

عنوان البحث

استخدام خامسة الاكريليك وتأثيرها على التصميم الداخلي لليخوت
"دراسة تطبيقية في يخت نيلي"

**Utilizing Acrylic Material and Its Impact
on the Interior Design of the Yacht**
"Applied Study in Yacht Design in the Nile River"

المؤتمر الدولي الرابع لكلية الفنون التطبيقية جامعة حلوان
الفنون التطبيقية ابداع .. تصميم .. انتاج .. تنافسية
٢٠١٦ / ٢ / ٢٩ - ٢٨

المحور الثاني التصميم بين المفهوم و التطبيق
" التصميم بين المنتج و الخدمة "

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المخلص :

تعتبر الخامات من العوامل المؤثرة في تصميم المنتج واستمراريته وتبلور اهميتها في كفاءتها ومثابنتها وكيفية
توظيفها للغرض التصميمي كما ان طريقة التركيب ايضاً عامل هام يعكس بدوره علي المخرج النهائي للعمل
سواء في التصميم الداخلي او الاثاث وكل تلك الامور لها دور مؤثر علي التحديات التنافسية للمنتج المصمم و
هي القيمة التي تؤدي لجودة التصميم وهي من الصعاب التي تواجهها مصر بصفة عامة
وسوف يتناول البحث دراسة تطبيقية لتوظيف خامات حديثة بطرق مختلفة في تصميم احد اليخوت ومراحل البناء
والتنفيذ حتي التسليم النهائي لليخت

Abstract

modern materials is the one of the factors affecting the product and continuity of design and its importance in efficiency, durability and how to use them for the purpose of design as the installation method is also an important factor in turn reflect on the final output to work both in interior design or furniture and all those things have an influential role on the competitive challenges of the product designer and is the value that lead to quality of design, one of the difficulties faced by Egypt in general

And the research will address a practical study for the one of the yachts and the stages of construction and implementation until the final delivery of the yacht

TITLE: Utilizing Acrylic material and Its Impact on the Interior Design of the Yacht

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Introduction:

In the recent years, there is a huge industry for modern material and we use it in a new way in interior design like using outdoor material in cladding walls or partition indoor so we can say that the modern material is the main factor affect on product and the continuity of the designs and its importance in efficiency, durability and how we use them for the purpose of design as the installation method is also an important factor in turn reflect on the final output to work both in interior design or furniture and all those things have an influential role on the competitive challenges of the designer and is the value that lead to quality of design all affect on the quality and durability of the design and its effects on development as a condition for the improvement of living standards¹, it is one of the difficulties faced manufacturing in Egypt and this major revolution in the manufacturing and production of raw materials have had the greatest impact on interior design These huge potential allows us to move forward in a prominent trend at the international level, especially in recent times and is thought of sustainable development using modern materials to achieve the three elements of the economy society and the environment through good design and proper management and control and environmental protection and the preservation of a private in the field of sustainable eco-tourism, which is one of the most developed and widespread concepts of sustainable development in the world they rely on nature in the first place picturesque scenery of natural resources² so we can access competitive, which means the progress of the economic because the tourism industry has a dual relationship with the environment in the extent of efficiency in the use of resources and the resulting effects on the environment³ and what we are looking to in our trips can be described as comfort with thrills and enjoying the atmosphere of sailing boat but with luxury and full control the feeling will be amazing as the boat cut through the waves at high speed with perfect stability⁴

The research will address a practical study for the one of the yachts and the stages of construction and implementation until the final delivery of the yacht

¹-Professor Klaus Schwab, The Global Competitiveness Report , World Economic Forum Editor 2013–2014 , p 53

http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

²- د. أحمد حسنين رضوان - د. أحمد يحيى اسماعيل ، السياحة البيئية المستدامة في مصر المفاهيم- الفرص – الامكانات ومقترحات الاستغلال ، ص ١٢، ١٥-٥

³-SB05TOKYO Student Session building a sustainable future ·SUSTAINABLE BUILDING DESIGN BOOK The 2005 World Sustainable Building Conference in Tokyo, Student Session, , 2005, Tokyo, Japan , P 66

⁴ - Sports and fitness magazine ,inside the ultimate advertising guide to the best boats ,June /July 2015, volume 22 number 2, p 50

Research Problem:

- It lies in how to employ the acrylic as a modern application in the interior design items, especially on designing for the yachts' reception area and welcoming entrances because First impressions are an important part of human interaction .so the reception can be an important element of the yachts which give visitors positive feelings and impressions as they enter for the first time.
- The shortage of knowledge about the requirements for the process of finishing yachts with these application and methods of formulation the contents are the two main problems.

Objectives:

The research aims to clarify and explain the relation between user and service with consideration of the different environments and cultures

Also to clarify the basic features to the acrylic a modern application for the interior design construct

Research importance:

Crystallize the importance of research to highlight and clarify the use of the acrylic as a modern material in the interior design with the analysis and clarification of the most important aspects influencing in the acrylic interior design and features that define the public area requirement.

The basic hypothesis of the research:

The possibility of using material in new application in interior design

Research Methodology:

The study uses the **analytical** descriptive and **experiential methodology** and has concentrated on the interior design made with acrylic as a modern application for the interior design construct

The Research Limitations:

Spatial boundaries: a study in the Yacht Rivers in Cairo

Border objective:

- research will focus on a floor designed by using the modern material acrylic
- yacht's interior design study in the reception area of the yacht public outing

Time limits: the implementation of the Furniture pieces 2013

Research themes:

1. Analytical study for acrylic as a modern material which is used in cladding interior design

2. Empirical Study of reception area interior design and implementation process at YACHT CUPID

Keywords:

Modern material - interior design – yacht

1 Analytical study of modern materials as Acrylic Sheets and their relation to interior design

Must be based the design on the basis of the criteria and methodology help solve problems and create something new or convert at least cases the desire for a better state¹ by solving problems beginning of the configuration phase and innovation by bringing together elements of the environment and put them in a certain formation to give something to him the meaning² and takes into account the distribution of values functional core of freedom of movement and color balance, and distribution be consistent and coherent³ ... etc.

And affect sense of comfort inside the place on the state of the individual and the degree of preference increasing with the increase in the rate of achieving the requirements and vice versa it is a positive relationship in spite of the diversity of the concept of quality of life and it differs depending on the time and place data⁴

1-1 the relationship between modern materials, design and sustainability

1-1-1-Describe Acrylic Sheets

Acrylic is chemical compounds that contain the acryloyl group derived from acrylic acid and it is one of the modern materials that have been employed in the interior design

The production of acrylic panels casting different sizes and thickness⁵ starting from 1 mm to 30 mm and sizes multiple of more than 15 different sizes in order to meet market needs and satisfy all the customers in terms of thicknesses and sizes available It is producing in panels in multi colors by more than 100 different colors

(Transparent - and half transparent - and impervious to light colors and solid colors)

Unlike the production of phosphoric distinctive colors and Aluminates and all the marble and frosted

Acrylic Sheet is optically transparent, unaffected by moisture, and offers a high strength-to-weight ratio, and high light transmittance also sheets can be easily heat-formed without loss of optical clarity Prolonged exposure to moisture, or even total immersion in water, does not significantly affect the mechanical or optical properties of this outstanding material but process technique is the more important factor⁶

Also it characterized by light weight multi colors with the possibility of changing in its surface by using any design also it can be painted and the possibility of bending and it is easy when chipping both in curved lines or broken⁷

¹Ken Friedman and others, Theory construction in design Research: criteria: approaches, and Methods, Design Studies Vol 24 No. 6 November 2003, P519 <http://design.osu.edu/carlson/id785/friedman.pdf>

² نمير قاسم خلف البياتي , الف باء التصميم الداخلي , جامعة ديالى دار الكتب والوثائق ببغداد، ٢٠٠٥ م ص ١٥ ، ٢٠٢٠
³ رجعت ، تاريخا لاثنا عشر العصور ، الهيئة المصرية العامة للكتاب ، ١٩٧٨ ، ص ٣٧٦

⁴UNICRI , NEW ENERGY FOR URBAN SECURITY , IMPROVING URBAN SECURITY THROUGH GREEN ENVIRONMENTAL DESIGN NEW ENERGY FOR URBAN SECURITY , MIT Massachusetts Institute of Technology , P10

⁵sendapmma.en.alibaba.com

⁶<http://www.professionalplastics.com/PLEXIGLASS-ACRYLIC-SHEET-CAST>

⁷<http://www.comoplast.com/Arabic/Mksatalw7.html>



Picture (1) Acrylic Sheet thickness and color¹

رقم المنتج	اللون	السمك (mm)	العرض (mm)	الطول (mm)	الوزن (kg)	الملاحظات
1	أبيض	3	1000	2000	0.6	
2	أبيض	5	1000	2000	1.0	
3	أبيض	10	1000	2000	2.0	
4	أبيض	15	1000	2000	3.0	
5	أبيض	20	1000	2000	4.0	
6	أبيض	25	1000	2000	5.0	
7	أبيض	30	1000	2000	6.0	
8	أبيض	35	1000	2000	6.75	
9	أبيض	40	1000	2000	7.5	
10	أبيض	45	1000	2000	8.25	
11	أبيض	50	1000	2000	9.0	
12	أبيض	55	1000	2000	9.75	
13	أبيض	60	1000	2000	10.5	
14	أبيض	65	1000	2000	11.25	
15	أبيض	70	1000	2000	12.0	
16	أبيض	75	1000	2000	12.75	
17	أبيض	80	1000	2000	13.5	
18	أبيض	85	1000	2000	14.25	
19	أبيض	90	1000	2000	15.0	
20	أبيض	95	1000	2000	15.75	
21	أبيض	100	1000	2000	16.5	
22	أبيض	105	1000	2000	17.25	
23	أبيض	110	1000	2000	18.0	
24	أبيض	115	1000	2000	18.75	
25	أبيض	120	1000	2000	19.5	
26	أبيض	125	1000	2000	20.25	
27	أبيض	130	1000	2000	21.0	
28	أبيض	135	1000	2000	21.75	
29	أبيض	140	1000	2000	22.5	
30	أبيض	145	1000	2000	23.25	
31	أبيض	150	1000	2000	24.0	
32	أبيض	155	1000	2000	24.75	
33	أبيض	160	1000	2000	25.5	
34	أبيض	165	1000	2000	26.25	
35	أبيض	170	1000	2000	27.0	
36	أبيض	175	1000	2000	27.75	
37	أبيض	180	1000	2000	28.5	
38	أبيض	185	1000	2000	29.25	
39	أبيض	190	1000	2000	30.0	
40	أبيض	195	1000	2000	30.75	
41	أبيض	200	1000	2000	31.5	
42	أبيض	205	1000	2000	32.25	
43	أبيض	210	1000	2000	33.0	
44	أبيض	215	1000	2000	33.75	
45	أبيض	220	1000	2000	34.5	
46	أبيض	225	1000	2000	35.25	
47	أبيض	230	1000	2000	36.0	
48	أبيض	235	1000	2000	36.75	
49	أبيض	240	1000	2000	37.5	
50	أبيض	245	1000	2000	38.25	
51	أبيض	250	1000	2000	39.0	
52	أبيض	255	1000	2000	39.75	
53	أبيض	260	1000	2000	40.5	
54	أبيض	265	1000	2000	41.25	
55	أبيض	270	1000	2000	42.0	
56	أبيض	275	1000	2000	42.75	
57	أبيض	280	1000	2000	43.5	
58	أبيض	285	1000	2000	44.25	
59	أبيض	290	1000	2000	45.0	
60	أبيض	295	1000	2000	45.75	
61	أبيض	300	1000	2000	46.5	
62	أبيض	305	1000	2000	47.25	
63	أبيض	310	1000	2000	48.0	
64	أبيض	315	1000	2000	48.75	
65	أبيض	320	1000	2000	49.5	
66	أبيض	325	1000	2000	50.25	
67	أبيض	330	1000	2000	51.0	
68	أبيض	335	1000	2000	51.75	
69	أبيض	340	1000	2000	52.5	
70	أبيض	345	1000	2000	53.25	
71	أبيض	350	1000	2000	54.0	
72	أبيض	355	1000	2000	54.75	
73	أبيض	360	1000	2000	55.5	
74	أبيض	365	1000	2000	56.25	
75	أبيض	370	1000	2000	57.0	
76	أبيض	375	1000	2000	57.75	
77	أبيض	380	1000	2000	58.5	
78	أبيض	385	1000	2000	59.25	
79	أبيض	390	1000	2000	60.0	
80	أبيض	395	1000	2000	60.75	
81	أبيض	400	1000	2000	61.5	
82	أبيض	405	1000	2000	62.25	
83	أبيض	410	1000	2000	63.0	
84	أبيض	415	1000	2000	63.75	
85	أبيض	420	1000	2000	64.5	
86	أبيض	425	1000	2000	65.25	
87	أبيض	430	1000	2000	66.0	
88	أبيض	435	1000	2000	66.75	
89	أبيض	440	1000	2000	67.5	
90	أبيض	445	1000	2000	68.25	
91	أبيض	450	1000	2000	69.0	
92	أبيض	455	1000	2000	69.75	
93	أبيض	460	1000	2000	70.5	
94	أبيض	465	1000	2000	71.25	
95	أبيض	470	1000	2000	72.0	
96	أبيض	475	1000	2000	72.75	
97	أبيض	480	1000	2000	73.5	
98	أبيض	485	1000	2000	74.25	
99	أبيض	490	1000	2000	75.0	
100	أبيض	495	1000	2000	75.75	

Table (1) Sizes table are available in the market²

¹sendapmma.en.alibaba.com

²<http://www.comoplast.com/Arabic/Mksatgad.html>

1-1-2-Environmental considerations between modern materials and design

Design has to be that stems from the environment ¹so that it can be accessed and understood and used to the maximum extent possible by all people by looking at the diverse needs and capacities at all stages of the design process

1-1-3-The relationship between modern materials and sustainable design

Must work modern materials to achieve a dynamic balance between the economy and society ²to generate long-term relationships between the user and the service and taken into account environmental and social differences to achieve sustainability ³of the design, provided that the availability of a safe and healthy promote environmental stewardship and sustainable conservation of natural and environmental conditions and urban environments⁴

1-1-4-Executive formula for sustainability between raw materials and design

1-1-4-1-Achieves sustainability in the design:

To accept the place amendments and extensions in the future to achieve maximum investment of energy and materials rates on the one hand reduce the cost of establishing the place and prepared

Take into account the factors and requirements for safety against fire and resistant to natural disasters by processing raw materials and style of execution

Must take into account the aspects of safety and security, privacy and personal space for the pioneers of the place⁵

1-1-4-2- optimum use of raw materials for sustainability

Raw materials that are energy-efficient and recyclable and do not cause any health damage

To design a good place ores lasts for long periods without the need for frequent ship maintenance work for as long as possible

Use of sustainable construction materials and rely on pre-fabricated for maximum possible

1-1-4-3- Nature authentication and celebrate rather than confront Celebrating Nature

Nature has to be authenticated and celebrate rather than meet them to work on the sustainability of the environment surrounding the design

¹Government of Ireland, Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) Planning Guidelines , May 2009 , P 5-6

²http://en.wikipedia.org/wiki/Sustainable_design

³<http://www.thegbi.org/guiding-principles-compliance/>

⁴Jong-Jin Kim, Assistant Professor of Architecture and Brenda Rigdon, Project Intern , Sustainable Architecture Module Introduction to Sustainable Design Humane Design , National Pollution Prevention Center for Higher Education ,Dec. 1998 , P27

⁵-Pacific Lutheran University Interior Design Guidelines,December 10th, 2004 , p 30

Be the formulation of design can deal with any human being; regardless of age, size and diverse needs and taking into account the economic aspects¹

Must take advantage of the nature of the environment and use whatever fits with the guidance of ores and design a way that minimizes the impact of environmental conditions it

Conduct restoration of the existing buildings demolished and better than the other set up to reduce the economic and environmental cost of raw materials

1-2 Designs using modern materials

Open spaces colors must take into account the rights and the environment, temperature² and prefers to use the colors of nature and neutral colors to most surfaces which gives the place a sense wide so the environmental efficiency and physiological comfort³, a range of conditions to feel comfortable within the human climates and different factors⁴

Acrylic Panels can provide that cause the panels are suitable for interior applications such as horizontal and vertical surfaces, room dividers, walls, doors, sliding doors, ceilings, furniture and shelving its surfaces could be smooth, rough, transparent, painted or texture⁵

1-2-1-Floor Design with Acrylic

It is used in making the floor tiles in the interior design such as the dancing floor tiles in disco halls



Picture (2) Acrylic used in the floor tiles

¹-Government of Ireland, Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) Planning Guidelines , May 2009 , P 4-5

²Brittany Allen & Katie Hessick , THE CLASSROOM ENVIRONMENT: THE SILENT CURRICULUM , Spring Quarter 2011 ,p7

³-<http://dc313.4shared.com/doc/2Kfy0TYu/preview.html>

⁴-د.يوسف محمد زكري ، مفهوم الراحة الفسيولوجية للانسان و طرق قياسها ،مجلة الساتل،جامعة ٧ ابريل كلية الاداب الزاوية ليبيا ، ٢٠٠٥ صفحة ٢,١٠

⁵<https://uniquedesignco.wordpress.com/2012/05/15/material-connexion/>

1-2-2-Wall Designwith Acrylic

Acrylic Panels are suitable for interior applications such as walls a random array of black polycarbonate tubes that are sandwiched between clear acrylic face sheets¹



Picture (3) Acrylic used in curved floor pattern



Picture (4) Acrylic the new material used in cladding the wall

1-2-3- Ceilings Design with Acrylic

Acrylic Panels are suitable for interior applications such as Ceilings designs²



Picture (5) Acrylic used in cladding the ceiling

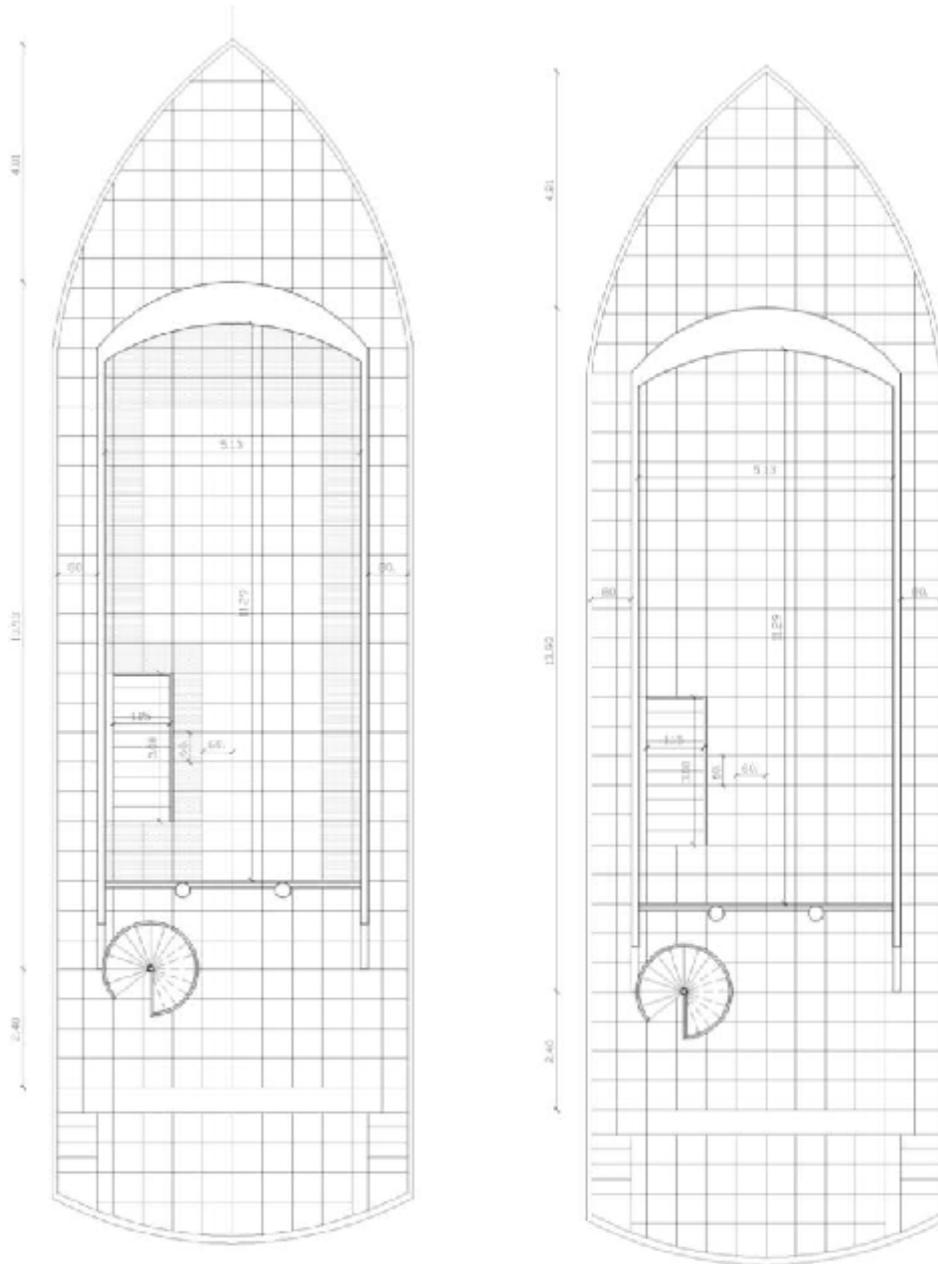
¹<https://uniquedesignco.files.wordpress.com/2012/05/570206-d4.jpg>

²<http://www.melodyhome.com/blog/wallpapers-of-different-materials-218/>

2 Applied study of modern materials and its relation to the design

The Applied study dealt how to use the acrylic in design the floor and the implementation steps in the first level of the Cupid yacht in the Nile River through the next points

2-1-1-the relationship between modern materials and the interior design of yacht



Shape (1) Acrylic tiles in floor of the cupid yacht all are white and the hatches tiles are black

The floor design with Acrylic Sheets were meeting the basic needs because it is unaffected by moisture, and offers a high strength-to-weight ratio, and high light transmittance also sheets can be easily heat-formed without loss of optical clarity Prolonged exposure to moisture, or even total immersion in water, does not significantly affect the mechanical or optical properties of this outstanding material so the process technique was more important in fact

2-1-2-the implementation of the floor tiles in Cupid yacht

The implementation of floor design with Acrylic Sheets were started with fixing a iron structure on the floor according to the measurements of the Acrylic tiles 60*60 and the floor height is 1 cm sheet thickness for the Acrylic tiles and 5 cm the iron structure where the electric wire will be fixed



Picture (6) iron structure on the floor is divided according to the measurements of the Acrylic tiles



Picture (7) after iron structure was fixed on the floor

2-1-3-the final design

After iron structure were fixed on the floor we put Acrylic sheets in floor tiles with putting rubber breaks to reduce friction between the tiles which weren't their thickness of less than 1 cm in a moving structure such as yachts and thus reduces cracking the outskirts of tiles which is reduce maintenance operations due positively on the owner in terms of reducing the cost required for maintenance



Picture (8) Acrylic tiles in floor of the cupid yacht all are white and black with putting rubber breaks



Picture (9) the reception area from the main entrance in morning



Picture (10) the reception area from the other side



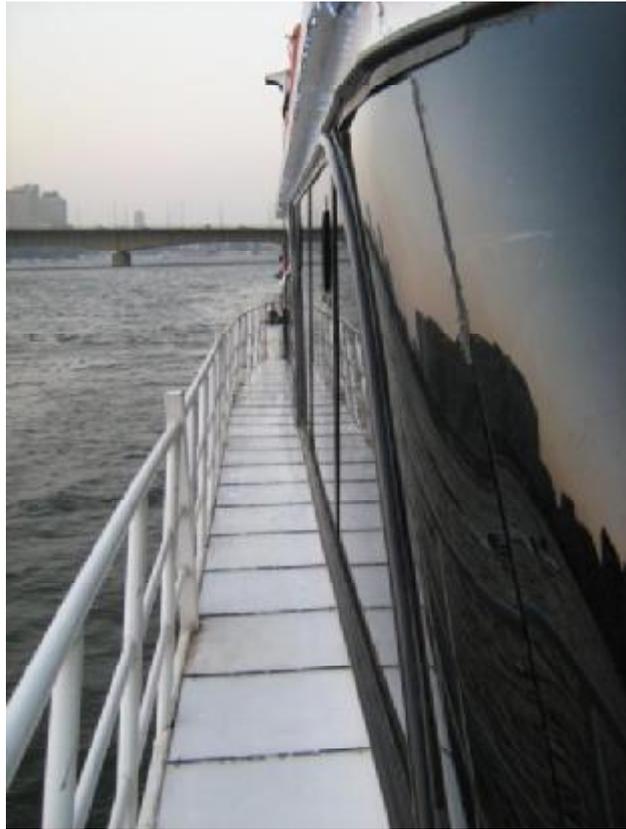
Picture (11) the reception area from the main entrance at night



Picture (12) the reception area from the main entrance at night using the floor light



Picture (13) the reception area from the main entrance at night using the ceiling light



Picture (14) the acrylic tiles in corridors next to the reception area



Picture (15) the acrylic tiles in the entrance of the reception area

Results

1. Acrylic - one of the new material - it is used in the whereabouts of the yacht to avoid the impact of changing weather and increased humidity
2. The possibility of using Acrylic for cladding the floor and change its shape by Roughening or painting the tile which is used to make a lot of designs
3. This material can use artificial light from underneath in endless lines of the designs
4. Use Acrylic cladding ground could be used functionally in the design in the development of lighting from the bottom of the tiles can be controlled remote control and change the lighting unit which gives a variable and diverse effects of the guests, which enriches and elevates special design value in its essential purpose of providing enjoyment
5. we use Acrylic sheets in floor tiles with putting rubber breaks to reduce friction between the tiles which isn't their thickness of less than 1 cm in a moving structure such as yachts and thus reduces cracking the outskirts of tiles which is reduce maintenance operations due positively on the owner in terms of reducing the cost required for maintenance

Recommendations:

1. Support for that research and development field and to ensure the development of skills, tools and methodologies needed to get the maximum benefit from using the new materials in interior design
2. Activating the role of the state and institutions in the care of the yachts design and its production and attention to the offer all the facilities in manufacturing the new material to strengthen the competitive advantage and achieve economic aspects

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