

2003 | 01

Colours | Construction  
Branding | Technology  
Lighting | Planning  
in Healthcare Environments

# Design in **EUROPEAN HOSPITAL**



Supplement to EUROPEAN HOSPITAL



### Dear Readers

In our twelve-year existence, **EUROPEAN HOSPITAL** has dealt with a wide range of topics relating to hospitals and healthcare. However, hospital design has received little coverage. So, why start now? Obviously European healthcare systems are in transition and money is scarce, so this cannot be the time for ambitious architectural visions and talk of designer furniture. Or can it?

Certainly there aren't many high-end luxury hospitals under construction in Europe. However, due to changes in concepts about healthcare delivery, the patient has become an obvious 'object of desire' for many hospitals. No patient, no hospital. In turn, patients increasingly expect more than state-of-the-art medical therapies: they also want to receive quality care and to feel comfortable in an often intimidating hospital environment. A little intelligent, human-centred design could turn a potential nightmare into a pleasant experience. No need to look for the 'big solution', small changes go a long way – brighter dishes, a flower vase on a table, new curtains or that fresh coat of paint ... and, of course, attentive staff – who, by the way, would also rather work in a designed rather than purely managed environment.

Design is an attitude and an approach to your environment. It is definitely not a question of money! Scandinavian furniture companies have demonstrated, for years, that good design and low prices are not a contradiction in terms.

With this first issue of **Design in EUROPEAN HOSPITAL** we hope to encourage you to view your surroundings in a fresh light. There is no accounting for taste – therefore you can find a cornucopia of products and solutions that are not necessarily expensive – but your choice should always be well designed.

Enjoy!

  
Daniela Zimmermann

  
Denise Hennig

Published by

**EUROPEAN HOSPITAL** Verlags GmbH | Höherweg 287 | D-40231 Düsseldorf  
Phone +49-211-7357 531 | Fax +49-211-7357 530  
www.european-hospital.com

© 2003 by **EUROPEAN HOSPITAL**

Editor-in-Chief:  
Brenda Marsh

Editorial contributors:  
Anja Behringer, Heidi Heinold,  
Denise Hennig, Brenda Marsh

Translations:  
Annette Bus, Stephanie Warren

Art Director:  
Ursula Löckenhoff

Art Consultant:  
Alasdair Howieson

Advertising:  
Denise Hennig

Managing Directors:  
Daniela Zimmermann  
Reiner Hoffmann

Printed by  
Frotscher Druck GmbH, Germany

Design in **EUROPEAN HOSPITAL** is a  
**EUROPEAN HOSPITAL** supplement  
**DIH** is published bi-annually

With special thanks to the following companies for their support and input:

Derungslicht | Heinle, Wischer & Partner | Held und Team | Maquet | Siemens | Trilux | Trumpf | Zumtobel Staff

# SOMATOM Smile

Form is More  
than Function.

www.SiemensMedical.com



Designpreis der  
Bundesrepublik  
Deutschland  
2002



TOP 10

Chosen by world's leading design  
magazines and a leading design award  
winner 2011



reddot design award  
winner 2011

XVI 100 0431 01-17/00

Intelligible operation is self-evident to Siemens Computed Tomographs. But in medical engineering good design only becomes outstanding if it can allay the patients' fears as well. And exactly for this our products have been awarded repeatedly.

For more information please contact us:

Siemens AG, Medical Solutions  
Computed Tomography  
Siemensstr. 1, D-91301 Forchheim  
Germany  
Telephone: +49 9191 18-0

**SIEMENS**  
medical

Siemens Medical Solutions that help

Design in EUROPEAN HOSPITAL

## content



The pitfalls of hospital planing Hans-Evert Gatermann	6
Ecology matters Heinz Pahl-Kaupp	8
Designing for healthcare Heinle, Wischer & Partner	10
Radiotherapy – with art and colour Brenda Marsh	12
Walls, doors and windows Diego G Velazquez	14
Product design	16
Product recognition confirms brand quality Fred Held	18
The child's eye view Brenda Marsh	20
The art of combining functional and aesthetic Holger Reim	23
Rooms, spaces and colours Susanne Wied	24
Healing light	26
Prize draw	27

## Integrating the Future.

- Operating tables
- Operating table accessories
- Patient positioning and transport
- Ceiling mounts
- Mobile functional furniture
- Services



**TRUMPF KREUZER**  
Medizin Systeme GmbH + Co. KG  
Benzstraße 26  
82178 Puchheim • Germany  
Telephone: + 49 (0) 89 / 8 09 07-0  
Telefax: + 49 (0) 89 / 8 09 07-20  
e-mail: info@muc.trumpf-med.com  
www.trumpf-med.com

**TRUMPF**

**TRUMPF**  
Medizin Systeme GmbH  
P.O. Box 1263  
07303 Saalfeld • Germany  
Telephone: + 49 (0) 36 71 / 5 86-0  
Telefax: + 49 (0) 36 71 / 5 86-1 65  
e-mail: info@de.trumpf-med.com  
www.trumpf-med.com

interview

# The pitfalls of hospital planning



**Architect Hans-Evert Gatermann joined the German Hospital Institute in Dusseldorf after graduating from the Berlin's University of Technology. Later, he became responsible for hospital planning at the State Ministry of Labour, Health and Social Issues for two decades. Since 1996, he has been director of the Public Health Programme at the International Union of Architects. Dr Gatermann is also a member of the German architects association BDA-AKG, and the NARK standards committee at the German Standards Institute (DIN). Given his vast experience in hospital planning and construction, we asked Dr Gatermann about any significant mistakes he has encountered in this field.**

**Hans-Evert Gatermann:** Basically there shouldn't be any mistakes because everything is prescribed and regulated in one way or the other and because, early in the planning phase, each project undergoes a multilevel inspection process. In North Rhine-Westphalia, for example, we have the hospital buildings ordinance KhBauVO – which contains many, many regulations. Some German states have emulated an ordinance model; others have no ordinance at all. The result is considerable insecurity. The building ordinance for North Rhine-Westphalia, which regulates on minimum requirements, was adopted in 1978 and, basically, has never been modified since then. However, today the legislator has to be a bit less strict, therefore I haven't heard of any major mis-planning for a couple of years.

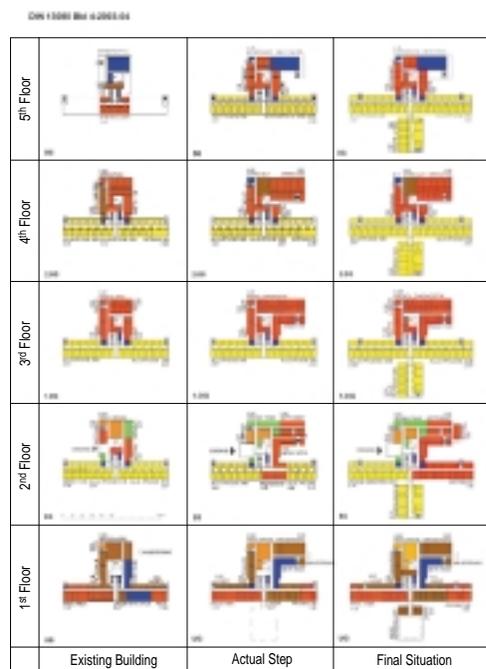
**Design in EUROPEAN HOSPITAL:** Even though you say there shouldn't be mistakes, in practice there are. Why is that?

**HEG:** That depends on what you consider to be a mistake. In 50 BC, Vitruvius laid down the basic rules of architecture in 'De Architectura Libi Decem'. These rules remain valid. Vitruvius was concerned with stability, aesthetics, and functionality – just like the architects of today. However, the hospital building ordinance primarily deals with safety aspects – above all fire prevention. In addition there is a host of other regulations, for example accident prevention, hygiene, etc. It's such a regulatory jungle that only experienced hospital architects should attempt to master it. It is definitely a mistake to disregard experience.

**DIEH:** Are there no other mistakes during the planning phase?

**HEG:** Only if you consider it a mistake when sometimes in the planning process very complex issues are looked at with a certain tunnel vision. There is no such thing as a zero-fault hospital. When you look at a hospital project in an integrated way, many things fall into perspective. Such an integrated approach applies about ten criteria – functionality, cost-efficiency, urban planning, interior and exterior infrastructure, construction, design, technology, flexibility and the potential for development. One aspect that is often very problematic is the renovation of older buildings, which were created in a very different regulatory framework. In such projects one has to be prepared for surprises.

As I said, there are too many regulations with which to comply. But there are also other aspects. For example, the fact that expansive building plots are becoming an ever-scarcer resource forces architects to plan in a more compact way. Large hospital projects are even designed as high rises – consequently a whole set of high-rise regulations applies. Moreover, when you build in a more compact way, you can't have daylight or natural air-conditioning in every single room. From an ecological viewpoint this is a weakness, but is it a mistake? No doubt, short distances are an advantage in terms of functionality.



Masterplan phases of construction

However, most mistakes occur in a very different area. There are many 'laws' in hospital design that an experienced architect knows, but they are not written anywhere. These laws usually concern functionality. Mostly, when people talk about functionality they mean short distances. Many nurses complain that distances are too long, but long corridors are a consequence of overruling standards and expectations in hospital care. Years ago, a hospital room with six beds was the norm. Six bed wards mean less rooms and shorter distances. But today the trend is towards the two-bed-room, in highly developed industrial countries even a private room. The hospital owner who wants many private rooms cannot expect short distances in wards.

But there are other limitations to functionality. Imagine a hospital building that is classified as a historic monument. To make this building comply with current – ecologically very sensible – energy regulations, it would have to be insulated on the outside. This doesn't work and, in that case, compromise becomes necessary.

**DIEH:** We don't need that kind of packaging.

**HEG:** Absolutely! But it is more important to strive for flexibility and adaptability. For example, traditionally, a central sterilising department had to be located next to the operating theatre. But today, with increasing co-operation between hospitals, that no longer holds true. If you have a hospital built according to that rule but the sterilising department now also must serve more than one hospital, you have a problem. You have two options: either you

don't change anything and live with long distances or you must come up with an entirely new concept. Unfortunately – or fortunately – hospitals are in a permanent process of change. In my opinion, flexibility and the potential for development are the two most important issues when planning a hospital. Imagine, say in Germany, that the rather strict separation of out- and in-patient services were to be abolished in favour of a closer co-operation of those two sectors. This would mean restructuring entire hospitals to accommodate the needs of the outpatient sector. Hospitals that were planned for a single purpose and built with cost-efficiency in mind, but not flexibility, will have problems.

**DIEH:** What does that mean for the future?

**HEG:** Today, at least in Germany, very few new hospitals are being built. Mostly what we see is renovation and rehabilitation. A master plan that describes the intended development of a hospital is a must. An integrated perspective, incorporating all functional units, is absolutely indispensable. For example, all floors must be included in the plan, both in terms of current status evaluation and the planning target. Since, usually, the target is not reached in one construction phase, work that needs to be financed first must be clearly indicated. Development from an existing building to the next construction phase must be shown, as well as how the new construction fits into the entire complex, and this should be presented in one lucid single plan, not in many detailed individual plans. Useful papers on this issue are available from both BDA- AKG and DIN.

**New Examination Lamp!  
Ask for more!**

**THE WORLD OF DERUNGS  
MEDICAL LIGHTING**

Our modular and forward-looking ideas for light, energy and communication systems extend from a complete lighting system for a consulting room, right up to individual design and manufacture in accordance with your requirements.

**Derungs Licht AG**  
Hofmattstrasse 12, CH-9200 Gossau  
Phone: +41 71 388 11 88, Fax: +41 71 388 11 77  
www.derungslight.com, mailbox@derungslight.com

Derungs Licht AG ist ein Mitglied der Waidmann Lichttechnik Unternehmensgruppe

**Derungs<sup>®</sup>**  
Medical Lighting

## construction

# Ecology matters – and should matter most in hospitals

The integration of ecological concepts into the planning and construction of hospitals seems only natural. Heinz Pahl-Kaupp, architect at the Salutaris (Gesellschaft für ganzheitliches Bauen), Waldbroel, Germany, defines why this is important and discusses the materials and technology required to meet such demands.



By definition, ecological integral planning and construction is the basis for building environmentally-friendly, energy-saving structures through the economic use of natural resources – the active and passive use of solar energy, for example – and the use of materials that do not harm water, soil and air during their manufacture, use and disposal.

This requires comprehensive study and decisions revolving around economic, technical, ecological, political, social, psychological and aesthetic factors.

## Primary decision base

A careful analysis of the spatial and functional programme, and location factors, is the primary decision base for the choice of construction. Due to the variety of functions carried out in different hospital departments, mixed constructions work very well – reinforced concrete frames and timber frames complement each other perfectly.

- Timber frames used for exterior walls can be effectively insulated with cellulose insulation and soft fibre panels.
- Reinforced concrete constructions can then be erected inside these frames; they are perfect for heat storage and comply with building regulations on sound and fire protection.
- All-timber constructions can be used for some parts of buildings, such as administration departments.
- Industrially produced clay sheets and clay 'bricks', which have beneficial effects on the room climate, can be used for the construction of non-load-bearing walls. Apart from the 'natural' protection against high frequencies, e.g. some diagnostic and therapeutic procedures, or mobile phones, this material also possesses an extremely high rate of damp absorption, which is also beneficial for room climate, and clay is said to have healing properties. Presently, the assimilation of harmful substances that affect the air is being scientifically evaluated.

The choice of materials for internal construction is based on their components – lino, ceramic tiles, for example, because these must not contain any radioactive particles in their structure and glazing. Wooden parquet flooring or natural stone can be used to cover floors and, depending on the purpose of rooms, walls can be covered with clay, ceramic tiles or wooden panels.

- Clay plaster is particularly suitable for non-tiled areas in wet units, rooms for continuous occupation and for those where fire protection regulations are particularly stringent.
  - Wood panelling, which is not completely sealed, is also suitable for constantly occupied rooms.
  - Even ceramic tiles – as long as they are not glued, but are laid on tracks to allow ventilation, can have beneficial effects on room climate in public spaces.
- Choice of paints is based on their content – i.e. they must not contain any potentially harmful substances.

## Building elements and ecological materials?

When it comes to decisions on building elements, particularly doors, windows and installation channels, the motto always must be, 'decision follows function'. Frames for internal windows, doors and other glass panels can be wood. Unprotected building elements can be constructed from wood and metal or – depending on its manufacture – recycled synthetic materials. The use of building elements such as solar cells, ESA facades – a honeycombed construction made from cardboard – or two-layered glass facades depends on

- the integration of internal, technical installations into the construction
- design
- aesthetic objectives and criteria and, of course, economic factors.

Technical installations need to be integrated into the entire construction system in an extremely flexible way, to ensure that walls, ceilings and floors are not damaged in the course of technological advances (in intervals of roughly 15 – 20 years), or during repairs, alterations or additions.

## The costs/benefits of ecological planning and building

The overall costs of ecologically sound, integral construction are no different to those incurred in conventional construction of hospitals. However, planning costs can be about 10% higher, resulting in an overall cost increase of about 1%. But this cost factor is soon offset by lower running costs achieved in the long term. Patients, as temporary users of the building, are supported in their recovery process, and the staff – permanent users of a hospital – have a workplace that is conducive to their health and well-being because potentially damaging factors have been reduced. (An examination of German office buildings revealed that hundred percent of rooms for permanent occupation did not comply with regulations covering the maximum measurements of any potentially harmful substances in the atmosphere.)

## Summary

- Ecologically sound construction has no disadvantages or limitations.
  - There are currently no indications that any particular hospital departments cannot be constructed in an ecologically sound way. In fact, quite the contrary, as this way of building guarantees user-customised solutions, from operating theatres to waiting areas, which, based on interdisciplinary co-operation and creativity, enable optimisation of comfort and functionality.
  - Financial advantages arise from lower running costs, flexibility of systems (investment to allow for any changes), planning and design philosophy, as integral prerequisites for a positive construction process.
  - The historically documented decay of reinforced concrete constructions can be reduced by 100%. Because constructions are not exposed to any thermal force and therefore not to any damp-related incalculability either, one can be assured of a structurally sound base for concrete constructions.
- If the objective of putting an ecologically sound approach to hospital building into practice can be achieved in an optimal, timely manner, there are no reasons not to choose this type of construction.

1. Reception area with computer workstations

2. View of the entrance area with horizontal installation ducts and painted pillar of reinforced concrete

3. Mixed wood and reinforced concrete construction

4. Clay panels framed by wooden pillars

5. View of the staircase



environments of care

# Designing for healthcare

Our architectural company has 140 collaborators in Stuttgart, Berlin, Cologne and Dresden, and we cover every architectural area – general planning, target planning and expert advice, as well as competitions.

Hospitals as the architecture of the future are one of our priorities. This task is complex: medical progress calls for flexible buildings and systems, cash limitations demand economic and effective structures, patients and personnel expect functional yet pleasing architecture.

Heinle, Wischer und Partner | Freie Architekten | Stuttgart, Berlin, Cologne, Dresden | www.heinlewischerpartner.de

## The hospital ...



### ... a city landmark ...

#### Stuttgart, Katharinenhospital General Hospital

The various functions of this building extension are grouped around a central glass hall – a former hospital garden, now a conservatory and year-round lounge for patients



### ... care ...

#### Berlin-Spandau, Hospital

Once a limited institution, this hospital is now part of a city district. To block air traffic noise we developed a second elevation as a conservatory. Set at the front of the wards, it is now used as a patients' lounge



### ... catering ...

#### Vienna, Wilhelminenspital New Kitchen and Club

Two pavilions, for a club and administration offices, soar over the two-floor social building. Built on a slope, they offer a panoramic view of Vienna. Cook-and-chill-kitchen (2.340 meals).



### ... surgery ...



#### Brandenburg on Havel, City Clinics

This development turned a 100-year-old medical establishment into a high-performance health centre. The operating theatres were moved from dark interiors to the facade, so that outdoor events are visible and doctors and nurses can work in daylight.

### ... intensive care ...

#### Dusseldorf, University, Medical Facilities Surgery Extension

A first step towards the completion of a surgical clinic, in two phases; extension of the first surgical centre with 10 operating theatres, 40 intensive care beds in single bed rooms, clinics for children, heart surgery and transplants (kidney, etc).



### ... renovation ...

#### Leipzig, University Clinic Gynaecology

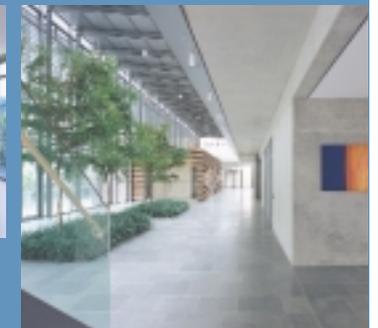
Reconstruction, conversion and extension of a project section 3-7: This listed historical building was completely renewed, whilst remaining operational during site work (58 beds).



### ... finishing design.

#### Dresden, University Clinics Paediatrics and Gynaecology

The new building brought paediatrics, maternity, obstetrics and gynaecology under one roof. Accessible from all the clinics, the garden hall expresses openness and a communal spirit. The ultimate effect emphasises precision, light, colour and pleasant building materials.



oncology

# Radiotherapy – with art and colour

The Churchill Hospital, Oxford



*Patients' waiting area in the hospital's simulator suite. Doors to the left and right give access to consulting rooms and the corridor leads through to a darkroom and other technical facilities at the rear*

*The flooring linoleum (supplied by Forbo Nairn, Scotland) was cut by hand, found to be more accurate than modern laser-cutting methods*

*The refurbished reception area at the hospital's east main entrance, with reception desk, patient seating, and corridor access to the main hospital area*

In 2001, the architecture practice of Gray Baynes & Shew, based in Oxford, was commissioned by Oxford Radcliffe Hospitals NHS Trust to produce designs for a simulator suite for the radiotherapy department at the city's Churchill Hospital. The department occupies a collection of drab, monotonous buildings, constructed over three decades since 1943, which are patched together to produce a confusing layout. The space allocated for the new project was a staff car park and, amid talk of a new cancer centre being built nearby, the new design might be seen as a bridgehead to link this with the existing buildings. Size considerations involved the need to house two simulators, each used to set up patients' treatment regimes, for use on the larger, more intensive linear accelerators. Greater use of the simulators would free up space on the accelerators, allowing more patients to be treated more quickly.

The design aimed primarily to make some sense of the disorientating building layout and provide a quiet, welcoming aspect with adequate seating. It had to be light and airy, but cool in summer.



Patients needed a civilised non-threatening space where they could discuss their treatment with medical staff. Privacy was therefore paramount, but there should be communion where required. The design also had to provide for future links to the cancer centre. The collection of flat roofs, abutting into the area from existing buildings, were among the difficulties faced. Poorly aligned, they also leaked in many places.

A further challenge was that the linear accelerators had to be kept running every day during construction. Overall, cost constraints were tight, and initially, there was some resistance at various levels in the client body to the use of modern design. However, demonstrations of trial colour panels and further site evaluation meetings helped allay fears and promoted the use of more radical colourways. The practice began to carry out substantial briefing consultations with the personnel who would be the end-users. These included radiographers, consultants, medical physicists and other clinical staff. Also involved were the estates personnel and planners, engineering colleagues and – last but not least –

the views of a number of patients were sought. However, the most radical and innovative move was the introduction of Chris Tipping – an internationally known multi-media artist, who is celebrated for his striking floor designs. His works, in conjunction with an expert floor contractor, have won many awards. The artist's inclusion in the consultations represented a radical and innovative move for the Oxford Radcliffe Hospitals NHS Trust, which had never before allowed artist and architect to collaborate to such an extent on their projects. Eventually, the detailed design of the proposed building was carried out with the help of the hospital's medical physics department. The accommodation housed

two simulators and their associated control rooms, ten clinical rooms, a darkroom and other ancillary spaces. To guard against the increased presence of – and risk from – X-ray radiation, all brickwork was constructed in two skins with staggered horizontal courses, all doors were lead-lined and windows made from boro-silicate glass. (During the preparation work on the site for one of the simulators, a large well was discovered in the sub-floor!)

The finished construction presents great diversity in the types of lighting used. These enhance the dramatic effect of the vivid colour schemes designed by Chris Tipping and also serve to emphasise the vistas and enfilades created by the clever use of the space in the department. Patient funds were used to pay for the involvement of the artist and for the linoleum floor and etched glass pieces. The quality of space and the use of colour has been manipulated to give the department a distinctive image and to ease the stress to patients of extensive radiotherapy procedures. Technical advantages include the incorporation of a large rooftop plant room that straddles the accommodation, giving good service access.

Soon after the success of the simulator suite project, the practice team was also asked to redesign the east main entrance of the same hospital. Constructed for the American Armed Forces during the Second World War and little altered since then, the entrance was drab, dark



and uninspiring and retained its unimaginative 'institutional' atmosphere. Project partner Nigel Spawton, working with architect Matthew Bullock, substantially improved and enhanced the public spaces by opening up the reception area ceiling to allow in more natural light through the celestery windows of the building's distinctive tower. The size of the waiting room was substantially increased and the incorporation of well-designed lighting and bold colours on the walls and pillars, coupled with the striking decorative floor designed by Chris Tipping, helped lift the mood in the reception area. The refurbished space now displays a gallery of nostalgic photographs dating back over the years, including those commemorating a visit from wartime leader and former US President Dwight D Eisenhower, along with portraits of former matrons in charge of the hospital during the 1950s and 1960s. The scheme, which cost £160,000, has been featured in the National Health Service's Design Quality Portfolio. The effect on staff and patients is equally positive. 'It looks fantastic and makes people feel that, when they come into the hospital, they will receive first-class treatment,' says Jane Imbush, the hospital's Director.

'This refurbishment is splendid,' adds facilities manager, Ken Hanks. 'The architects have opened up the roof space – which was closed off when a suspended ceiling was fitted some years ago. Now it's bright, modern, very cheerful – and good for the patients.'

*The material used is an eco-friendly mixture of linseed oil, hessian and cork, and is naturally bacteriocidal – an ideal product for hospitals*

*The linoleum also has good grip characteristics, is extremely hard-wearing and can be supplied with a sound-absorbing backing*

*Details: Gray Baynes & Shew, Oxford OX1 2ND, UK. www.gbs-ox.co.uk Phone: +44(0)1865.248488 E-mail: architecture@gbs-ox.co.uk.*

painting

# Walls, doors and windows

The belief that hygiene means bright white walls, covered with washable oil paint, is a thing of the past. Then, and now, mildew and other threats to health were caused because materials used in the foundation, construction and decor were not specifically made for hospitals.



Diego G Velazquez, master painter/varnisher and technical consultant with Akzo Nobel Deco GmbH, gives general advice to avoid mistakes when planning new – or refurbishing old – buildings.

We also need to know what the walls' materials are – concrete, plaster or (as in some offices) even loam or half-timber – the age of the building is relevant when deciding on a base coat, for example. We may also be dealing with wallpaper.

Because different paint manufacturers have different warranty provisions, it is sensible for hospital managers to be involved and have a contact who can clarify the issues mentioned above, and advise on which materials are right for the walls involved.

In a case of damage or defects, the manager would need to ascertain who is liable according to product liability laws, or understand the conditions specified in the call for tenders. In planning mistakes, for example, liability covers 30 years.

Consultants can be liable if, for example, an inadequate sequence of coatings was recommended or if selected materials were inadequate for the particular purpose.

### Wall covering

This should be made with fibreglass, or a similar material, and treated with special paint, which must comply with the DIN EN 13300 European standard, which lists product features, e.g. all coating layers must be non-inflammable. Depending on use and on legal requirements they should also be non-combustible,

"As with all projects that entail the application of coatings the question of which paints to use in the construction, refurbishment or renovation of a hospital requires a status analysis prior to a call for tender or contract award. This means that the hospital person in charge of the project – usually a technical director – gets to know the building and should include the staff in the entire process. A decision must be made as to whether only a quick fresh coat of paint or a state-of-the-art refurbishment is wanted. The latter may seem expensive at first, but pays off in the long run, because fewer follow-up renovations are necessary.

### Designer-Table

Recommended paint quality for hospital areas

	Surface effects	Wear	Flammability	Emission	Cleaning
Patients' rooms	Matt	Water-resistant, but better: scrub-resistant		Solvent-free low odour, low emission*	Light soiling cleaned with water
Hallways	Matt, medium-shine, silky-sheen	Scrub-resistant	Non-inflammable or non-combustible, depending on national legal requirements	Solvent-free, odour-free	
Storage rooms, functional rooms in the care area	Matt	Water-resistant		Solvent-free	Light soiling cleaned with water
ICU	Matt to medium-shine	Scrub-resistant		Solvent-free	
Infectious diseases wards	Medium-shine, silky-sheen				
Surgery/ Emergency areas	Medium-shine, surface texture dense	Highly scrub-resistant to mild lye and acids			With water, brush, sponge and cleaning preparation
Radiology	Medium-shine	Decontamination possible*			Decontamination action

\* certified

- disinfectant-resistant and readily decontaminated. A fibreglass covering should be recommended from an organic architectural aspect and be
  - porous and steam-permeable
  - anti-static, i.e. electric conductivity and dust binding must be reduced.
  - It should contain mineral raw materials and be non-rotting.



High-quality paper, even if wet, is easier to use on an uneven wall or if a length of existing wallpaper needs removal or adjustment, and allows for machine use, so decorating is quicker and therefore cheaper. Of course, not all requests – in terms of colour and material – are realisable. For example, rooms for nervous or upset people should not be painted in colours that exacerbate nervousness. Also, accident and emergency rooms, operating theatres, hallways and toilets, all of which can be soiled, should be painted in a light colour so that soiling is visible and therefore cleaned. And in these cases, wet scrub resistance is very important (water-resistant paint is fine for patients' rooms where walls are rarely cleaned with water). The brighter a surface the more dense it becomes, which in turn means improved scrub resistance. Coat thickness is very important for the purchasing department or the technical director or the painter, in terms of machine processing. Other technical considerations include durability against damage from nicotine in smoking areas, or water or light resistance, as well as how easily small repairs can be carried out.

High-quality paints are not necessarily the most expensive. Using quality bonding agents or pigments can generate optimum results. Even coatings as thin as 100 µm can offer good opacity and scrub resistance. Moreover, even several thin coats don't cover, say, a fibreglass texture.

We also need to consider emissions and protection from health and environmental harm. In Germany, the safety standards authority carries out tests, and paints examined are safe for interior decoration. The table gives an overview of the degree of wear and areas of use. As for colours, keep the following in mind: Always paint walls in bright, friendly colours and don't forget that bedridden patients look at the ceiling most of the time. It is incomprehensible why most walls and ceilings are white. In high rooms, particularly, ceilings should be a warm, bright, pastel hue.

Advice? Develop your overall colour guidelines before issuing a call for tenders.

MAQUET

TRUST IN YOUR TEAM.



SYSTEM TECHNOLOGY BY MAQUET.



Technology you can trust. Sound out our experts and see for yourself the convincing solutions offered by our expanded product portfolio in the areas of OR, therapy and ICU. At Medica 2003 - from 19 to 22 November in Düsseldorf, Hall 12. MAQUET GmbH & Co. KG, Kehler Strasse 31, 76437 Rastatt Germany, www.maquet.com

GETINGE  
Surgical Systems

## product design



### Ceiling mounts free space

Uncluttered floors are important in keeping work fluid and easing stress. 'If something is suspended from the ceiling it cannot obstruct work on the floor,' mount manufacturer Trumpf Kreuzer Medical Systems points out. 'There are no cables or hoses to trip over, the floor remains a multi-functional workspace and it can be easily cleaned. Of course, each ceiling mount is tailored to individual requirements – it must combine multiple, service-related, diagnostic and control functions, particularly in operating theatres and intensive care.' 'A ceiling mount,' echoes Georg Averdunk, of the Krefeld Hospital Technology Planning Company, 'is an unobtrusive, highly sophisticated servant, which must accommodate a wide variety of equipment with different hoses and cables, and the total system weight, including all integrated instruments, can reach 500-kg/1,100 lb. So the initial decision about the type of mount (single-arm or double-arm, medium-load or heavy-load), as well as the location, must be made at an early planning stage. At this point, it is usually not yet known which devices from which manufacturers will ultimately need to be integrated into the system, which underlines what's at stake in the collaboration between hospital planners and system manufacturers.'

[www.trumpf.com](http://www.trumpf.com)

### Intense – and where you need it most

Whether used in intensive care, medical staff rooms, examination rooms, A&E units or anterooms for operating theatres – the new Halux Exlite NG examination lamp offers the most intense lighting. A specially designed reflector system (combining facet and parabolic technology) guarantees precise, true-colour and neutral white light, which the manufacturer says is ideal for the most sophisticated examinations. With a compact and closed hinge system, the lamp offers increased smoothness and manoeuvrability due to the spring-relieving arm. The excellent and unconventional casing design also presents smooth surfaces to satisfy stringent hygiene. The Halux Iris, a medical product compliant with EG 93/42, class 1 and constructed and tested according to EN 60 601, is also produced in ceiling, wall or free-standing versions.

[www.derungslicht.com](http://www.derungslicht.com)

### Bedridden patients gain control

The HiMed Cockpit, with an infrared environment control system, was designed by Siemens Information and Communication Networks to aid quadriplegics. Whether sitting or lying, the moveable mounting is easy to control and is equipped with large, ergonomically positioned keys, a small blowpipe and headset. Via these, a patient can make phone calls, call a nurse, watch TV, listen to the radio, control lighting and blinds, use the Web, make appointments, order videos, contact friends, enter a hospital's intranet to order food (eliminating yet another task for nurses), and much else. Within the patient's telephone ChipSet 4 an integrated chip card reader handles billing as well as connection with other payment mechanisms. Authorised medical personnel also use HiMed to access the patient's digital record from the hospital information system (HIS). Medical workers welcome the equipment's around the clock service, a reduction in workload, and most importantly, seeing patients control their environment within and beyond hospital walls.

[www.siemens.com](http://www.siemens.com)

### Pretty – sturdy – handy – clean

Bathrooms and cloakrooms are often the heart of darkness – no windows, never a ray of sunlight. But lack of natural light does not mean these badly neglected areas should remain grey and dreary. A wide range of well-designed equipment is available that could complement existing wall and floor coverings. Naturally manufacturers' fittings and washroom accessories must meet a hospital's special needs – by offering smooth surfaces for easy cleaning, for example. At quite another level, the makers should also ensure that fixtures are theft proof.

[www.hewl.de](http://www.hewl.de)

### Hidden elegance

Suitable for use in basic, intermediate and intensive care areas, the supply unit supplies necessary technology in a functional and very compact way and makes access easy for medical staff, the manufacturer reports. With basic dimensions of 300 or 600 mm, and recess depth of only 85 mm, the VS 300 comes as a vertical or horizontal, wall-integrated medical supply unit. (Other dimensions or multi-compartment systems can also be supplied). Equipment in the front-panel cover plates can be variable, and so are the modules. In addition, a Trilux locking system simplifies maintenance or exchange of individual modules.

[www.trilux.de](http://www.trilux.de)

### Movie star and award winner

The Hanaulux G8 surgical light 'starred' in the film 'Anatomy 2' and has gone on to beat 1,500 products from 32 countries and win the International Forum Design Award 2003 in the operating theatre light category. The iF jury also presented the unit with a 'red dot' design award. 'Above all,' its manufacturer reports, 'the innovative technology of the gas-discharge Hanaulux G8 lamp is outstanding, making this far more than just a trendsetter with an unusual design: It ranks among the strongest surgical lights worldwide, and is fitted with unique lighting technology. The Hanaulux G8 incorporates all the advantages of lighting systems to date, thus making it an advanced concept for optimum lighting in operating theatres.' The surgical light is also the first to be constructed as an open ring light, a design that minimises air-stream turbulence in ceiling vents, thus minimising the risk of infection in the theatre, the firm adds. 'The amount of heat developed by the light is extremely low. The special layout of lenses and reflectors avoids hard shadows in the work field, so a surgeon's eyes do not tire so quickly. Additionally, the Hanaulux G8 also allows for 3-D vision and precise focus on a wound.'

[www.maquet.com](http://www.maquet.com)

### The changing face of floors

Bayer Polymers new flooring 'Artwalk' – made from the raw materials Desmodur and Desmophen, and with a cast resin coating or terrazzo-look granular rubber – can be laid with no seams and unsightly edges. Very intricate designs can be applied to curved surfaces around columns, sharp corners or irregular lengths of wall, the firm points out, and it is possible to create inlays and logos, choosing from the large range of colours, or using additives, such as aluminium particles, glitter or chips. The design possibilities are '...almost endless', says Bayer, which has linked with designers and fitters to offer tailor-made floors. The flooring '...meets the most stringent functional requirements,' Bayer points out. 'Systems can be formulated for specific requirement profiles, i.e. high abrasion resistance, mechanical strength, colour-fastness, resistance to chemicals, crack bridging and ease of maintenance. They adhere to almost any substrate and the polyurethane granular rubber version can be used to level out significant irregularities in the substrate – and no screed is required.'

[www.artwalk-bayer.com](http://www.artwalk-bayer.com)

### Bed head unit wins design award

Schyns Medizintechnik, of Hanover, Germany, has won The International Forum Design Award 2003 for its medical supply unit S 500, which not only supplies room and reading lighting but also all indispensable bedside media – such as electricity and communication outlets and medical gas, with outlets and other connections hidden in the lighting strip. Designed by Gestaltonauten of Essen, this fully adjustable reading lamp has a formal simplicity that offers discreet lighting, conveying a sense of peace and quiet, says the maker, adding that this 'contributes significantly to a pleasant and cosy atmosphere in patients' rooms'.

[www.schyns.de](http://www.schyns.de)

## Branding: medical technology

# 'Product recognition confirms brand quality!'

Fred Held, industrial designer, discusses the importance of corporate product design



Fred Held

Why is corporate product design important for medical technology?

**FH:** Companies that pay little attention to corporate product design will be left behind because the increasingly complex technologies and functions of these products are hard to differentiate and experience. Purchasing decisions rest on beliefs that one product is better than another, and/or one product is cheaper than another. That's very dangerous for manufacturers of high quality products because price dominates decisions – and that's rational. This is why products made in low wage countries can easily become successful. It is important to counteract these developments by ensuring that a product's quality and innovation are readily recognisable by customers. Therefore, aesthetic design and outstanding ergonomics are essential. Nonetheless, a brand's refinement and competence are vital for long-term success and should be in the forefront of product presentation.

Is this what your company focuses on?

**FH:** Yes. We don't just deal with product design. A considerable part of our aim is the product's ergonomics, practicality and structure – that is, how a product should be structured for ease of use and practicality for the user. We also develop a uniform brand design.

A few years ago we looked at research into the psychology of perception and recognition, which was used to develop handbooks for the design of products and product programmes based on their features. From this, we developed a method.

For example, most companies tend to manufacture their entire range of products in one colour, usually placing the logo at the top left corner. This works – if at all – only with small product ranges. However, if you are looking at 20 products or more – for example, we have worked with

Olympus Winter & Ibe for years, and this firm markets over 600 instruments – you must come up with more ideas to achieve a unified look. You need many different characteristics, so that each product – independent of its functionality – has at least a few. In this way, an individual brand's value is perceived and confirmed with each individual product – this is especially important when a product is regarded as particularly innovative and/or of very high quality. Look at Mercedes, Coca-Cola, Gucci, Nivea and so on – to be readily recognisable these brands maintain permanent features.

These rules also apply to medical equipment. In packaging design for consumer goods – an area in which I worked after my degree – brands have been developed in this way since the 1930s. I was surprised to find this was not the case for technical products. We apply



this method to a different range of products. The essential point is: 'Product recognition confirms brand quality'. So, apart from quality, the customer also buys the prestige and status of a brand. This also makes it easy to use a complex product range – by recognisable handling, compatible functionality and, of course, homogenous aesthetics.

Product components such as keyboards, logos, typography, connections, colouring, surfaces, materials, building groups etc. are described and separately defined by appearance. The defined features must represent the company and brand's objectives – in visual, haptic and acoustic terms. With medical equipment it is always beneficial for as many features as possible to be linked to functions and to integrate fully into the product's appearance – buttons or switches, for example, can be a distinctive colour, contrasting from the main body of the product.

How long does it take to brand and launch a new instrument?

**FH:** You are not dealing with one single issue, but with a manufacturer's entire product range. The development of characteristics is usually completed in a few months. Because medical technology products are usually replaced in long cycles covering over five years, putting ideas into practice with all the products in a brand takes a corresponding period of time.

This is a long period. Is it really worth the investment of so much time and money for branding?

**FH:** All companies whose corporate product design we have undertaken so far are doing either well or very well! The real 'art' is to develop the unique features and put them into reality, as well as maintain those features after five years. Quite often, after such a period, companies have the urge to try something new – but that can be the point in time where consumers are learning to recognise the brand's products. And that recognition period is only the first step towards developing a true brand image.

Held & Team, Hamburg

Few tasks are as demanding as creating a sense of well-being and a feeling of contentedness...



...especially when designing clinics, hospitals, health- and care-centres. We aim at increasing the patient's feeling of well-being, whilst fulfilling the necessary organisational and technical requirements at the same time. Without light, medical efforts can fail – without good lighting, the optimum conditions for rapid healing and recovery do not exist. Challenge us today!

ZUMTOBEL STAFF

Zumtobel Staff Deutschland  
Vertreter - GmbH  
Geyersmarschstr. 74-78  
D - 32857 Lemgo  
www.zumtobelstaff.com/ukproduct

## The child's eye view

The Bristol Hospital for Sick Children – a flagship for young patient care



Out-patients waiting area – a circus acrobat theme



In the ground floor entrance area, birds suspended from the ceiling are reflected in the floor finish

When parents stand with their children and first see the Bristol Children's Hospital they will immediately recognise that everything has been done to ensure that a child's first impression is not only of a non-intimidating place, but one that is extending a positive welcome. Observed from street level, what children see are planes of colour projecting from the face of the building, and a large and colourful random sculpture that looks like fun. The sun breakers needed on southerly elevations have undersides coloured in intense hues, which give a tremendous vibrancy, contrasting with the yellow brick, the architects point out: '... and this also has solid panes of colour, which are broken with bands of green glazed brick and courses of red brick lower down the building.' In the main reception of this 168-bed hospital, the children see a flock of swallows swooping from the ceiling – the same birds that also form a pattern in the floor finishes below the young patients' feet. Artist Ray Smith, who designed these birds, also created an eye-catching trapeze artist, who swings under the central roof light above the outpatients' reception.

Inside this exceptional hospital, children do not face long, intimidating corridors, and the intense colours of the sun breakers are happily echoed in the interior design. Each level has its own colour identity, intense at lift cores and ward entrances but graduating to less intense hues throughout the floor. These colours also have an art theme by Ray Smith, working with interior designer Lee Cheong, of

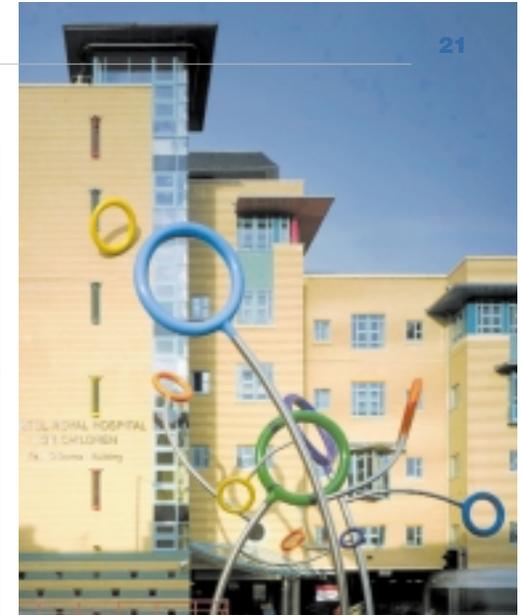
Whicheloe Macfarlane MDP – now the Building Design Partnership (BDP) – the architectural firm responsible for the entire concept. The host of interior design and art themes they created are picked up in floor finishes and colour themes and progress even to crash rails, skirting boards and fabrics. Even the doors on each floor are themed both for colour and features, e.g. flowers, the sea, planets, and the same colours and themes are reflected in the floors, which feature stepping stones in a fish pond, starfish and ivy leaves – not only used for visual appeal but also to help children to find their way easily. And, along their travels, no one could fail to be fascinated by the fantastic kinetic clock created by the world-renowned artist Kit Williams, for the timepiece includes dolphins and waves and has, at its heart, a hornpipe-playing monkey, who blows bubbles on the hour.

Ray Smith also worked on the nurses' stations to ensure they present a sense of fun and appeal to all ages, from toddlers to adults. For the stations not only offer staff ample storage, work surfaces and high and low level sections for children and adults, but they are embellished with designs representing a train, boat, buildings, and so on.

Once in their ward, furnished with cheerful chairs and sofas, young children need not fear the departure of parents, because all beds (apart from PICU) have a parent's bed alongside, and half the



Giraffe nurse base



Main entrance and sculpture – 'Lollipop Behop'

hospital's accommodation is in single rooms, with fold-down parent beds and cubicle curtain track, plus clothes and suitcase storage. There are also en suite bathrooms on the corridor side of these rooms, for screening and privacy. Doors do, however, have large vision panels, for nurses to have clear observation. 'At the end of the day, these are hospital rooms, the architects pointed out. 'The bed, bed head trunking, wide doors, etc all had to be accommodated.'

A mock-up of a single room was made and this proved invaluable in working out small details, say the architects. Now, in four-bed and six-bed wards, parents are also provided with their own beds. Another important part of the architect's brief was that children should be able to play anywhere, '...and that was not only to apply to the young patients but their numerous brothers and sisters, cousins and second cousins!' the architects stress. Thus the centres of the wards have artwork and the fun nurse stations have plenty of room around them for children to play. The rooms also have plenty of space and there is a play department and outside play area. 'In fact,' the architects add, 'the play department is one of the hidden secrets of the new hospital. When we first looked at the site we discovered a little oasis of green in the middle of what was a very harsh urban area. This we used, and it also had the advantage of being above road level, due to the slope of the site.'

Spiritual needs were also carefully considered. The non-denominational prayer room has a stained glass window designed by Katerin Jones, who was responsible for its interior design, assisted by Lee Cheong.

Additionally, for the Hydrotherapy Pool artist Roger Michell, illustrated delightful tales of 'dering-do' and added funny poems to the tiles, to distract the children.

Many other artists were commissioned to create artworks for this ground-breaking hospital. Nothing artistically possible was missed...

In physical terms, low windowsills offer views across the city, and there are a number of areas for quiet conversation. Children's heights have also been considered, so light switches are not too high, and doors with glass-panelled doors with handles as well as lifts with controls are also reachable by small patients. All staff bases and reception desks are also child height. Additionally, at the bottom of the main staircase are windows punctured in the wall at odd levels, to create a fun play area under the staircase.

The staff was trained to ensure that working practices do not detrimentally affect these art features – for instance, they are expected to open doors rather than push them open with trolley edges.

### How did this grand design arrive?

The Bristol Hospital for Sick Children had been 'bursting at the seams with no room on its site for rebuilding without impossibly disruptive phasing', said the architects. As one of the leading paediatric hospitals in Great Britain, specialising in bone marrow transplant, childhood oncology and leukaemia, paediatric cardiac surgery and general surgery and other medical specialities, there was obviously a need for an entirely new hospital to be built, adjacent to the Bristol Royal Infirmary, but only a quarter of a mile from the existing site.

Architect David Radford spent a long time in the hospital talking to staff and observing their work in order to sketch potential design solutions. His firm was appointed as architects and interior designers in November 1995.

Graham R Nix, deputy chief executive and project director, United Bristol Healthcare NHS Trust, who commissioned the new hospital, said: 'The earliest reference we can find as to the need for a replacement regional children's hospital is in the minutes of the hospital medical committee in 1938. The hospital is over 100 years old and



Intensive therapy unit

was built when ill children were dropped off at the doors and picked up when they were better. Today it is recognised that the whole family needs to be considered, children need their family to be fully involved and this enhances the speed of recovery. Our aim was to provide this hospital (a regional specialist centre for the South-west of England, which receives national and international referrals) with the most up to date facilities possible, yet preserve the special atmosphere that is such a vital part of the old hospital. To ensure that we meet the future needs of children, parents and staff, we involved representatives of all those groups in the process of designing the new hospital.'

The Trust's vision for the future was based on three important things, he added:

- The child's eye view of both the physical surroundings and how the place feels.
- The need for a relaxed, interesting and secure environment to reduce fear and tension for the child and for the family as a whole.
- Recognising the vital role that the family plays in the treatment and recovery of their child, and so aiming to meet the needs of the whole family.

The project team researched hospital facilities in America and Europe, involved the architects and design team in the research and consulted with many staff, parents and children. In all the architects dealt with about 45 user groups, including staff, patients and families, in the design phase and spent many hours on day and night shifts to fully understand the needs of a children's hospital in both aesthetic and practical terms.

There was fantastic enthusiasm from staff, parents and children. It was also apparent that the continual presence of parents and carers with children is vitally important to assist in their speedy recovery. Thus, along with a visual impact geared to the young (patients aged from one to 16 years), one of the key elements of the

architectural brief was to provide sleeping accommodation for parents alongside their children's beds.

After working with the user groups David Radford said that, despite their sometimes conflicting requirements, they tried wherever possible to introduce '...those idiosyncrasies which departments required and which would give their accommodation their own identity'.

'One of the most enjoyable of these was the parents group,' he added. 'The message was that when a child is initially admitted the parents were in a blur and were only interested in letting the staff get on with their jobs. However, as weeks progressed, the discomfort suffered from sleeping in a chair and never having any privacy, became overpowering.' Even parents of children who died were eager to make the new design work. The result is the considerable consideration of parents needs that now exists.

There were many hurdles during the course of the design, in terms of the difficult site geology, as well as when intensive care beds were increased from 12 to 18, day surgery changed to a short stay ward, medical staff offices were omitted in favour of a renal unit, the baby unit was omitted in favour of cardiac care unit, and the size of the ITU increased, which needed a substantial extension of the building. ('To our eternal shame, this involved demolishing an adjoining pub (public house),' the architect recollects humorously).

Finally, from 2001, the £20.4 million hospital (floor area: 14,500 sq.m) filled with medical teams, parents, and the many children who benefit from a very special experience that helps to distract, entertain and generally ease their fears at a very traumatic time in their young lives.

\* NB: Following their merger, the architect and interior design practice *Whicheloe Macfarlane MDP* is now the *Building Design Partnership (BDP)*, of Manchester, Great Britain. Website: <http://www.bdp.co.uk>

# The art of combining function and aesthetics

1. User friendliness is displayed in a clear design with only few switches for intuitive operation
2. With its wood panelling, the Magnetom Symphony MR-system is a good example for visual enhancement
3. The SOMATOM Smile has been rewarded with renowned national and international design awards



Producing innovative, state-of-the-art technology that is also user-friendly and aesthetic, is: '... integral to our philosophy at Med', says the Siemens Group. 'From the time a product is conceived, engineers work closely with designers to develop an aesthetic that inspires confidence in Med systems,' the company continues. Wood panelling on an MR system or the playful paintings on X-ray systems for paediatric clinics, are good examples of visual enhancement – and Siemens points out that its CT Somatom Smile has received much national and international acclaim.

Good design also supports workflow by harmonising processes and ensuring smooth transitions, the firm adds. To this end, and to tailor their systems to customers' needs, physicians

and users, e.g. technologists and nurses, participate closely in the product engineering process. 'Because minutes and seconds often make the difference between life and death, each and every handle has to be in proper position at all times throughout a medical treatment,' Siemens points out.

The firm meets those necessities in various ways. For example '...only those buttons and switches absolutely necessary for operation are found on imaging devices like CT, MR or PET/CT (e.g. Table up, Down, Right and Left). This also applies to the operating console in the control room. The system design enables direct access to the correct button and saves valuable time'. Keeping a uniform layout for the operating software (syngo) through a universal screen interface, identical icons, and uniform work steps, also helps users. The edict is: 'Learn one – know all.'

'Syngo has no rival in the medical world, and we have sold more than 15,000 licenses around the world,' Dr Manfred Wangler, President of the syngo SW engineering group at Med, points out.

With the help of its innovative modalities and workflow solutions, '...particularly the new hospital management software Soarian,' the firm says it is confident that its portfolio of products is '...based on aesthetics, functionality and efficiency'.



environments in colour

# Rooms, spaces and colours



By Susanne Wied, Care Lecturer and Organisation Consultant at the Institute for Care and Communication, Berlin

## The norm

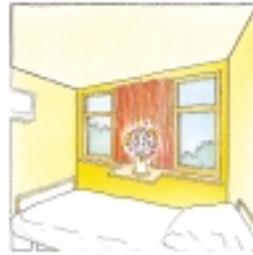
When we think about designing hospital rooms we have to take various aspects into consideration such as functional requirements regulated by hospital building regulations. The minimum room size and bed space for a single room is 10m<sup>2</sup>, the minimum space per bed and patient in a shared room is 8m<sup>2</sup>, and the minimum ceiling height is 2.7m and 3m respectively. So certain norms for room design are already in place, and traditionally the shape of the rooms is meant to be rectangular. Only hospitals that follow the anthroposophic way of thinking purposely deviate from this norm. In other hospitals, the architect may be daring enough to design more rounded spaces in the reception area, but for wards, building regulations prevent him from doing the same to patients' rooms.

## The shape

This is largely based on the development of our ideas about the classic geometry of length, width and height. A construction of building blocks in a rectangular design can easily be built – and torn down. The finished room itself does not have right angles, it is the human perception, the need for orientation (to avoid bumping into things, or to see the end of a hallway, or find the X-ray department, for example) that makes it so. However, shape is only one aspect for orientation, the others are colour and movement of objects. So there is no need to do away with right angles, but we need to account for certain laws of human perception to promote the health of patients and staff.

## Ambience determines health

Colours and the way they are used in design to create harmony largely determine the ambience of a room. And it is this ambience which contributes significantly to a patient's recovery, as well as the

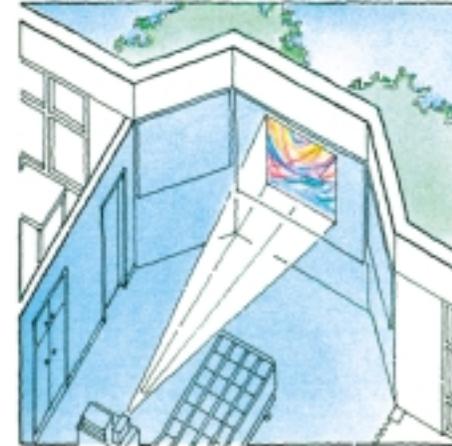


A visual anchor for the bed-ridden patient is easily created

well-being of staff. Some may say that patients are only in hospital rooms for a short period, and the staff is in the hospital to work rather than feel good. However, experiences gained in the Thyssen factory designed by Ernst-Friedrich von Garnier show that the sickness level amongst staff decreased by 50%. This means that colour is a very important design factor, even achieving reductions in cost in the long run. The industry is well aware of this. However, many hospitals use colours and design that are actually counter-productive for patients' health, particularly buildings painted mostly in white and grey, including modern constructions made from glass and steel. Research has shown that eyes quickly tire when there is too little contrast. Cold light on a white background produces glare and increases this effect. Grey is exhausting and depressing. At the other end of the spectrum, the use of too many colours becomes boring and the brain starts to select to avoid overtaxing.

## Colours

Classic colour theory helps room design only to a certain extent, as it is often quite inflexible and static (even the more esoteric theories on colour) regarding the meaning and symbolism of a colour. Often this symbolism is chosen according to personal preference, or even subconsciously by those making final design decisions. However, if we think about contradictions – for example, the colour green has in a clinical context (indoor plants are green but so is puss!) – we cannot be sure which association is caused by a colour shade in those who look at it. Additionally, almost 10% of men cannot differentiate or only differentiate with difficulty between red and green. This must be considered in any visual scheme and when choosing the colours for clothing to be worn in operating theatres. Another important factor that influences the effects of wall and furniture colour pigments is light, be it natural or artificial. The



Cool blue creates depth

quality of colours perceived changes according to the lighting. This is why it makes sense to discuss colour schemes with architects and qualified colour advisors. Architects are predominantly trained in spatial design and much less in colour design. Before choosing an architect it is therefore prudent to look at their experience with colours, if a colour consultant will not be involved in the design.

## Care

Clinics are not newly designed regularly; generally 'users' must live with what is there. However, a lot can be achieved at no great expense. When the objective is to create orientation and to give the patients a sense of security, we must examine how important ceiling design is for severely bedridden patients (illustration 1). There are now some very good solutions available from artists such as Renate Reifert, who attaches ceiling objects to an existing ceiling – a pragmatic solution to the problem of not being able to install pretty stucco ceilings in hospital rooms. Notice boards, plants, flowers, curtains and colourful bed linen are not unnecessary accessories. To the contrary, they contribute to the cosy atmosphere of a ward. The rooms themselves need not be



A simple coloured line divides the ceiling into several sections

furnished to the tastes of consultants or ward sisters – patients should have their own pictures, or those borrowed from a patients' library, to put up on the walls. However, subtlety is necessary. Builders do not usually furnish their homes with Ligne Roset, and wealthy private patients do not automatically have great taste. Individual well-being must be the main objective. However, there still needs to be a clear scheme for a ward's overall design. With tight budgets this does not always mean expensive furnishings and equipment, but it should be clearly visible that efforts have been made to make the design more patient-friendly. Seeing severely ill patients sitting in corridors (next to lavatories) to talk privately with their relatives – because there is no place in their six-bed ward for this – is sadly not something of the past – it's still an every-day occurrence in the neuro-surgery department of a large teaching hospital, for example. Look at your hospital and consider the above. Good colours and design contribute to good care.

\* Further reading: Wied, Susanne: Farben – Räume – Vom klinischen Weiss zu pflegenden Farben (From Clinical White to Caring Colours) – 1st edition, Hans Huber, Bern, Göttingen, Toronto, Seattle 2001



## Excerpt from 'Rooms – Spaces – Colours'

*'Particularly when life gets tough, art can show its power, rising above its commonly perceived status of having mere decorative purposes.'*

Renate Reifert – painter

Using the spectrum of visible light creates the impression of space even in a confined environment

Based on the fact that colours possess energies that affect the human psyche, I have specialised in painting and transforming rooms filled with fear – those in hospitals. There, patients experience considerable uncertainty, when facing surgery, awaiting an X-ray examination or in the nuclear medicine department. Using this colour theory, I create counter-balance to necessary, but often scary,

hightech equipment, by appealing to people's mental and spiritual sides. My abstract compositions, applied directly to walls – or ceilings, if I work in rooms where people are mostly bedridden – very much depend on the 'how' to achieve the maximum positive effects of colours. Walls and ceilings lose their fixedness, narrow spaces can appear wider. I put colours in their spectral context and use them in a way

that makes the onlooker perceive not only the sensory impression of the colour but also the underlying spiritual effects and powers – if they are prepared to feel these. We could compare this type of perception with listening to fairy tales, which always have other hidden, necessary messages.

Contact: Renate.reifert@gmx.de or www.renate-reifert.de

# lighting



Reception and waiting areas: good working light is needed, but harsh illumination should be avoided because, for many people, these are starting points of a traumatic journey

The mixture of lighting (main picture) where daylight has been utilised and enhanced, open corridors are softly lit, and pillars at ground level offer illumination, all remove any sense of claustrophobia, despite this hall's upper narrowness

# prize draw

**1st**

An Alessi espresso coffee machine



**2nd**

Two Mono espresso coffee cups

**3rd**

A Pott spaghetti tester

**Dear Reader,**

Your opinion is important, so would you share your thoughts with us by using the quick-and-easy tick-boxes below? (As a token of our thanks, your name will automatically be entered in our raffle\* – see box)

Please select relevant options to express your views:

- Design in **EUROPEAN HOSPITAL (DIEH)** is excellent. Please send me future issues.
- DIEH** is quite interesting – send me more. However, I'd like to see following topics in your next issue. Topics: \_\_\_\_\_

For me, **DIEH** is almost as superfluous as a spaghetti tester. However, I would like to receive future issues of **EUROPEAN HOSPITAL**.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name (printed): \_\_\_\_\_ Job title: \_\_\_\_\_

Hospital/company: \_\_\_\_\_

Address: \_\_\_\_\_

(Please print your details in capital letters to ensure they are legible. Many thanks)

To enter this raffle either simply fill in this form and fax it back to +49-211-7357 530 or enter your details on the internet at [www.european-hospital.com](http://www.european-hospital.com)

Normal competition rules apply. Names/addresses will be drawn from the EH 'hat' on 29/11/03. The prizes will be sent directly to the winners soon after that date. No further correspondence on this draw can be undertaken. The judges' decision is final. Data protection: If you do not wish to receive any future promotional material, other than future issues requested in this entry, please tick the box



Quality leader\* in industrial design for medical equipment since 1999!



Industrial design specialising in medical equipment

www.HeldundTeam.de  
e-mail: info@HeldundTeam.de  
Rehmstr. 3a D-22259 Hamburg  
Tel: ++49(0)40-460 7075  
Fax: ++49(0)40-460 7076

\*Source:  
Ranking: Design 2002/ 2003  
Ranking: Design 2001/ 2002  
(2002/2001 not published)  
Ranking: Design 1999/ 2000

# Healing light

Poor illumination can ruin a beautiful interior design – as well as upset patients and even hamper examinations

Fear, insecurity, helplessness and the threat of isolation from one's family are among many sensations experienced when visiting a doctor or clinic. At such times, thoughtfully designed healthcare environments can help patients, because a sympathetic, interesting and comfortable environment can induce relaxation and even increase confidence. Welcoming waiting and consulting rooms also reflect the ethos of those who run a practice or hospital – and can thus influence the successful acquisition and long-term loyalty of patients – all contributing to a medical facility's economic success.

To ensure good and practical design architects/interior designers must exchange their individual expertise with that of physicians or others who work directly with patients. During this planning, one of the key considerations must include lighting and its effects on patients and staff, because, if well chosen and arranged, the right kind of light can be therapeutic for all those involved in healthcare delivery.

Orientation and appraisal of an unfamiliar place are guided by light, which allows spaces to emit a range of effects by enhancing colours in the interior design as well as through its own chromatic qualities. Thus light activates emotions and influences our state of mind and moods.

Newly-developed lighting products now enable us to emulate changes in natural light – the fresh blue sky of morning through to sunset's warm orange. Such pleasant and discrete effects, if well used, breathe life into an indoor environment. Therefore, an interior designer must carefully consider not just space, colour and materials, but also lighting – and the way it can be controlled.

*Recommended: The Deutsches Büro für Innenarchitektur GbR (Interior Architecture Bureau) recommends healthcare designers to read the book Praxis und Klinik – Gestaltung, Funktion, Ökonomie. (ISBN 3-00-010573). Further details: webmaster@praxisundklinik.de*

# MEDICAL TECHNOLOGY



## ES 500- wall-mounted luminaires – Design and function

A successful interaction between technology and aesthetics enforces the striking features of the new wall-mounted luminaires ES 500-. The systems are designed for use in care areas and offer a wide planning scope with different equipment combinations for general illumination and specific reading lighting. Exchangeable clip-on profile caps enable additional design perspectives.

TRILUX LIGHTING LIMITED  
Medical Technology  
SAXON HOUSE, Swallowdale Lane  
Hemel Hempstead  
Herts HP2 7EA  
Tel. 0 1442 21 4063  
Fax 0 1442 266077  
[www.trilux.co.uk](http://www.trilux.co.uk)

TRILUX

