香港工商業獎

2008

HONG KONG AWARDS FOR INDUSTRIES

# 機器及機械工具設計
# MACHINERY AND MACHINE TOOLS DESIGN

香港中華廠商聯合會
The Chinese Manufacturers' Association of Hong Kong

# 香港中華廠商聯合會會長尹德勝 BBS 太平紳士獻詞
# Message by Mr Paul Yin, BBS JP
# President, The Chinese Manufacturers' Association of Hong Kong

廠商會對於推動工業多元化發展，一向堅持無間。本會十分榮幸能繼續參與由特區政府主辦的「香港工商業獎」，並作為「機器及機械工具設計」的主辦機構，藉此鼓勵和提高本港生產機器及機械工具的設計水準，從而提高產品競爭力，並對傑出的產品加以獎勵。

今年爆發的金融海嘯對全球的經濟造成嚴重的打擊，香港亦無可避免受到牽連。現時各界對香港 2009 年的經濟增長並不樂觀，然而，本會卻預料 2009 年機器及機械產品比去年將有所增長，主要原因是香港的機器及機械工具的主要出口市場為中國內地。根據統計數字顯示，2007 年該類產品總出口額達 3,086 億港元，比 2006 年增長 13%，其中出口往內地佔整體出口額 58%，比 2006 年增長 20%，成績令人鼓舞。另一方面，相對歐美等地，中國內地的經濟受金融海嘯的影響較輕微，隨著內地積極開發西北部地區，以及推動高新科技工業的發展，對高質素及高科技的機械產品及設備需求日漸殷切。

香港的機器及機械工具製造商一向以生產靈活見稱，產品的價格及品質的認受性甚高。廠商應加強環保及高增值的研發工作，以生產高精密的環保機器及機械工具，並提供優質的售後服務，進一步提高競爭力。

今年的參賽產品中，包羅了不同類型的機器、機械工具以至環保產品。不少產品兼具創意、成本效益、科技應用、技術發展表現卓越，品質已達國際級水平。

在此，本人謹向評審委員會各委員致以衷心感謝，並特別感謝評審委員會主席徐立之校長領導委員會完成艱辛的評審工作，以及感謝各位參賽者和贊助機構，希望他們日後繼續支持這項比賽。

最後，本人謹向所有得獎公司致以熱烈祝賀。

尹德勝

香港中華廠商聯合會會長
**尹德勝 BBS 太平紳士**

Since its inception, The Chinese Manufacturers' Association of Hong Kong has spared no efforts in promoting industrial development and improvement to product quality and design. We are honoured to take part in the "Hong Kong Awards for Industries" organized by the HKSAR Government and to be the organizer of the 'Machinery and Machine Tools Design Competition'. This competition aims, firstly, at encouraging the upgrading of the design of machinery and machine tools in Hong Kong with a view to enhancing our product competitiveness, and, secondly, at giving appropriate recognition to outstanding entries.

The financial crisis this year is taking a heavy toll on the global economy. Hong Kong is unavoidably affected. The feeling of gloom of many notwithstanding, we in the CMA are confident that there will be a healthy growth in the machinery and machine tools sector in 2009. This is because Mainland China has long been Hong Kong's major export market for machinery and machine tools products. In 2007, the total exports of these products amounted to HK$308.6 billion, an increase of 13% compared to 2006. 58% of these products were destined for Mainland China, or an increase of 20% over the previous year. This is most encouraging. Furthermore, compared with the rest of the world including USA and Europe, Mainland China has emerged relatively unscathed from the financial crisis, and with its shift in focus to high-tech industrial development coupled with the rapid development in its north-western region, China will continue to have a great demand for high quality and hi-tech machinery and equipment.

Hong Kong manufacturers of machinery and machine tools are well known for their flexibility in production. They are likewise highly acclaimed for their price and quality. Manufacturers should nonetheless work harder on applied research with a view to producing high precision and environmentally friendly machinery and machine tools. Prompt and quality after-sales service is also important in improving competitiveness.

We are greatly encouraged to note that this year's participants in our 'Machinery and Machine Tools Design Competition' have all demonstrated their outstanding achievements in terms of innovation, cost effectiveness, application of technology, and environmental protection. Indeed, pricing edge aside, the quality of our machinery and machine tools has reached world-class standards.

We wish to pay special tribute to the Judging Panel under the distinguished chairmanship of Professor Lap-Chee Tsui. The success of the Competition this year is due in no small measure to the dedication, professionalism and patience of each and every member of the Judging Panel, for which we are truly grateful.

We would also like to say a big 'thank you' to all entrants and of course our sponsors whose support was at once welcomed and essential. We look forward to their continued support in future.

Finally, we would like to congratulate all winners of the Competition.

Paul Yin, BBS JP
President,
The Chinese Manufacturers' Association of Hong Kong

# 2008 香港工商業獎：機器及機械工具設計組別最終評審委員會
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Final Judging Panel

**前排左起：**
陳福祥博士、顏慶義教授、徐立之教授（最終評審委員會主席）、任揚教授、劉定禮博士

**後排左起：**
張大鵬教授、郭始剛博士、楊家強教授、陳鴻祥先生，JP、羅兆榮先生（職業訓練局代表 — 非評審委員會成員）、潘永生先生（香港生產力促進局代表 — 非評審委員會成員）

First row from left:
Ir Dr F C Chan; Prof Ngan King Ngi; Prof Lap-Chee Tsui (Chairman of the Final Judging Panel); Prof Yeung Yam, Dr T L Lau

Second row from left:
Prof David Zhang; Dr Paul Kwok; Prof David Young; Mr Stephen Chan, JP; Mr Daniel Lo (Representative of Vocational Training Council – non-Judging Panel member); Mr Joseph Poon (Representative of Hong Kong Productivity Council – non-Judging Panel member)

# 2008 香港工商業獎：機器及機械工具設計組別最終評審委員會
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Final Judging Panel

**徐立之教授（主席）**
**Prof Lap-Chee Tsui (Chairman)**
香港大學校長
Vice-Chancellor and President, The University of Hong Kong

**陳福祥博士**
**Ir Dr F C Chan**
香港工程師學會副會長
Vice-President, The Hong Kong Institution of Engineers

**陳鴻祥太平紳士**
**Mr Stephen Chan, JP**
機電工程署副署長（規管服務）
Deputy Director (Regulatory Services),
Electrical and Mechanical Services Department

**鍾寶璇教授**
**Prof P S Chung, JP**
香港城市大學電子工程學系講座教授
Professor (Chair) of Electronic Engineering,
City University of Hong Kong

**馮永業先生**
**Mr Wilson Fung**
香港生產力促進局總裁
Executive Director, Hong Kong Productivity Council

**郭始剛博士**
**Dr Paul Kwok**
香港公開大學科技學院副教授
Associate Professor, School of Science & Technology,
Open University of Hong Kong

**劉定禮博士**
**Dr T L Lau**
香港大學工業及製造系統工程系副教授
Associate Professor, Department of Industrial and
Manufacturing Systems Engineering, University of Hong Kong

**勞虔基博士**
**Dr K K Lo CEng, FIET**
職業訓練局副執行幹事（政策及發展）
Deputy Executive Director (Policy & Development)
Vocational Training Council

**顏慶義教授**
**Prof Ngan King Ngi**
香港中文大學電子工程學系系主任
Chairman, Department of Electronic Engineering,
The Chinese University of Hong Kong

**黃肅亮教授**
**Prof Joshua Wong**
香港理工大學電子及資訊工程學系榮休教授
Professor Emeritus, Department of Electronic and Information
Engineering, The Hong Kong Polytechnic University

**任揚教授**
**Prof Yeung Yam**
香港中文大學機械與自動化工程學系教授及系主任
Professor and Chairman, Department of Mechanical and
Automation Engineering
The Chinese University of Hong Kong

**楊家強教授**
**Prof David Young**
香港科技大學嵌入式系統設計院院長
Director, Embedded Systems Institute,
The Hong Kong University of Science and Technology

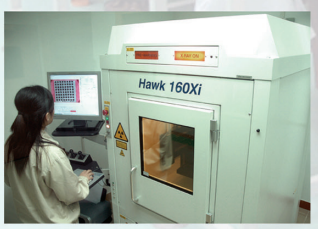
**張大鵬教授**
**Prof David Zhang**
香港理工大學電子計算學系系主任及教授
Head and Chair Professor, Department of Computing,
The Hong Kong Polytechnic University

# 2008 香港工商業獎：機器及機械工具設計大獎
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Grand Award


Design and Engineering

Close loop molding in clean room under network monitoring

High Speed SMT Line




X-ray inspection centre


Computerized test station

Product Assembly in clean room and Package for Sterilization

## 藝美達實業有限公司的 NovaPod

設計者：藝美達實業有限公司

**評審委員意見：**

傳统 2D 培殖法步驟繁複費時且未能確保最佳培殖素質；NovaPod 實踐了幹細胞 3D 培殖法。由於幹細胞可以浮游於均衡的營養素中，所以 NovaPod 有助幹細胞更快和更強成長。在設計上不只符合基本要求如重覆性、複製性和可控性，更配備滲透性氣膜作保護。產品採用了最新電子技術如單片整機、反饋控制來調控產品的準確及穩定性。優點包括可調速度、容易採樣、環保處理、空間節省和可藏置於市面上的孵化箱內等。NovaPod 的優點與貢獻遠超過其本身的成本。產品已成功銷售到歐洲市場及世界各地。

## NovaPod by Automatic Manufacturing Limited

Designer name: Automatic Manufacturing Limited

**General comments on the product:**

The NovaPod is designed for 3D bio-processing. The traditional 2D way to produce stem cell is laborious and difficult to optimize. The new 3D device, NovaPod provides a better platform for faster production of stronger stem cells due to free growth floating in confluent nutrition than the traditional stem cell culture. The product is also designed with a gas permeable membrane for the required protection. In development and manufacturing the device, it has applied up-to-date electronic technologies (system on chip, feedback control for accuracy and stability).

The product is also well designed and developed to meet the essential requirement such as repeatability, reproducibility and controllability. The device also includes add-on features of adjustable speed, easy sampling, eco-friendly processing, space saving and it can fit most third party's incubator equipment. The value created by the devices is well higher than the cost, in terms of the benefits derived in consideration of the manpower and wastage aspect. The device has been successfully marketed in Europe and other countries.

# 2008 香港工商業獎：機器及機械工具設計獎
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Award

## 香港生產力促進局 - 材料科技部的廠內壓鑄鎂合金廢料回收系統

設計者：楊利堅博士，陳敏強先生，龍思遠教授

**評審委員會意見：**

此新開發的鎂廢料回收系統，有效地將一般不可重熔回用的高活性鎂廢料轉化為可重用合金材料。此設計整合多種嶄新技術以達至提升整體效能，減低能源及成本消耗，更改善安全性及環保表現，相關專利包括不含助熔劑的物理性分離法、應用對流式過濾、設計及雙層式電熱加溫技術。

此系統提供既經濟又安全的解決方案予鎂合金壓鑄生產商回收鎂廢料，更顯著地降低物料物流運輸成本。

## In-house Diecasting Magnesium Scraps Recycling System by Hong Kong Productivity Council, Materials Technology Division

Designer name: Dr Yeung Lee Kin Kinny, Mr Raymond Chan, Prof Long Siyuan

**General comments on the product:**

The system is newly developed for recycling of magnesium scrap, which is highly reactive metals and could not be directly re-melted and recycled into usable alloys. The design incorporates the integration of new technologies to achieve overall improvement on performance, energy consumption, cost, safety and environmental issues. Patent design features including adoption of non-flux physical separation method, application of counter-flow filtration design and adoption of double-layer oriented heaters.

The product provides an economical and safe solution for magnesium diecasting manufacturers to recycle the magnesium scraps, which saves substantial logistic costs.

## 仁興機器廠有限公司的 MM 系列多物料全自動注塑機

設計者：梁偉祥先生，梁永祥先生，姚灼華先生，陳榮先生

**評審委員會意見：**

本產品提供一個綜合和高效能的解決方案來生產高品質的多物料產品。用戶在這一台注塑機上可以實現多物料注塑，包括以轉盤換位的包膠工藝，以轉軸（芯）換位的注塑工藝。本注塑機可利用混色器配合來達成雲彩注塑技術，精確地控制每組注射系統的次序、次數、膠量等，重複地注塑成雲彩或多層次色彩的產品。本產品設計成單元式的注塑機，可提供階段性的開發、簡易安裝和維修，並有效地改進產品外觀 、產品功能表現和提高產品設計的自由度。

## A High Precision Two-colour Mixing And Over Moulding Plastic Injection Moulding Machine by Yan Hing Engineering Works Ltd.

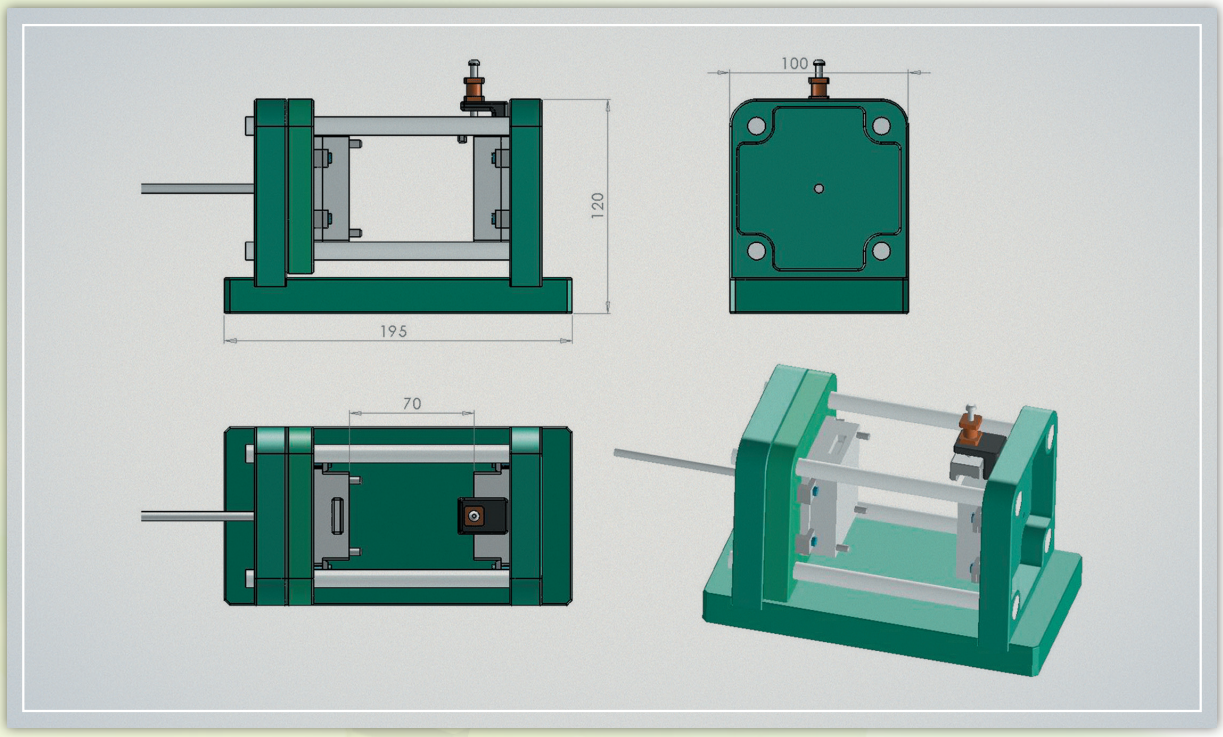
Designer name: Mr Leonard Wai Cheung Leung, Mr Roland Wing Cheung Leung, Mr John Zhuohua Yao and Mr Wing Chan

**General comments on the product:**

The product offers a compact and cost-effective solution to produce quality products comprising of different types of plastic materials. The machine incorporates two important mechanisms, the turntable transfer and the rotation of core, in a single unit. The product also features a colour mixing device that precisely controls the sequences and durations of plastic materials entering the mould cavity, resulting in highly repeatable colour patterns. The machine is offered in modular design, which allows phased development and easy installation and maintenance.

The product effectively improves the appearance, functional performance, and design freedoms of plastic products.

# 2008 香港工商業獎：機器及機械工具設計優異證書
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Certificate of Merit




## 宜安有限公司的<br>節能鎖模裝置系統

設計者：李揚德先生

**評審委員會意見：**

這項鎖模裝置是一種既簡單又有效的裝置，它可應用於機械中，以減少生產過程中的能源消耗。該項裝置包括定範本和動範本，還包括扣鉤和卡槽。所述扣鉤可以固定在定範本和動範本上，相對於現有的鎖模裝置來說，該項發明不需要油缸，從而實現了更高的靈活性和節能性能。

## Energy Saving Tool-Lock System<br>by E-Ande Company Limited

Designer name: Mr Lugee Li

**General comments on the product:**

The Too-Lock system is a simple yet is an effective device that can be applied in machines to reduce energy consumption during production. The system includes the stationary platten and movable platten, and a locking-block and a slot. The locking-block can be fastened at the stationary platten and movable platten without hydraulic cylinder compared to existing tool-lock, which achieves higher flexibility and energy saving performance.

## 創機科技有限公司的
## 彩色三維鞋楦激光掃描機

設計者：陳梓航先生

**評審委員會意見：**

此產品為高速瞬時三維激光掃描機並有顏色貼圖掃描功能。掃描的三維鞋楦外型及顏色貼圖數據，可讓設計師輕易地把人手繪畫設計轉換成電腦化三維數據格式，並支援電腦化生產。掃描的三維鞋楦外型數據也可用作放碼，並提供刀路作多碼數大量生產。此掃描機亦可配合製鞋工業的多種生產應用，並提升鞋業的設計及生產水平。此掃描機的掃描速度更比傳統機種快約 40 倍。

## Color 3D Shoe Last Laser Scanner
## by Frontier Advanced Technologies Ltd

Designer name: Mr Kenny Chan

**General comments on the product:**

The product is a real time 3D laser scanner with texture colour capturing functionality. The captured colour texture with 3D shoe last shape data enables designer to convert manual design easily to digital format for computerized production. The captured 3D data can be used to produce different sizes of shoe last and to generate tool path for mass production. The scanner well suits the shoe industry manufacturing application and enhance the design and production of shoes. The scanner is 40 times faster than existing 3D scanner.

# 2008 香港工商業獎：機器及機械工具設計優異證書
# 2008 Hong Kong Awards for Industries: Machinery and Machine Tools Design Certificate of Merit

## 香港生產力促進局 - 材料科技部的低溫真空離子電鍍設備

設計者：楊利堅博士，高松年博士，陳遠明博士，陳啟華博士，易敏龍先生，劉耀鴻先生，陳偉國先生

**評審委員會意見：**

低溫真空離子電鍍在低熔點工件上進行覆膜覆着，而傳統離子電鍍在高溫下進行，所以傳統離子電鍍不能應用在低熔點工件，例如塑膠上。低溫真空離子電鍍利用可控制的平面磁控管弧極，高電流脈衝弧沉積技術和集成爐腔設計，從而達至在低溫下進行覆膜覆着。

低溫真空離子電鍍能在工件上覆着金屬和非金屬鍍層，為製造商提供一個經濟和高效率的系統，使製造者生產更高的增值產品。

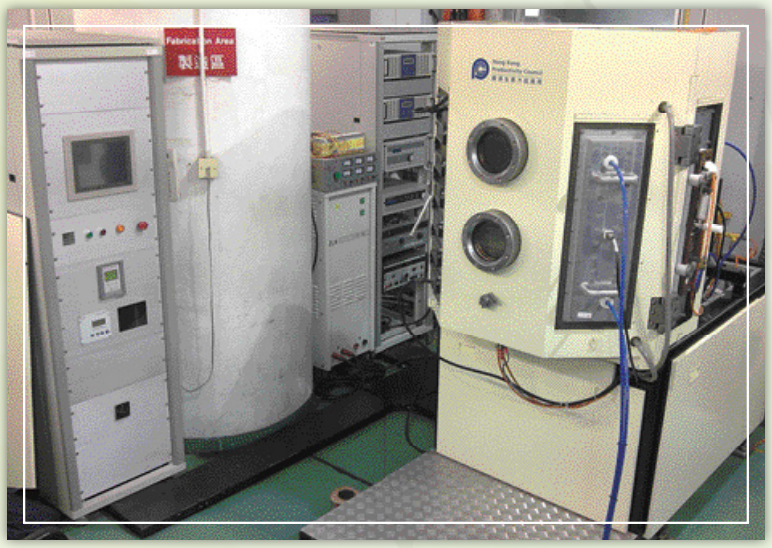
## Low Temperature Ion Plating Machine by Hong Kong Productivity Council, Materials Technology Division

Designer name: Dr Yeung Lee Kin Kinny, Dr Ko Chung Nin, Dr Chan Yuen Ming, Mr Chan Kai Wa, Mr Yick Man Lung, Mr Lau Yiu Hung, Mr Chan Wai Kwok

**General comments on the product:**

The product is developed for surface coating by Ion Plating Process on substrates with low melting points. Traditional Ion Plating Process operates at high temperature, which limits the range of substrates used in coating. The design integrates the planar controllable magnetron arc cathode, the high current pulse arc deposition technology and the integrated chamber designed, which achieve the low temperature ion plating process.

The product provides an economical and efficient system for manufacturers in plating ferrous and non-ferrous metals onto parts, which enables manufacturers to produce higher value-added products.



## 興華科儀有限公司的 G-BOX

設計者： 興華科儀有限公司

**評審委員會意見：**

G-BOX 採用了綜合式的設計，內置了 RFID 閱讀器、無風扇中央處理器 (Fanless CPU)，中間件 (Middleware) 和應用軟件。 G-BOX 不但體積細小、耗電量低，而且還改善了傳統閱讀器分散和繁複的線路接駁問題。此外，G-BOX 還提供了 WiFi 和即插即用 (plug-n-play) 功能，並適合應用於各行各業。無論是倉庫管理以至零售商戶，G-BOX 也能助他們提升效率，達至更佳的成本效益。

## G-BOX by Schmidt & Co (Hong Kong) Limited

Designer name: Schmidt & Co (Hong Kong) Limited

**General comments on the product:**

The product is an all-in-one RFID device combining a powerful RFID reader, a fanless CPU, embedded middleware and application software. The device is portable with a smaller size, less cabling, lower energy consumption. WiFi and plug-n-play features are also provided. The user-friendly device can be deployed in a wide range of applications. It helps users to achieve higher efficiency in operation from backroom to shop floor with a better cost-performance.

## 香港中文大學 - 精密工程研究所的一種可控混合驅動機械式壓力機

設計者：杜如虛教授、金振林博士、何凱博士

**評審委員會意見：**

可控混合驅動機械壓力機融合了油壓機、普通機械壓力機和伺服壓力機的優點。在傳統機械壓力機的曲柄滑塊機構上添加伺服驅動的連杆機構，實現了針對不同沖壓工藝要求的沖頭運動軌跡。開發了基於工業 PC 的實時回饋控制器，以確保機床可以獲取理想沖頭軌跡，並實現高效節能目標。

## A Controllable Hybrid Mechanical Metal Forming Press by Institute of Precision Engineering, The Chinese University of Hong Kong

Designer name: Prof Ruxu Du, Dr Zhenlin Jin, Dr Kai He

**General comments on the product:**

The machine combines the advantages of a hydraulic press, a mechanical press and a servo press. With the addition of a servo linkage to the crank mechanism of a traditional mechanical press, different patterns of punch motion can be obtained which serves different needs of production. A PC-based real-time feedback controller was developed to control the trajectory of linkage to obtain the most desirable motion precisely and achieve high-energy efficiency.

## 天馬電子機械有限公司的
## 電腦數控鑽床 SpeedStar 1

設計者：戴松協先生

**評審委員會意見：**

此產品結合了先進科技和優化設計，為印刷電路板中的鑽孔程序提供一個巧妙的解決方案，令功耗、速度及維修等方面也得到改善。創新設計包括可分離的歐州型刀具庫、蜂巢狀結構及於軌道上配以空氣軸承的工作臺和設計獨特的換刀系統。

產品設計成功地提高機床自動化，其中的斷鑽檢測、自動上落板裝置和深度控制功能令操作更便利。

## CNC Drilling Machine SpeedStar 1
## by Timax Electronics & Machinery Ltd

Designer name: Mr Tai Chung Heep

**General comments on the product:**

The product offers an ingenious solution for the drilling operation on printed circuit boards. It is an integration of application of new technologies and design optimization to achieve improved performance in power consumption, speed and easy maintenance. New designs include detachable EuroMagazine, sandwich honeycomb structure with air bearing tracks and a special tool change system. The design successfully incorporated high level of automation for ease of operations including drill breakage detection, auto loaders and precision depth control.

## 環球爐業工程有限公司的
## 電磁炒爐系列

設計者：杜潤強先生

**評審委員會意見：**

電磁爐煮食是以節能、環保及安全而著名的煮食方法。此炒爐包含了一個特別功能以感應炒鑊跟線圈的距離，並且自動調節電壓，跟炒鑊配合以提供穩定的熱能。因此即使廚師烹調時拋鑊，炒鑊仍然可繼續受熱。此功能主要是為配合傳統中菜拋鑊的獨特煮食方法而設計。

## Induction Wok Range
## by Universal Electrical Machine Works Co Ltd

Designer name: Mr To Yun Keung

**General comments on the product:**

Induction cooking is a well-known for energy saving, environmental friendly and safer cooking method. This device includes a feature to monitor the distance of the wok from the coil and automatically varies the voltage to ensure constant energy coupling with the wok. This allows chefs tossing the wok upwards while the wok maintain heated. This feature is particularly designed to suit the characteristics of wok tossing in Chinese cooking.

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