

# Opportunity and Challenge of Novel Technology for the UV Applications in China

*Tao Wang*

*Blue Sky Special Lamps Development Limited Company*

*Lantian Industry District, Nangaocun Bei Road, Zhuozhou County, Hebei Province of China,*

*Post Code: 072750*

## **Abstract**

This presentation provided information about the novel UV lamp and equipment and applications of UV technology in China, especially, about the ending application, which including coatings, inks, and adhesives.

## **Introduction**

The environmental concerns and legislation to cut Volatile Organic Compounds make the UV technology one of the fastest developed green technologies in China, the growth rate of raw materials and UV formulations are over 25% from the year of 2002, and will keep the development speed for the future as we expected. In 1982, the total amount of UV products in China was 350 tons, but in 2005, in 2006, the raw materials including monomers, oligomers, initiators were 48024 tons and the end products of UV formulation were 41000 tons which including 29000 tons of coatings and 12000 tons of inks. The UV application fields extended from traditional wood/bamboo floor, paper overprint and PVC coatings to automobile parts, anti-corrosive, metal, and electronic appliances coatings, further to inks and adhesives.

## **UV lamps and equipment**

UV lamp and equipment were the necessary for the UV application, the novel application of UV technology normally depends on the development of novel equipments.

Blue Sky began provides customers with UV and IR lighting equipments and their accessories as well as dope for UV. Recently, a lot of IR and UV systems have been attached to the printing set, which greatly increased the cure rate and product capacity. Figure 1 showed the example of the release coating printing set with IR-UV attachment. Figure 2 is the UV attachment to a silk screen printing machine, which could be used to produce the pressure sensitive papers.



不干胶斜臂印刷机配套 UV 实例



商业表格印刷机配套实例 (刮刮卡银浆 UV 固化)

Figure 1 release coating printing set with IR-UV attachment



Figure 2 UV attachments for silk screen printing and the products

Long life, low heat and high power LED could be used for a lot of fields such as fiber connection, syringe adhesive, lens and laser head fixing. Figure 3 showed the LED and products which produced by LED.



High power machine



focus adjustable, portable LED

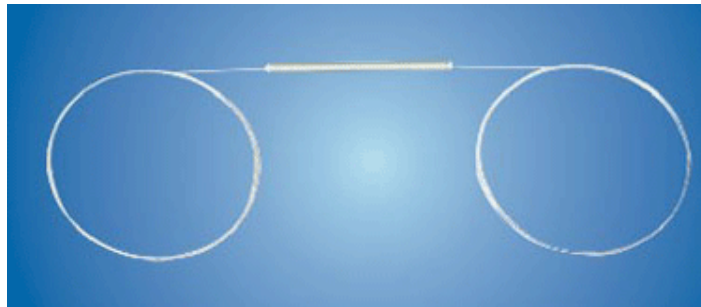


Figure 3 LED and the products made by LED

Blue sky also produces regular UV lamp and equipment for traditional application, which are showed in figure 4.



UV lamp for gravure printing



UV lamp with shuttle



Portable UV curing system



Table set UV curing system

Figure 4 regular UV cure system from Blue Sky Company

### UV coatings

UV coatings is still the major UV products in China, its amount has over 2000 tons, except for the UV floor coatings, UV technology have been used in other fields such as furniture kitchen utility and stair as well. Some examples are shown in figure 5.

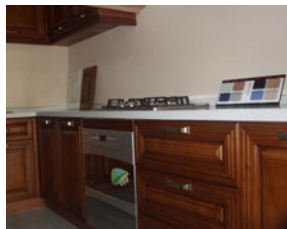
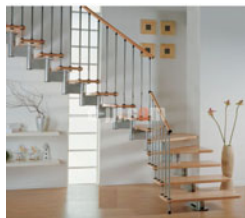


Figure 5 examples of UV coatings for wood

One of the fast developed UV application filed in China is the UV coatings for automobile parts (figure 6) , such as head lamp, wheel, inside decoration, varnish for plastics.



Figure 6 applications of UV coatings for automobile parts

Recently, UV coating for metal have developed quickly, which including iron, steel, aluminum, and the alloy. Figure showed some of the products



Figure 7 UV metal coating examples

UV technology for electronic application has expanded in China for the last few years, the field including: PCB inks, dry films, liquid resist, mark inks and so on. Figure 8 shown some examples of the products

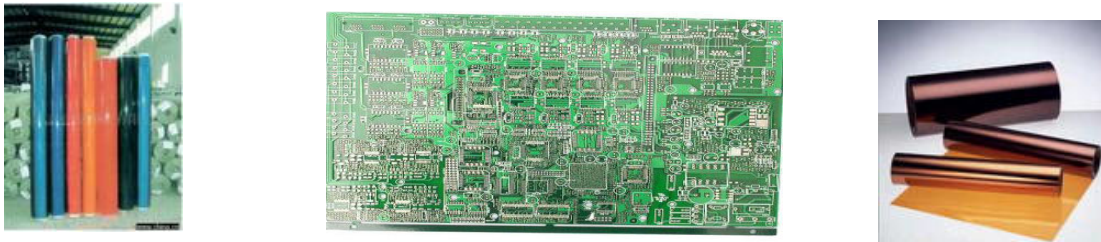


Figure 8 examples of UV products for electronic applications

UV varnish for arts is one of the big markets in China, especially for ceramic and photo-album (figure 9).



Figure 9 UV coatings for arts

UV coatings for plastics is one the biggest application area in China, which contained different plastics such as PET, PP, PE, PSt, PVC, PC, BMC, ABS and so on, they could be used as cover or decoration for almost all of the fields. Figure 10 gave some of the examples.



Figure 10 application examples of UV plastics coatings

### UV inks

During this few years, UV inks (offset, gravure, metal, silk screen, flexo) has been rapidly developed, the total amount is 2665 tons in 2006. figure 11 showed some examples of the printed papers.



Figure 11 UV inks applications

### UV adhesives

UV adhesives could be used in varieties fields such as glass, films, laser head of CD and computers. Figure 12 showed the products made by UV curing adhesive



Figure 12 products of UV curing adhesive

Blue Sky began her career on 1983, and now has a capacity of more than one million of lamps per year with 120 employees. With a manufacture base of about 200 hundred of square meters, she provides customers with UV and IR lighting equipments and their accessories as well as dope for UV. Beginning with the slogan of “ To develop UV enterprise, to decontaminate environment ”, she pays lots of attentions to employee training and technology refreshing throughout her career. With better quartz tubing and electrodes imported, Blue Sky keeps a

perfect manufacture process of special lamp in place and has set up a developed and efficiently running quality system. Today, no doubt, Blue Sky has been the largest and the most professional enterprise in special lamps manufacturing fields of china.