Japan Composite Materials

Overview

14 January 2021

Company Profile : Japan Composite Materials Co.,Ltd.
Company sale : 638,000.00€　(2019)
Company address: 1-21-26 Misono Amagasaki Hyogo Japan
Company organization:　President Junichi Yanagihara
Engineering Takaaki Masui
Procurement Minako Yanagihara

JCM Proprietary

From President

Composite Part Manufacturing with advanced composite materials especially with mass production purpose, it is quite difficult to establish a marketable product without knowledge of material development, procurement, process engineering, and experience in CFRP manufacturing. We are a design company who can play coordinating role to fulfill the wishes of individual clients and commercialize them. We have been working with Japanese industrial design office that focuses on carbon composites. JCM has been 18 years since its establishment and the 15th term since it was become independent company.

JCM advantage field in composite engineering.

・3D measurement cameras,
・Laptop housings for home appliance manufacturers,
・Mobile phone development projects,
・Development of thermoplastic composite bodies for automobile companies.
・Application development for thermoplastic CFUD tape manufacturers.

We have increased the experience value of process engineering as well as supplying special materials. It was. “Japan Composite Materials Co., Ltd." made the materials division independent in 2018.

JCM development capabilities / Engineering

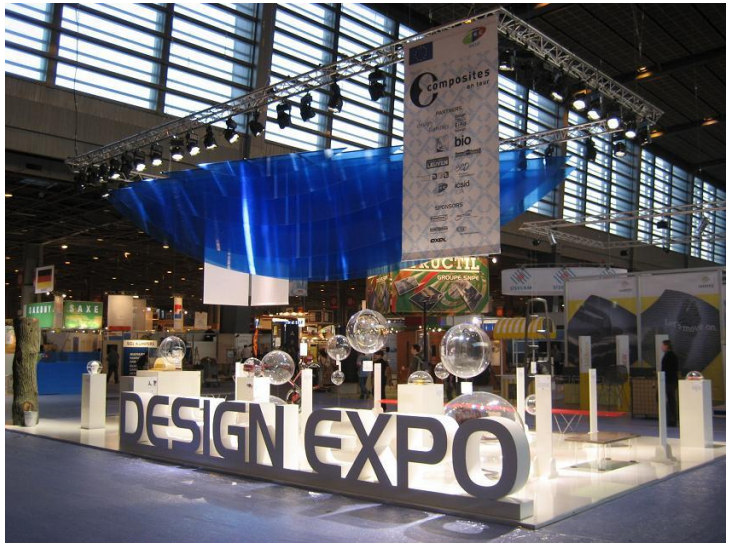
JCM has separated from composite industrial design office and establish the unique process that JCM can arrange the composite materials as customer needed for mass-production. Specifically, JCM select the composite material at upper stream of the flow to down to mass-production to be commercial stream with complying customer requirement. This process flow of JCM is unique and isolated from material trading company. We propose appropriate design and composite materials for Japanese composite fabrication companies.

JCM development capabilities / Advanced composite material

The "JCM Japan Composite Material Market" is specializing to sell thermoplastic prepregs and rapid-curing prepregs, including their molding process. The name of "market" does not sell ready-made material products, but also sells new materials that are introduced by JCM. We also develop and sell our original intermediate materials with cooperating factories. It is not only materials, but also basic molded products such as plates, rods, and pipes.

JCM expectation to Composite United e.V.

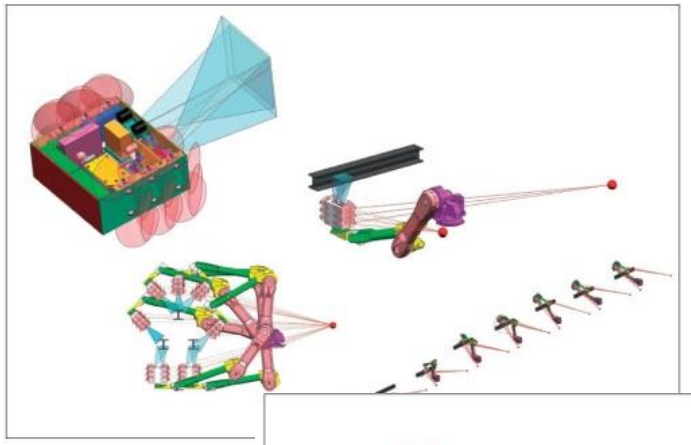
We can introduce updated oriental composite materials and optimal conceptual designs to the European market. JCM has good judge of updated composite materials (as confirmed by an experienced Japanese designer). Bringing new materials made in Japan to everyone in Europe. We hope Composite United could introduce JCM engineering and material in Europe and use it for mass-produced structural materials soon.



2007 JEC Composite Show in Paris

After a while after the independent opening of MBJP, Composite designing firm.

We designed a non-contact 3D measuring instrument for Opton Co., Ltd. It takes the characteristics of carbon composite were utilized.
It was selected the prized, International Composite Design Competition.
When I exhibited at the international composite design competition sponsored by JEC, It became the selection and the design was exhibited at the JEC Composite Show.



#80 Optical Non-contact 3D image scanning system 5

#80 Optical Non-contact 3D image scanning system 4

OPTON Optical non-contact 3D image scanning camera

This is the latest and finest optical non-contact 3D image scanning camera in the world.
It was developed for the scanning to the carbon composite made main wing stringers of Boeing 787 Dream Liner.

Technical Feature: Composite Design

1. This scanner could measure the 3D meter length stringer with high precision less than 0.1mm.
2. The constructing elements are all the carbon composite. CFRP to get the stability to minimize the measuring error less than 0.1mm.
3. Very light and high hardness design.
   The bending modulus of the elements is 230GPa, featuring High elasticity modulus carbon fiber.
4. The Zero heat expansion coefficient design with CFRP.
   It is very important to measure the 3D meter object with high precision less than 0.1mm that we have to remove the distortion of the chassis. CFRP chassis only could do that. It is helping to keep its dimensions with the distortionless character of CFRP by heating. The CFRP chassis could keep its dimensions more the higher heating distortion from optical units inside.
5. The light weight by using the CFRP chassis is providing good influence the multiple joints arm Robotics working, because 3D image scanning camera is on the top of the arm.

Technical Feature: 3D Scanning System

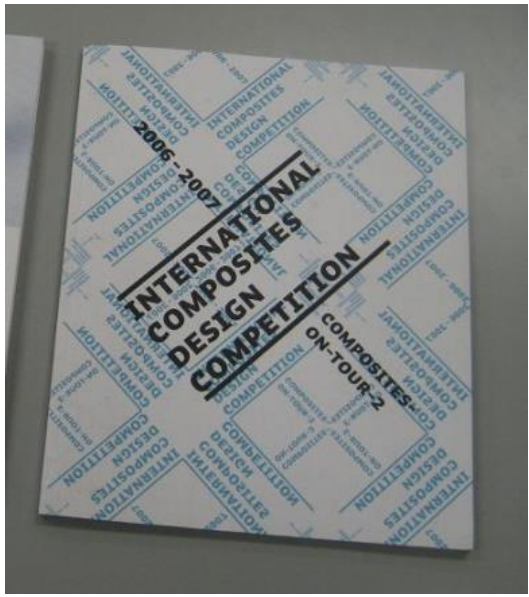
1. The optical noncontact 3D image scanning camera is taking 12 pattern 2e dimensional images. And 3D images are calculated and formed by them. It is the pattern image shift scanning. (The latest technology)
2. The address of the 3D image scanning camera is monitored by the address scanning sensor mounted behind the robotics arm. The 24 LEDs on the camera are installed inside the camera to recognize its position.
3. This scanning camera is the only one in the world which could scan the Black composite CFRP surface by using the higher brightness HD lighting system. It is very difficult to measure CFRP surface.
4. The 3D scanning system is composed of 3D image scanning camera mounted on the top of multiple joints Robotics arm and 2 address scanning sensors by using LED ray. For the scanning to stringer of main wing of Boeing 787, the camera system is mounted on the body rail and moved along the rail. The system could measure 30 meter full length of the main wing.

Technical Feature: Styling Design

1. The main chassis is constructed with flat, straight and square CFRP elements, to make it for low price, but it is enough performance also.
2. The cover is protecting 24 LEDs for to recognize the position of the camera is made of the hard epoxy CFRP.
3. The styling image reminds the High Performance Engine.

It is interesting that other materials could not be the chassis of this 3D image scanning camera.
The object of this 3D scanning system, Boeing 787 Dream Liner is very famous airplane as the all CFRP composite made and good economic performance.
This 3D scanner is scanning the stringer of the main wing with less than 0.1mm distortion.

If we hope to measure the highest quality standards' CFRP, we should choose the measurements made of CFRP.



The design that took advantage of the performance of the CFRP flat plate to reduce costs was highly evaluated.

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3. Very light and high hardness design:
   The bending modulus of the elements is 250PGA, featuring high elasticity modulus carbon fiber.
4. The Zero heat expansion coefficient design with CFRP:
   It is very important to measure the 30 meter object with high precision less than 0.1mm that we have to remove the distortion of the chassis. CFRP chassis only could do that. It is helping to keep its dimensions with the distortion-les character of CFRP by heating. The CFRP chassis could keep its dimensions from the higher heating distortion from optical units inside.
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4. This 3D scanning system is composed of 3D image scanning camera mounted on the top of multiple joints Robotics arm and 2 address scanning sensors by using LED ray. For the scanning to stringer of main wing of Boeing 787, the camera system is mounted on the long rail and moved along the rail. The system could measure 30 meter full length of the main wing.

Technical Feature: Styling Design

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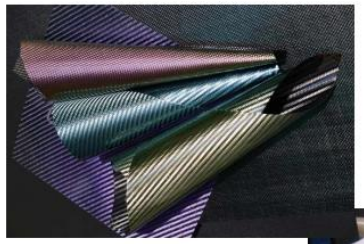
JCM Proprietary

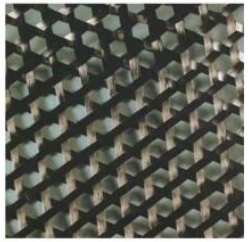
ー 素材からの商品開発 ー

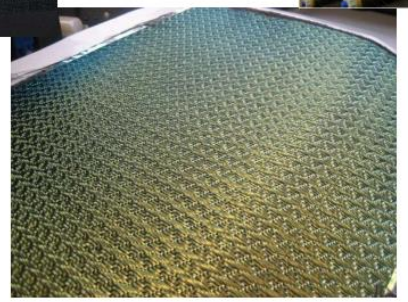
強化部材である工業用繊維（カーボン、ガラス、アラミド繊維他）の開発に携わってきた経験があります。繊維製造の現場には関与したことが洗いませんが、技術の高いウィーバーと一緒に仕事をしてきました。

マジックボックスJPは、素材メーカー（繊維メーカー、樹脂メーカー、プリプレグ等中間材料メーカー）との独自のネットワークにより、各メーカーの開発品材料、あるいは各メーカーに対して、材料開発を発注することが可能です。

炭素繊維に限らず、PP系、PE 系スーパー繊維、アラミド系繊維のセルフコンポジット等、アウトオブ・カーボン・ファイバー、天然系由来の樹脂、繊維の組み合わせによるエコ・コンポジット材料についても深く開発に関与してまいりました。







Design development starting from the material

ー コンポジットテキスタイルの開発 ー

スポーツ用品メーカーのリクエストに応えて開発が始まったコンポジットファブリックは、カーボン、グラスファイバー、アラミド繊維だけでなく、スパイバーも含めその開発対象にあり、とてもパワフルなコンポジット織物を作り出します。

TEIコンポジットのプロダクト・ライン（一部）

TEIコンポジットのファブリック感性マップ

顧客メーカーの開発者の開発計画にあわせて、新しい織物を作りだしており、最近では高強度熱可塑系糸の織物や、カーボン、グラスファイバー織物を熱可塑プリプレグ化する事業にも着手しています。
年内には大規模なプリプレグ工場が稼働します。

弊社は台湾にあるTEIコンポジットの特別代理店です。
オリジナル・コンポジット材料の試作・量産に向けた製作が可能です。

Development of composite textiles

Laptop PC A Panel concept and raider chart

JCM has been involved from the client's product design planning stage, making proposals on composite material selection and molding technology.

【0.4mm厚カーボンコンポジット開発】

概要・目的

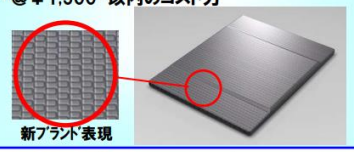
◇カーボンプリプレグ成型によるPC筐体の実現
・カーボンによる耐圧/軽量化とカーボン独自の高品位外観の両立

Before(現状)

・Mg筐体による強度・軽量化の限界
t=0.6mmMgボディ(67g)筐体
・他社はすでにカーボン筐体化(SONY等)
・現状@￥1,500(塗装含む)

After(目指すべき姿)

・業界最軽量+強度のPCモデル実現
t=0.4mmカーボンボディ筐体の実現(50g以下)
・BB技術によるPパターン織で高品位外観の実現
・@￥1,500-以内のコストカ



商品ターゲット(導入時期)	08/4Q	09/1Q	09/2Q	09/3Q
2009/10発売モデル	商品構想			
開発スペック	評価完了			
落下/押し圧強度・耐薬品	デザイン開発			
	設計・量産評価			
				商品化

【エココンポジット開発】デザイン社主導

概要・目的

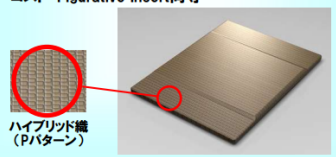
◇エコ素材ならではの高品位外観の新価値化
・エコ社会に先駆けた家電の新イメージを先行提案
・エコ素材によるCO2削減とCLOSED LOOPを実現

Before(現状)

現状課題
・エコ素材は意匠展開性の手段が乏しい
・PLA樹脂の強度不足
・エコ素材の開発コストが未知

After(目指すべき姿)

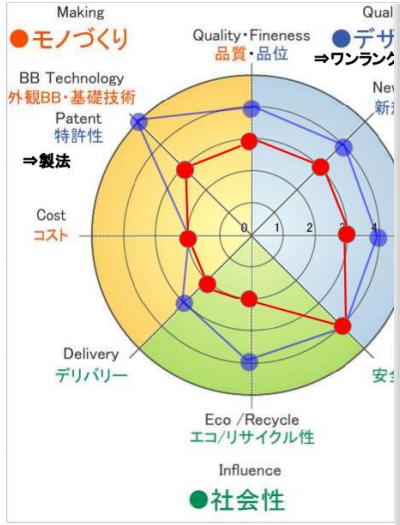
・エコ×ハイテク素材とのハイブリッド織で表現力拡大
・植物由来クロスとPLA樹脂による実用強度実現
・コスト=Figurative Insert同等



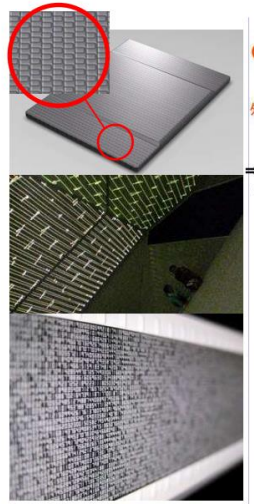
商品ターゲット(導入時期)	08/1Q	08/2Q	08/3Q	08/4Q
携帯電話(2008年10月末)	素材・成形研究			
開発スペック	天然繊維・複合繊維限界調査			
高品位/落下/押し圧強度・耐薬品	ポリ乳酸以外素材調査		予備	
	天然素材限界調査			
			量産対応のパーツ制作	

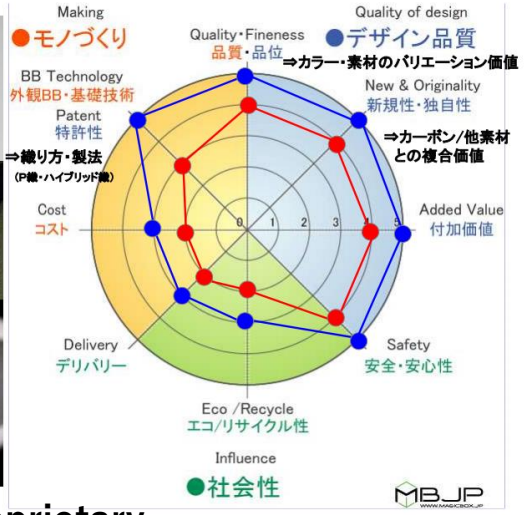
【TODAY:カーボンコンポジット】

【TODAY:エココンポジット】

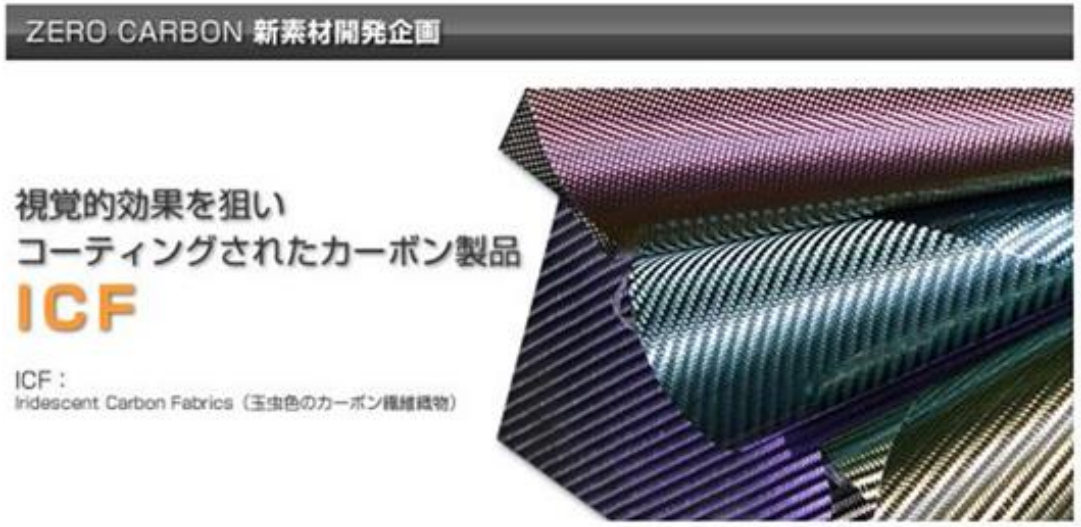


【FUTURE:カーボンコンポジット】





Experimental Composite panels (Light weight and visual value)



Surface material development

We introduce
‘What’s going on’
with the cutting-edge materials.

Below is introducing OEL panels with composite material. 2012

JCM Proprietary

Composite elements development

JEC Composite Show 2012

Research on overseas mass production factories

Product development planning with the latest molding technology

Introduced here is a project that we were involved in as a design office about 10 years ago.
The latest CFRP / CFRTP design activities are still underway.
We cannot introduce our latest projects, yet.

With such a background as a composite design office, JCM became an independent material sales company.

JCM develops and sells original material products for automated mass production composite in Eastern Asia including Japan.

We would like to introduce the latest composite materials developed in this area to CU members mainly in Europe.

JCM Proprietary