Future" by Jakob Libermann, Tobias Rückert, the managing director of Light Office, did not put it away on the shelf. Soon he hit upon the groundbreaking idea of developing future healing methods using light energy into a business proposition. Since the founding of Light-Office in 1999, he has been developing and distributing products that utilise the medicinal effect of light.

Light-Office develops select items for the market segments of preventive health-care, sports, fitness, beauty, personal care and relaxation which round up the package for well-being.

But Light-Office is also actively engaged in the field of research on light and colour therapies and on the subjects of wellness and health. Its core activity in this respect is to investigate the correlation between the elements of water, light, sound and the physical well-being of humans. The research work is conducted in cooperation with institutions, academies and experts and it serves as the basis for the selection and development of different products through distribution networks.

Tobias Rückert, an expert in the field of wellness and health products sourced from all over the world, says: "For us it is extremely important to throw light on various areas and elements such as light, sound and water from a scientific perspective. We are quite open to new directions of research and development subject to critical examination. We use the latest findings from the research organisations to develop new products."

Customer service and ecological concerns at the forefront

Reasonable pricing at the best possible quality are the top-most priority for Light-Office, because, after all, for a long-term cooperation pricing, quality and service mean enduring success to the customer as well as to the supplier equally. In the distribution of products, ecological concerns are given due regard from the point of production till marketing.

Tobias Rückert: "To ensure top quality of our Products & Services, we deploy our entire know-how. Innovations and flexibility help us achieve these objectives. For this purpose, we welcome collaborations and partnerships."

Success through partnerships

To take advantage of the synergetic potential, Light-Office is continuously in search of new collaborations and Joint Ventures, including affiliate programmes and Franchise Partnerships. For such collaborations, the spotlight will be on enterprises already engaged in the business-line of Wellness, Beauty and Body care. Over and above this, cooperation with research institutions and experts and interested lay people will be sought. Tobias Rückert has great expectations: "The aim of this synergetic endeavours should be to provide the latest information, products and trends to the customer."

View more information about Light-Office at: www.light-office.com

Typ	Power	Ø	Length	Lumens	Holder	Colour Temp.	Colour Reproduc.	Item-No.	VPE
Natural Spectrum									
Incandescent Bulbs									
Standard	220v/60w	60mm	101.6mm	540lms	E27	ff	94 RA / CRI	VL-122060	10 Pcs.
Standard	220v/75w	60mm	101.6mm	675lms	E27	ff	94 RA / CRI	VL-122075	10 Pcs.
Standard	220v/100w	60mm	101.6mm	900lms	E27	ff	94 RA / CRI	VL-122100	10 Pcs.
Candle	220v/25w	35mm	95mm	225lms	E14	ff	94 RA / CRI	VL-112025	10 Pcs.
Candle	220v/40w	35mm	95mm	360lms	E14	ff	94 RA / CRI	VL-112040	10 Pcs.
Full Spectrum Lighting									
Halogen Bulbs									
With Reflector	12v/20w	51mm	51mm	220lms	GX 5,3 / MR16	4500K	98 RA / CRI	VL-26302036	10 Pcs.
With Reflector	12v/35w	51mm	51mm	420lms	GX 5,3 / MR16	4500K	98 RA / CRI	VL-26303536	10 Pcs.
With Reflector	12v/50w	51mm	51mm	600lms	GX 5,3 / MR16	4500K	98 RA / CRI	VL-26305036	10 Pcs.
Energy Saving Lamps									
Type: Spiral	220v/15w	54mm	146mm	800lms	E27	5500K	96 RA / CRI	VL-222015	10 Pcs.
Type: Spiral	220v/20w	54mm	161mm	1050lms	E27	5500K	96 RA / CRI	VL-222020	10 Pcs.
Type: Spiral	220v/23w	54mm	161mm	1251lms	E27	5500K	96 RA / CRI	VL-222023	10 Pcs.
Type: Spiral	220v/11w	54mm	146mm	700lms	E14	5500K	96 RA / CRI	VL-212011	10 Pcs.
Type: Spiral	220v/13w	54mm	146mm	750lms	E14	5500K	96 RA / CRI	VL-212013	10 Pcs.
Tubes, including EB									
Standard	220v/14w	16mm	549mm	ff	T5	5500K	97 RA / CRI	VL-252014	25 Pcs.
Standard	220v/21w	16mm	849mm	ff	T5	5500K	97 RA / CRI	VL-252021	25 Pcs.
Standard	220v/28w	16mm	1149mm	ff	T5	5500K	97 RA / CRI	VL-252028	25 Pcs.
Standard	220v/35w	16mm	1449mm	ff	T5	5500K	97 RA / CRI	VL-252035	25 Pcs.
Standard	220v/18w	26mm	600mm	ff	T8	5500K	97 RA / CRI	VL-282018	25 Pcs.
Standard	220v/36w	26mm	1200mm	ff	T8	5500K	97 RA / CRI	VL-282036	25 Pcs.
Standard	220v/58w	26mm	1500mm	ff	T8	5500K	97 RA / CRI	VL-282058	25 Pcs.

„ff“ = Details can be requested any time as up to date readings had to be done when this brochure was printed / „K“ = Kelvin / „EB“ = elektronik Ballast

Full Spectrum = Daylight-Spectrum, incl. all visible colours + UV + IR. **For a bright working experience.**

Natural Spectrum = All visible colors + IR, reduced yellow part of light (no UV!). **For a cozy living atmosphere.**

No liability for given data.

