Organiser

香港印刷業商會
THE HONG KONG PRINTERS ASSOCIATION

Implementation Organisation

APTEC
印刷科技研究中心
Advanced Printing Technology Centre
(A Subsidiary of The Hong Kong Printers Association)

Sponsor

CCIDAHK

中華人民共和國香港特別行政區政府
文化體育及旅遊局
Culture, Sports and Tourism Bureau
The Government of the Hong Kong Special Administrative Region of the People's Republic of China

政府資助計劃
Government-funded programme

Colour · Method · Master：Enhancing Print Quality by CTV

Brenda Pang
Executive Director, APTEC
Nov 14, 2025

CTV
COLOUR TONE VALUE
by APTEC

The Hong Kong Printers Association

- Established in 1939, the most representative printing organization in Hong Kong.
- Through its communications with governments and other institutes, delivering the latest information through different channels, various conferences and study missions, establishment of APTEC, offering privileges, etc, enhances the cohesion and competitiveness of printing industry.

香 港 印 刷 業 商 會
THE HONG KONG PRINTERS ASSOCIATION

Advanced Printing Technology Centre

- Established in 1999, under the Hong Kong Printers Association
- Assist the printing and related industries for technology & skills upgrades
  - On-site training, applied research, technical seminar
  - Color management, printing standardisation, print colour control, Adobe

APTEC
印刷科技研究中心
Advanced Printing Technology Centre
(A Subsidiary of The Hong Kong Printers Association)

Applied Research

- G7
- Soft proofing
- Digital printing
- Ink saving and color management
- Waterless printing
- Kaleido ink
- ISO 10128 calibration
- Konica Minolta Digital Printing Machine
- Canon Digital Printing
- ISO/PAS 15339
- XCMYK
- CxF
- Agfa Quick Dry Printing
- ISO 12647 paper data collection
- CTV (Colour Tone Value)

Actively promote printing standardization

- The First organization bring print-by-number concept, printing standardization and certification to China!
- Actively participating in ISO/TC130
  - ISO/TC130 China represented Expert
  - Involved the latest UCD testing (universal characterization dataset for PC1) for 12647-2
- Strategic partnership with Fogra
  - Promote Fogra PSO and PSD
  - FIRST authorised trainer (out of Germany) for PSO Professional and Digital Print Professional

Process Standard ISO 12647 certified exp. 01 16 OFFSET

ProcessStandard Digital Fogra Report No. 99999 Valid until 0000-00-00 PSD certified

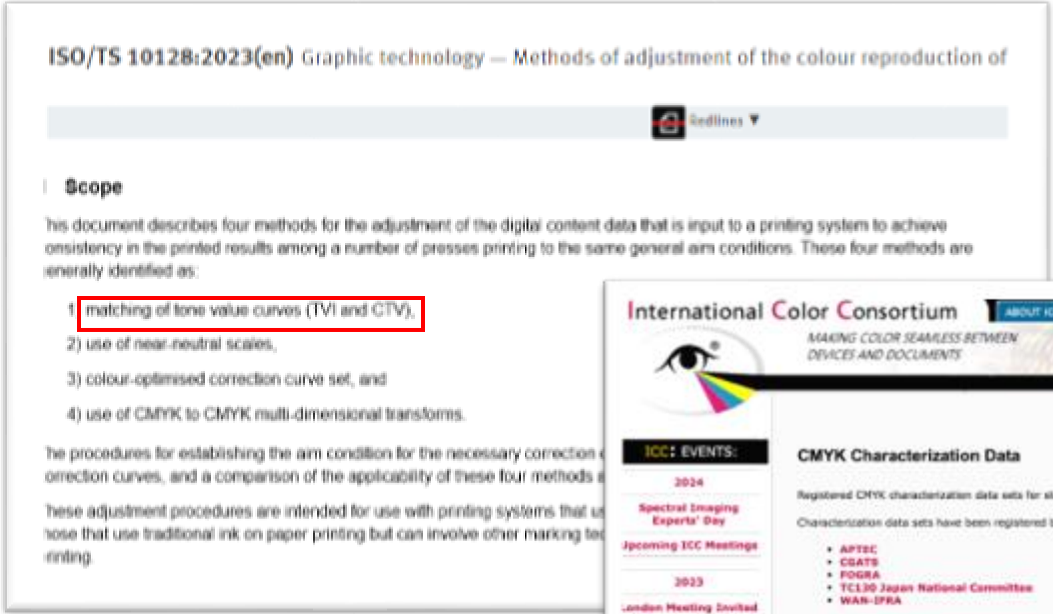
Fogra APTEC cert PSO Professional ISO 12647 | XX9999

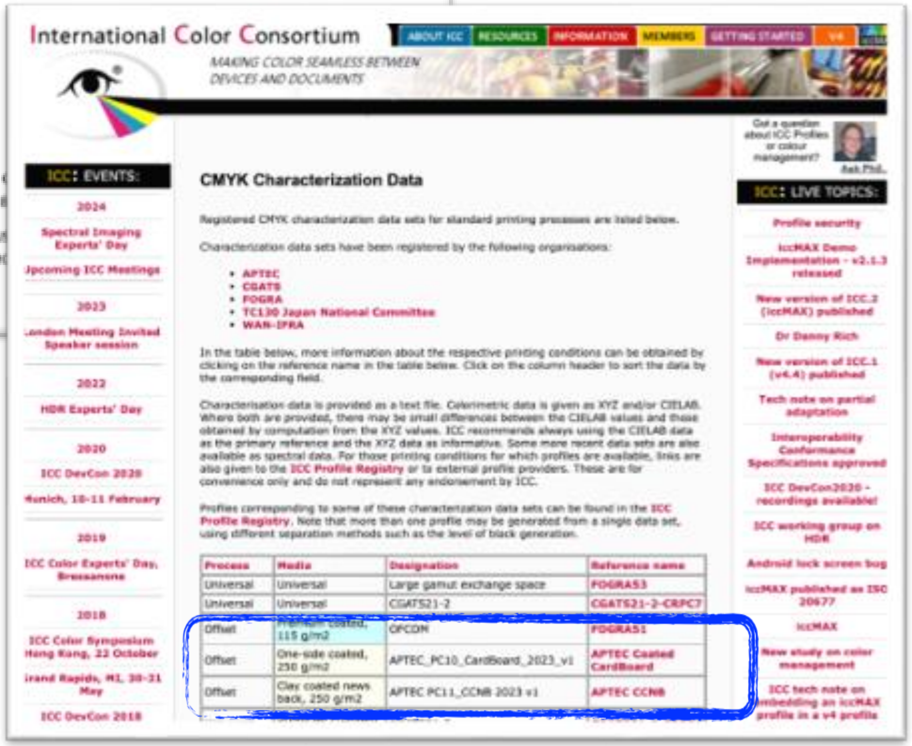
ISO

Organised International Conferences

A breakthrough in colour control method: CTV (Colour Tone Value)

- **2017:** ISO published ISO 20654 about Spot Colour Tone Value control (SCTV)
- **2019:** APTEC started to study and research the SCTV application in 4C
- **2023:** ISO Published ISO 10128 to state CTV as press calibration method
- **2023:** APTEC submitted TWO characterization datasets for CCNB and coated white board by using CTV to ICC and ISO/TC130 WG3





First GBA Standard in Printing Industry

"Requirements for calculation and application of Colour Tone Value (CTV) in print workflow"

"湾区标准" 清单

序号	"湾区标准" 识别号	标准编号	标准名称	起草单位	发布单位	声明使用单位
1	WQ 1-236	T/KJXY 0002-2024	法人和其他组织跨境身份认证技术规范	广东省电子商务认证有限公司、广东省标准化研究院、广东南方通信建设有限公司、中国通信服务香港有限公司、信飛科技有限公司、中国通信服务澳门有限公司、深圳市信飞合创科技有限公司	广州市南沙区跨境信用促进会	广东省电子商务认证有限公司、广东省标准化研究院、广东南方通信建设有限公司、中国通信服务香港有限公司、信飛科技有限公司、中国通信服务澳门有限公司、深圳市信飞合创科技有限公司、科聯电信有限公司、三信加密科技一人有限公司、冠付消费金融信息科技有限公司、顺帆国际有限公司
2	WQ 1-237	T/GDPRA 001-2024	印刷流程控制的色调值（CTV）计算及应用要求	香港印刷科技研究中心有限公司、香港印刷业商会、深圳职业技术大学、广东东莞市质量监督检测中心、深圳市裕同包装科技股份有限公司、鹤山雅图仕印刷有限公司、东莞金杯印刷有限公司、深圳市印刷行业协会、深圳劲嘉集团股份有限公司、东莞斯道拉恩索正元包装有限公司、中山市建斌职业技术学校、广东启博智能科技有限公司、珠海市豪迈实业有限公司、广东省印刷复制业协会、华新(佛山)彩色印刷有限公司、澳门印刷业商会、深圳市新宏泽科技有限公司、上海泛彩图像设备有限公司、澳门华辉印刷有限公司	广东省印刷复制业协会	华辉印刷有限公司、中华商务联合印刷（广东）有限公司、石华堂印刷有限公司、东莞金杯印刷有限公司、深圳永经堂纸品有限公司、伟信企业（香港）有限公司、鹤山雅图仕印刷有限公司、鹤山精联印刷有限公司、东莞隽思印刷有限公司、数码速印工作坊有限公司、珠海市豪迈实业有限公司、东莞当纳利印刷有限公司、安量彩印制盒（东莞）有限公司、深圳市裕同包装科技股份有限公司、保诺时网上印刷有限公司、中山鸿兴印刷包装有限公司、出色制作专门店有限公司、宏亚印务有限公司

粤港澳大湾区标准化研究中心

粤港澳大湾区标准化研究中心关于
粤港澳大湾区共通执行标准清单的公告
（第 6 号）

经粤港澳相关方共商确认，《法人和其他组织跨境身份认证技术规范》等 9 项标准纳入粤港澳大湾区共通执行标准清单（简称"湾区标准"清单），现予以公布。欢迎粤港澳社会各界广泛使用。

特此公告。

附件："湾区标准"清单

粤港澳大湾区标准化研究中心
（代章）
2025 年 5 月 22 日

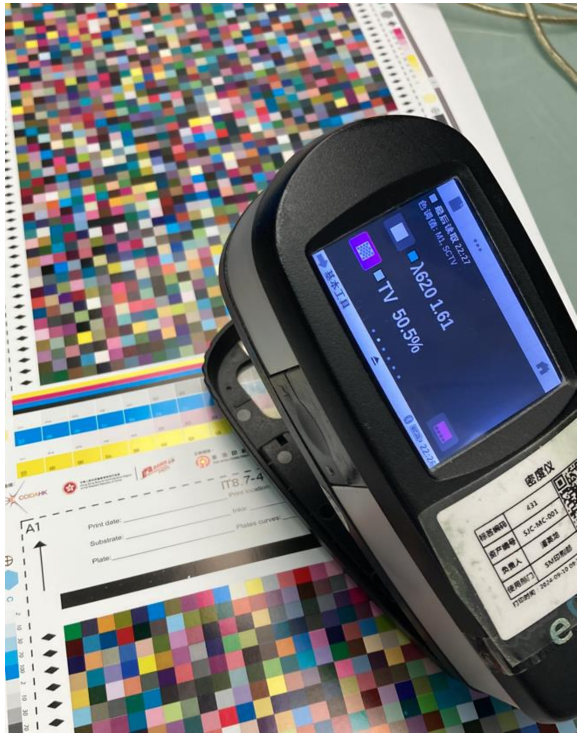
A breakthrough in colour control method: CTV (Colour Tone Value)

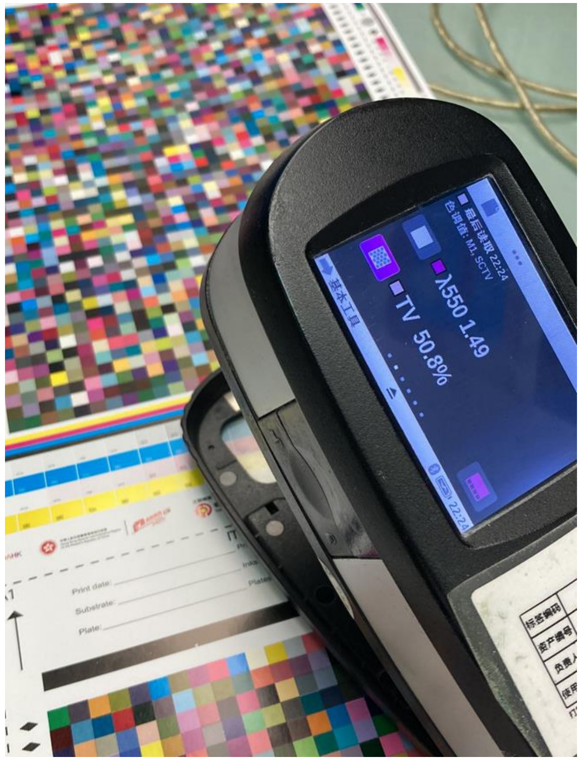
- A press calibration method
- Print dots are calculated from LAB value
- 50% tone in the file = 50% tone in printing (linearization)
- Can be used with:
  - Any printing ink
  - Any printing substrates
  - Any screening ruling (AM, FM, hybrid)
  - Any printing methods (offset, digital, flexo, …)
- Can be used for 4C, spot colour tone, multi-colour

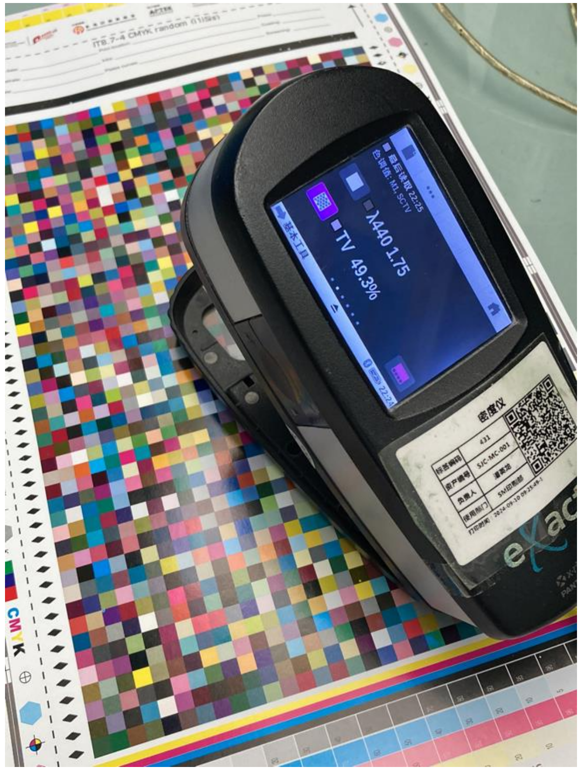
A breakthrough in colour control method: CTV (Colour Tone Value)

- Easy to master → same practice with traditional printing control of printing dots
- Smoother gradation, more detailed and better colour contrast
- Easy to obtain proof-to-press colour matching
- Easy to obtain colour matching from different press machines
- Enhance colour reproduction so that visual effect in printout and original file is consistent

Highly Colour Reproduction Accuracy







CTV in 4C printing

Using CTV calibration method

Using other calibration method

More detailed and better colour contrast

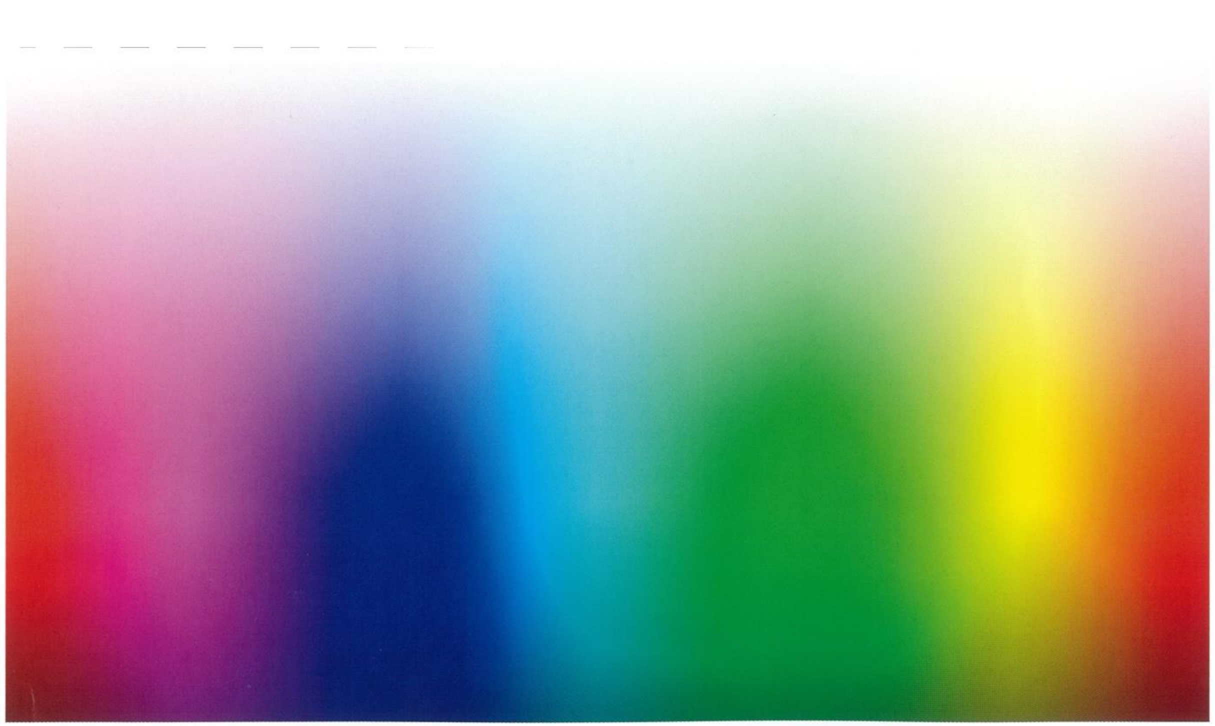
CTV in 4C printing

Using CTV calibration method

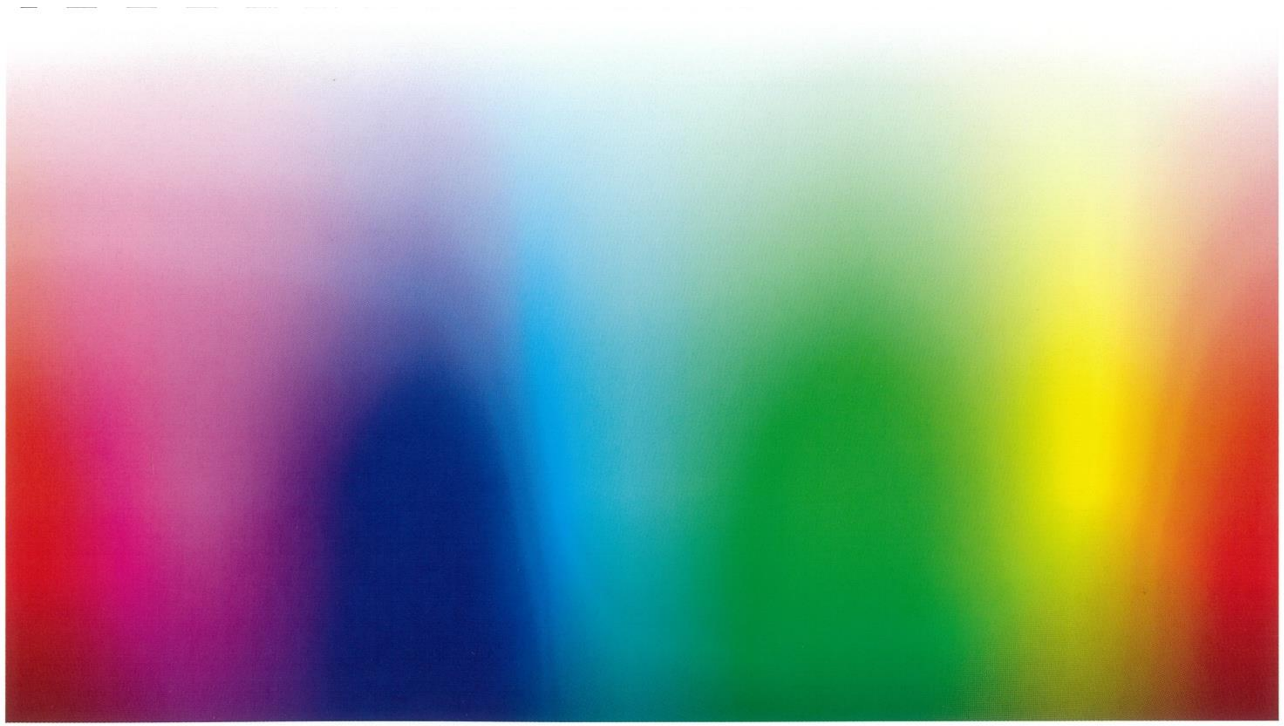
Using other calibration method

More detailed and better colour contrast

CTV in 4C printing



Using CTV calibration method



Using other calibration method

Smoother gradation

CTV in Multi-colour Printing (7C)

7C printing by using CTV (CMYKOGV)

4C printing by using CTV

CTV is the ONLY choice for multi-colour

CTV in Multi-colour Printing (7C)

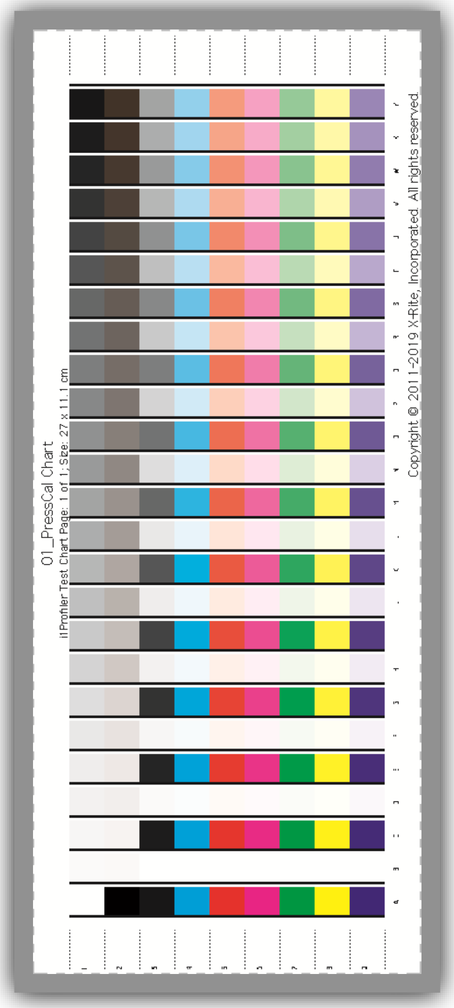
7C printing by using CTV (CMYKOGV)

4C printing by using CTV

CTV is the ONLY choice for multi-colour

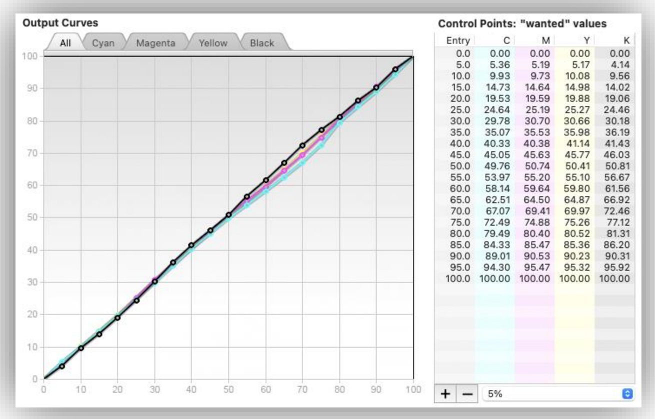
CTV Curve Calculation

- Measure the CTV test chart by spectrophotometer

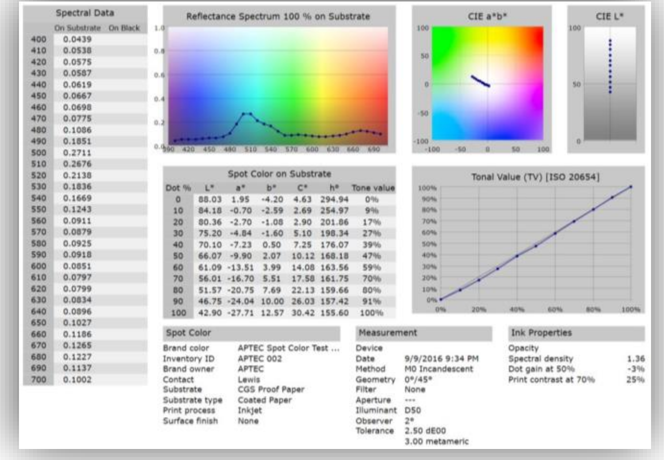


CTV Curve Calculation

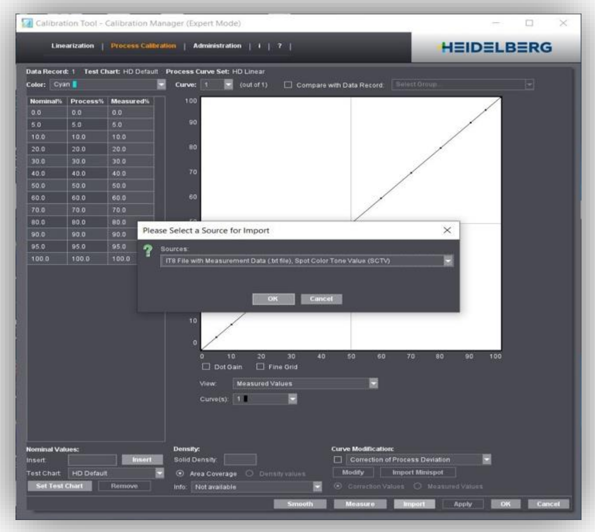
- CTV curve calculation software
  - ColorLogic: Ant
  - Chromix: Curve
  - CGS: CxF ToolBox
  - Heidelberg: Prinect Calibration Manager
  - GMG: OpenColor
  - …



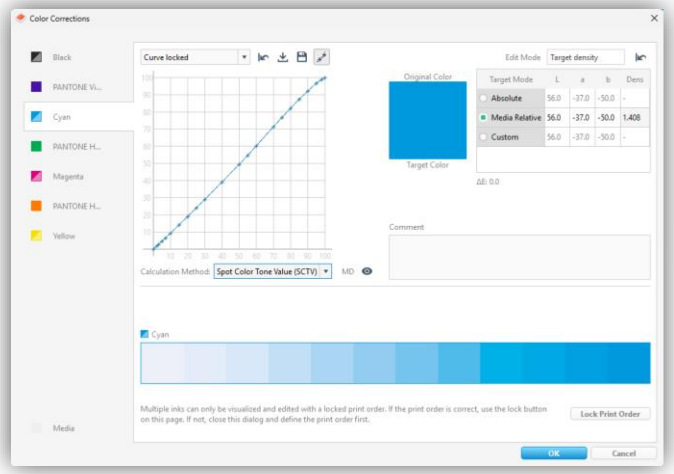
Chromix: Curve



CGS: CxF ToolBox



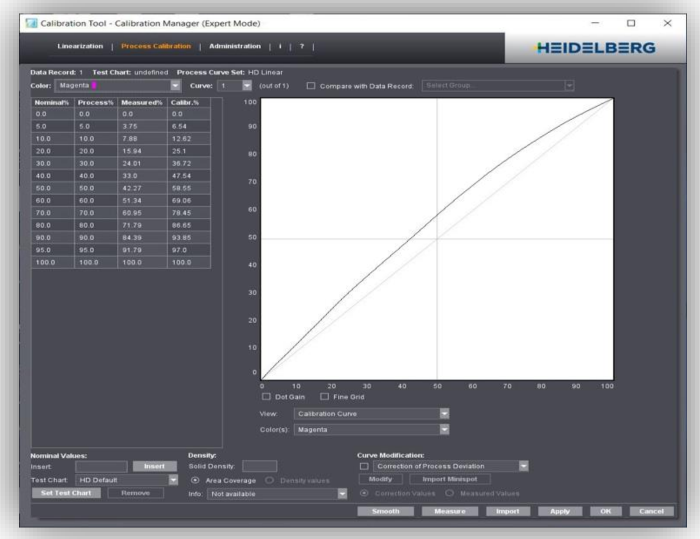
Heidelberg:
Prinect Calibration Manager



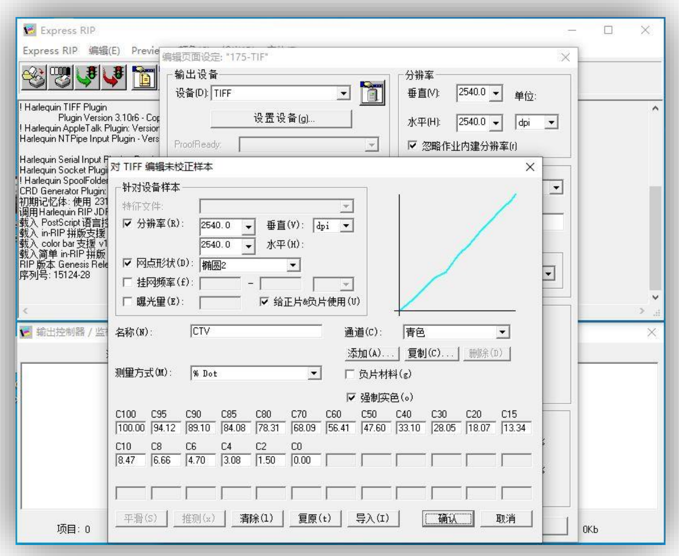
GMG: OpenColor

Apply CTV

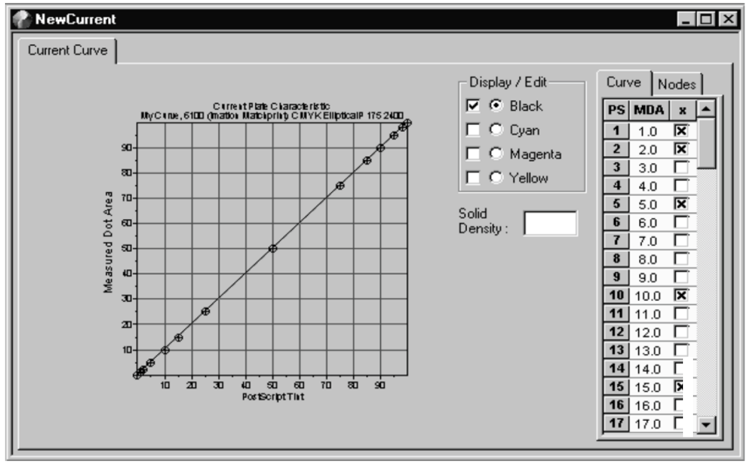
- RIP applies CTV
  - Heidelberg: Prinect
  - Harlequin (HQ): Express RIP
  - ECO3: Apogee
  - Kodak: Prinergy
  - Founder: ElecRoc
  - Dainippon: TrueFlow
  - Esko: Automation Engine
  - …



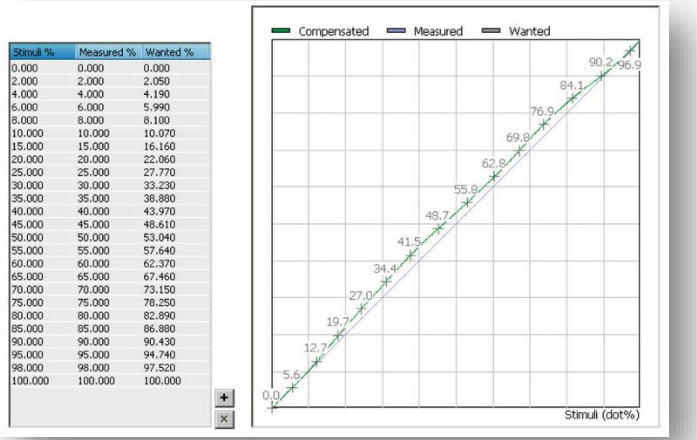
Heidelberg: Prinect



Harlequin (HQ): Express RIP



Kodak: Prinergy



ECO3: Apogee

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Government-funded programme

Colour · Method · Master: GBA ReCreates the World's Colour

CTV
COLOUR TONE VALUE
by APTEC

"Colour · Method · Master" Project

Supported by HK government, subsidized by the Cultural and Creative Industries Development Agency (CCIDA)

- Promote CTV and encourage printing companies to use CTV
- Extend the application areas of CTV
- Formalise CTV as the FIRST printing "GBA Standard" (DONE)
- Strive to promote CTV to be used globally

CTV
COLOUR
TONE VALUE
by APTEC

Core Scheme: CTV Pilot Scheme

- 19 selected companies (mainly from Greater Bay Area, few from other Chinese cities and ASEAN)
- APTEC provides CTV on-site training
- Once achieve the target, will be awarded the qualification of the **"CTV Certified Printing Company"**

CTV
CERTIFIED
PRINTING
COMPANY
by APTEC

CTV Certified Printing Companies

CTV
CERTIFIED PRINTING COMPANY
by APTEC

e-print
www.e-print.com.hk

鶴山精聯印刷有限公司
Heshan Ching Luen Printing Co. Ltd.

OUTPUT EXPRESS LIMITED

SINSO®

安量彩印製盒有限公司
Safe Power Printing & Box Mfg. Co., Ltd.
安量彩印制盒(東莞)有限公司
Safe Power Printing & Box (Dong Guan) Mfg. Co., Ltd.

HUNG HING

ASIA ONE

rrd

KINTA PRESS & PACKAGING
(member of ASAHI PRINTING GROUP)

新興印刷

華輝印刷有限公司
Welfare Printing Ltd.

华新彩印
HUAXIN COLOUR PRINTING

豪迈实业
HAMAH INDUSTRIAL

VIVAR

九星印刷
Nine Stars

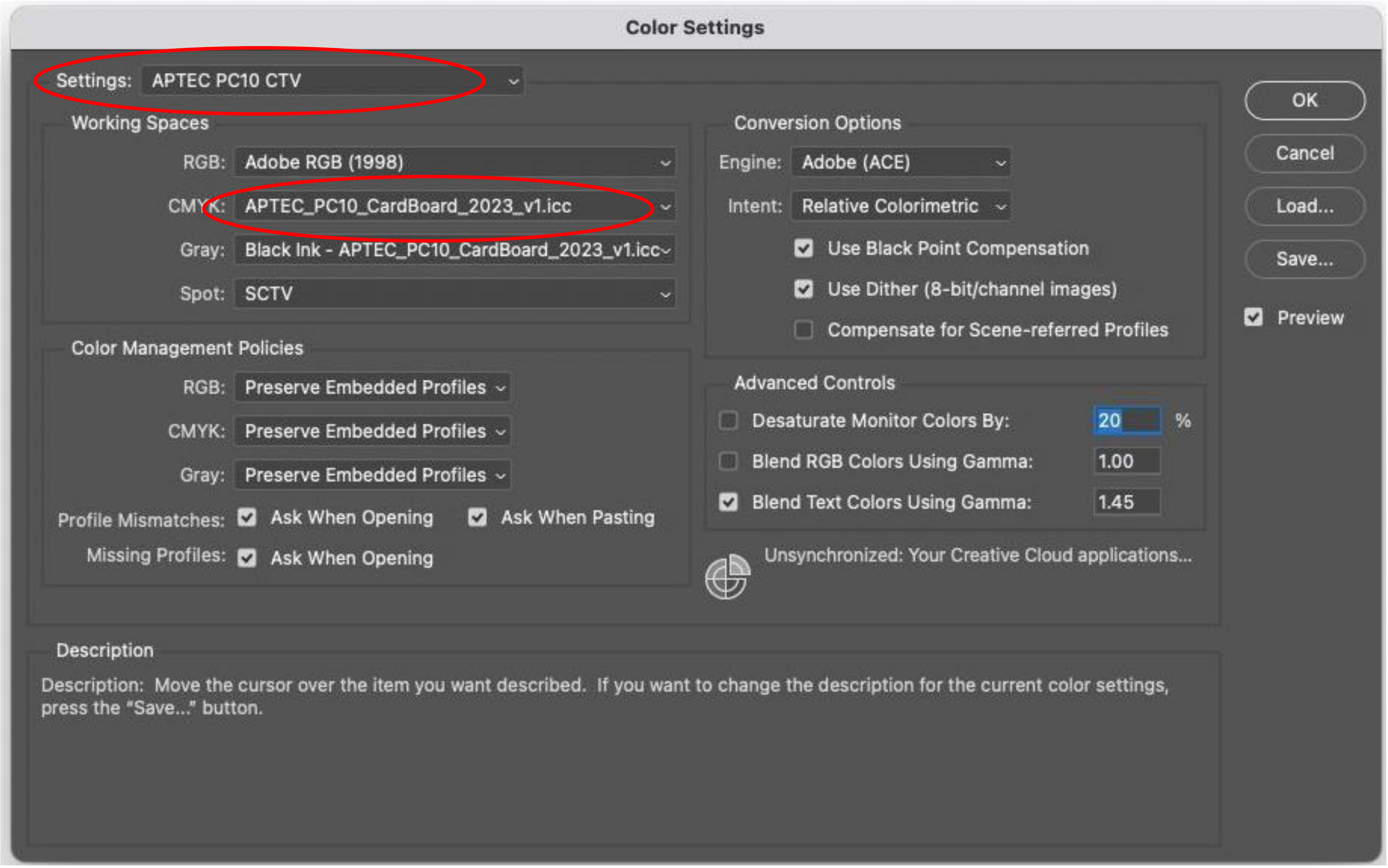
福山纸业
FUSHAN PAPER

GAOYI 高义

東莞新洲印刷有限公司
DONGGUAN NEW ISLAND PRINTING CO., LTD.

XP
安徽新華印刷股份有限公司

Proof-to-press colour matching with correct colour setting in prepress



Core Scheme: Production of CTV Charaterisation Dataset

- 11 selected companies from GBA (offset, flexo, digital printing)
- Assist APTEC to produce 6 sets of characterisation dataset by CTV

中華商務聯合印刷(香港)有限公司
C & C JOINT PRINTING CO., (H.K.) LTD.

金杯印刷有限公司
GOLDEN CUP PRINTING CO., LTD.

QP Group
雋思集團

/CHARMING

华新彩印
HUAXIN COLOUR PRINTING

石華堂
SWT
SHECK WAH TONG
石華堂印刷有限公司
Sheck Wah Tong Printing Press Ltd

YUTO

wkt
永經堂印刷集團
Wing King Tong Printing Group
since 1944

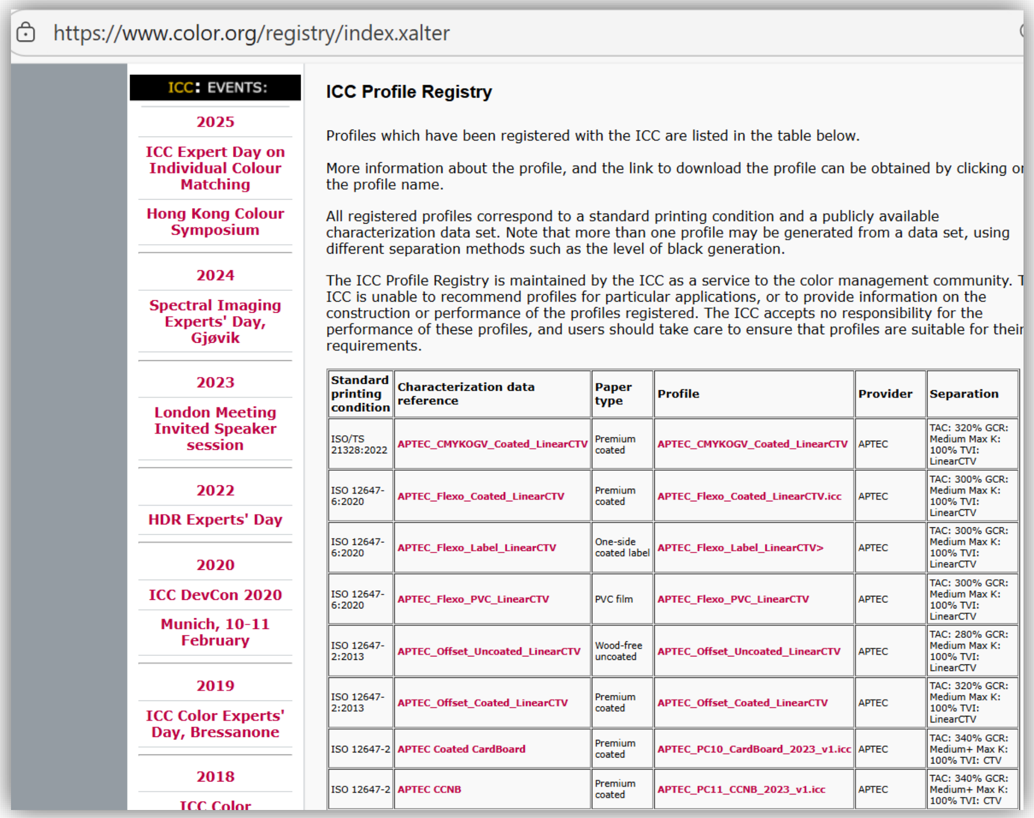
Winson Enterprise (H.K.) Limited
偉信企業(香港)有限公司

DSP
WORKSHOP

LEO
PAPER GROUP
LEO PAPER GROUP
鶴山雅图仕印刷有限公司
利奥纸品印刷集团成员

6 new Charaterisation Datasets created by CTV (Uploaded to ICC website)

- APTEC_CMYKOGV_Coated_LinearCTV_2025
- APTEC_Offset_Uncoated_LinearCTV_2025
- APTEC_Offset_Coated_LinearCTV_2025
- APTEC_Flexo_PVC_LinearCTV_2025
- APTEC_Flexo_Label_LinearCTV_2025
- APTEC_Flexo_Coated_LinearCTV_2025
- APTEC_PC11_CCNB_2023_v1.icc
- APTEC_PC10_CardBoard_2023_v1.icc



https://www.color.org/registry/index.xalter

ICC: EVENTS: 2025 ICC Expert Day on Individual Colour Matching · Hong Kong Colour Symposium · 2024 Spectral Imaging Experts' Day, Gjøvik · 2023 London Meeting Invited Speaker session · 2022 HDR Experts' Day · 2020 ICC DevCon 2020 Munich, 10-11 February · 2019 ICC Color Experts' Day, Bressanone · 2018 ICC Color

ICC Profile Registry

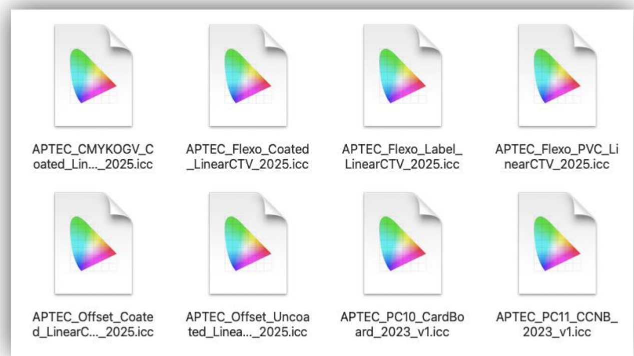
Profiles which have been registered with the ICC are listed in the table below.

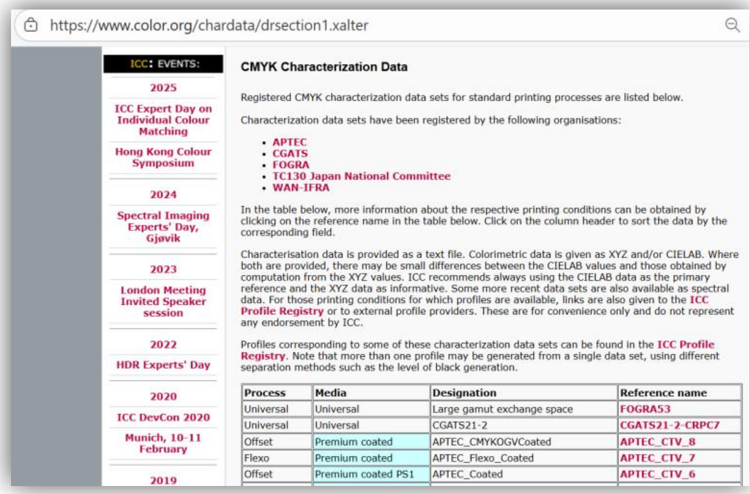
More information about the profile, and the link to download the profile can be obtained by clicking on the profile name.

All registered profiles correspond to a standard printing condition and a publicly available characterization data set. Note that more than one profile may be generated from a data set, using different separation methods such as the level of black generation.

The ICC Profile Registry is maintained by the ICC as a service to the color management community. The ICC is unable to recommend profiles for particular applications, or to provide information on the construction or performance of the profiles registered. The ICC accepts no responsibility for the performance of these profiles, and users should take care to ensure that profiles are suitable for their requirements.

Standard printing condition	Characterization data reference	Paper type	Profile	Provider	Separation
ISO/TS 21328:2022	APTEC_CMYKOGV_Coated_LinearCTV	Premium coated	APTEC_CMYKOGV_Coated_LinearCTV	APTEC	TAC: 320% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-6:2020	APTEC_Flexo_Coated_LinearCTV	Premium coated	APTEC_Flexo_Coated_LinearCTV.icc	APTEC	TAC: 300% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-6:2020	APTEC_Flexo_Label_LinearCTV	One-side coated label	APTEC_Flexo_Label_LinearCTV>	APTEC	TAC: 300% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-6:2020	APTEC_Flexo_PVC_LinearCTV	PVC film	APTEC_Flexo_PVC_LinearCTV	APTEC	TAC: 300% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-2:2013	APTEC_Offset_Uncoated_LinearCTV	Wood-free uncoated	APTEC_Offset_Uncoated_LinearCTV	APTEC	TAC: 280% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-2:2013	APTEC_Offset_Coated_LinearCTV	Premium coated	APTEC_Offset_Coated_LinearCTV	APTEC	TAC: 320% GCR: Medium Max K: 100% TVI: LinearCTV
ISO 12647-2	APTEC Coated CardBoard	Premium coated	APTEC_PC10_CardBoard_2023_v1.icc	APTEC	TAC: 340% GCR: Medium+ Max K: 100% TVI: CTV
ISO 12647-2	APTEC CCNB	Premium coated	APTEC_PC11_CCNB_2023_v1.icc	APTEC	TAC: 340% GCR: Medium+ Max K: 100% TVI: CTV





https://www.color.org/chardata/drsection1.xalter

ICC: EVENTS: 2025 ICC Expert Day on Individual Colour Matching · Hong Kong Colour Symposium · 2024 Spectral Imaging Experts' Day, Gjøvik · 2023 London Meeting Invited Speaker session · 2022 HDR Experts' Day · 2020 ICC DevCon 2020 Munich, 10-11 February · 2019

CMYK Characterization Data

Registered CMYK characterization data sets for standard printing processes are listed below.

Characterization data sets have been registered by the following organisations:

- APTEC
- CGATS
- FOGRA
- TC130 Japan National Committee
- WAN-IFRA

In the table below, more information about the respective printing conditions can be obtained by clicking on the reference name in the table below. Click on the column header to sort the data by the corresponding field.

Characterisation data is provided as a text file. Colorimetric data is given as XYZ and/or CIELAB. Where both are provided, there may be small differences between the CIELAB values and those obtained by computation from the XYZ values. ICC recommends always using the CIELAB data as the primary reference and the XYZ data as informative. Some more recent data sets are also available as spectral data. For those printing conditions for which profiles are available, links are also given to the ICC Profile Registry or to external profile providers. These are for convenience only and do not represent any endorsement by ICC.

Profiles corresponding to some of these characterization data sets can be found in the ICC Profile Registry. Note that more than one profile may be generated from a single data set, using different separation methods such as the level of black generation.

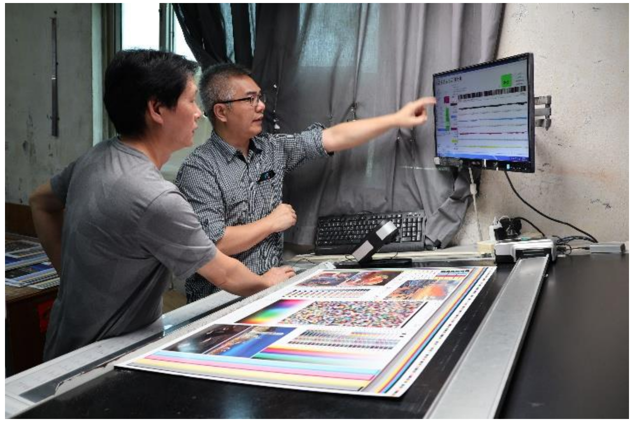
Process	Media	Designation	Reference name
Universal	Universal	Large gamut exchange space	FOGRA53
Universal	Universal	CGATS21-2	CGATS21-2-CRPC7
Offset	Premium coated	APTEC_CMYKOGVCoated	APTEC_CTV_8
Flexo	Premium coated	APTEC_Flexo_Coated	APTEC_CTV_7
Offset	Premium coated PS1	APTEC_Coated	APTEC_CTV_6

Testimonial

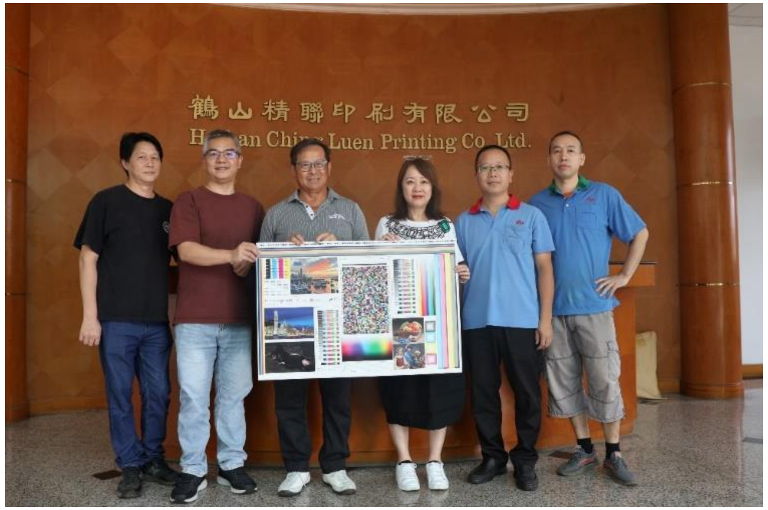
鶴山精聯印刷有限公司
Heshan Ching Luen Printing Co. Ltd.

CTV
CERTIFIED PRINTING COMPANY
by APTEC

Prepress Manager of Ching Luen stated that, “It is a breakthrough. **We should not use the traditional TVI concept to interpret.** After using CTV, image contrast is better. **CTV can help to solve the spot colour control problem.** We will use CTV in our daily production.”



Production Manager mentioned, “Compared with other colour control methods, **using CTV can meet the target easier. And it can help to spot out the problems of press machine**.”



Testimonial

安量彩印製盒有限公司
Safe Power Printing & Box Mfg. Co., Ltd.
安量彩印制盒(東莞)有限公司
Safe Power Printing & Box (Dong Guan) Mfg. Co., Ltd.

CTV
CERTIFIED PRINTING COMPANY
by APTEC

Prepress Manager from Safe Power Printing mentioned, “Using the CTV calibration method, there is **no need for additional software or hardware**. CTV is **simple and easy to understand, quick and accurate assessment of the printing colour**.

We have already applied the CTV in daily production, which has **reduced make-ready time**. It also has improved printing color accuracy and quality. In the long run, this can **optimize overall production costs and enhance efficiency.**”

CTV
COLOUR
TONE VALUE
by APTEC

Consistent Colour • Accurate Colour Reproduction • Stronger Colour Contrast • Smoother Gradation • Sharper Image Details • Only Choice for Multi-Colour

CTV
COLOUR
TONE VALUE
by APTEC

Thank you!

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