



# MDF Powder Coating: Green Coating Technology

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## Structure of a Life Cycle Assessment (LCA)



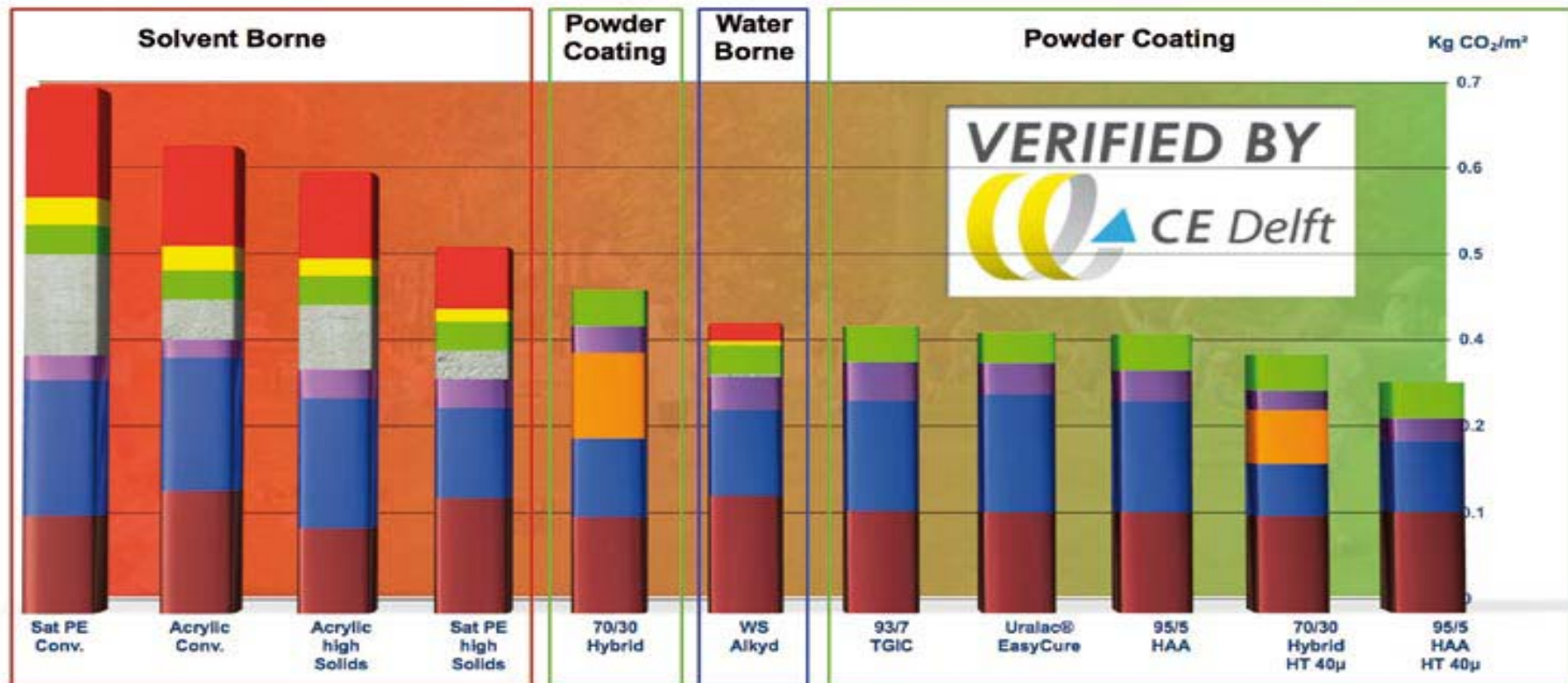


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## The results of the DSM study:

shaping  
powder

Pigment Resin Epoxy Resin Coating production Solvent Substrate heating Air heating Solvent incineration



Note: Carbon Footprint expressed as Kg CO<sub>2</sub> eq. per m<sup>2</sup> coated metal substrate.

DSM Powder Coating Resins

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## Summary:

Powder Coatings reduce CO<sub>2</sub> emission  
by 25 – 60 % against conventional  
solvent borne coating systems.



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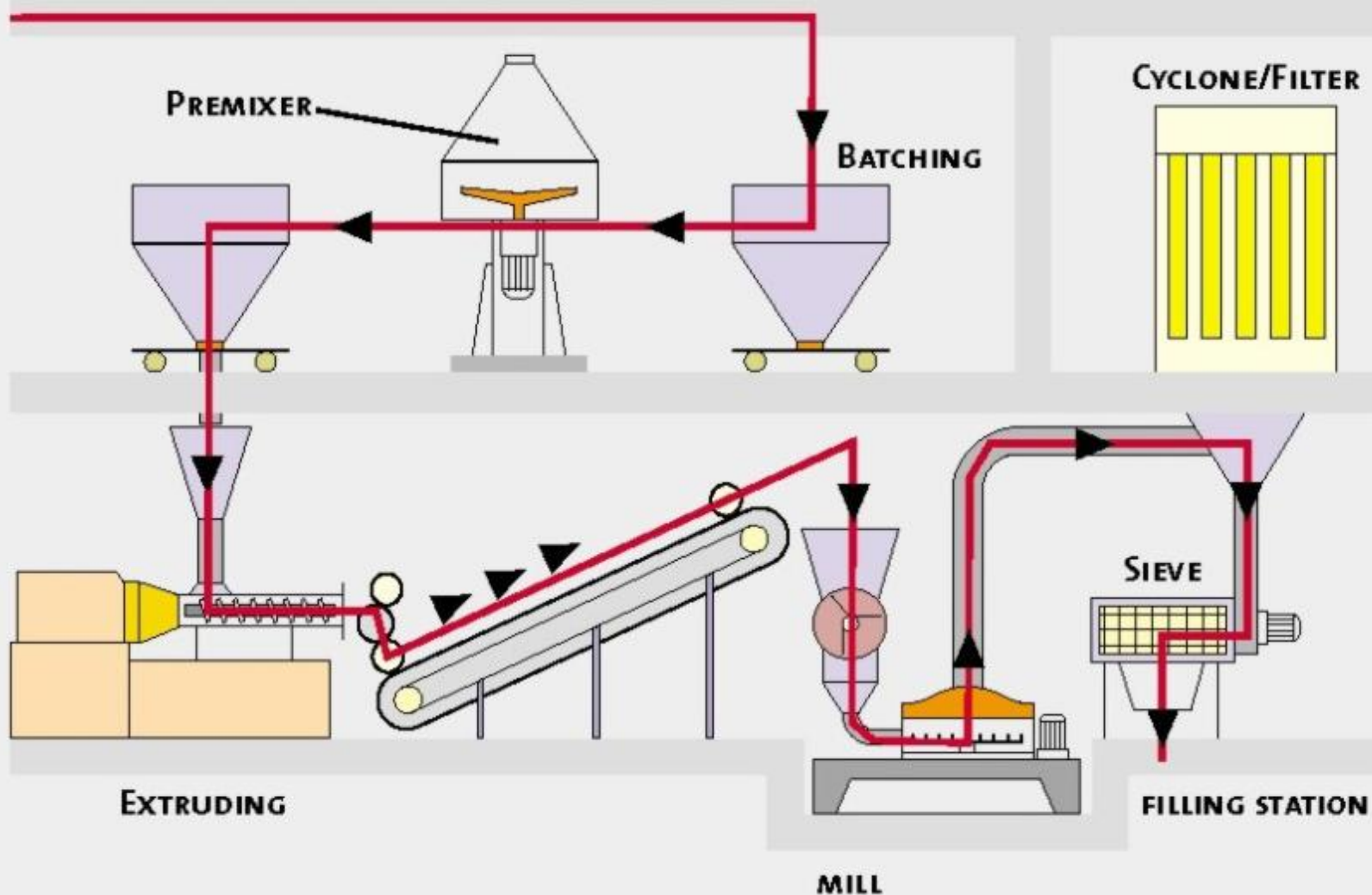
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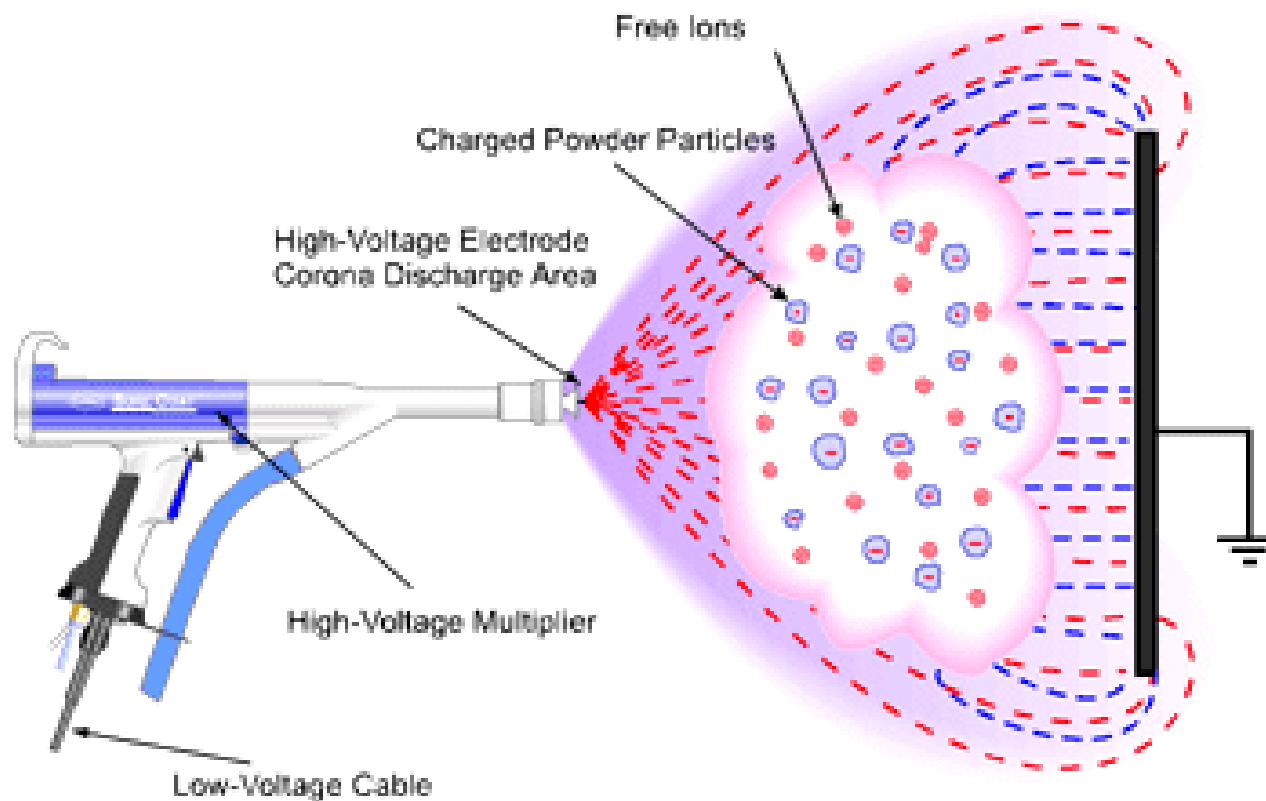
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► BINDER, CURING AGENT, PIGMENTS, ADDITIVES

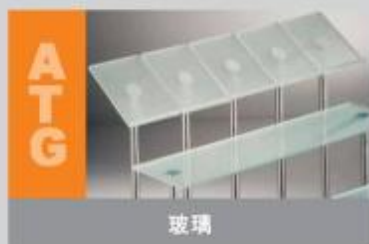




# Corona Charging System



## 老虎公司目标产业群/ATG



TIGER APPLICATION TARGET GROUPS / ATG





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## MDF POWDER COATING APPLICABILITY

1. Pre-Heating Process
2. Moisture content of MDF
3. Additives in the MDF
4. Conductive Primers



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## MDF POWDER COATING ADVANTAGES

1. Environmental friendly, zero VOC
2. Tough surface, high scratch resistance
3. Greater design flexibility, such as various colors and textures, flexible edge profile and embossing surface
4. High efficiency, cost effective
5. Green production process, more than 99% powder can be recycled, no hazardous waste
6. No water consumption during production process

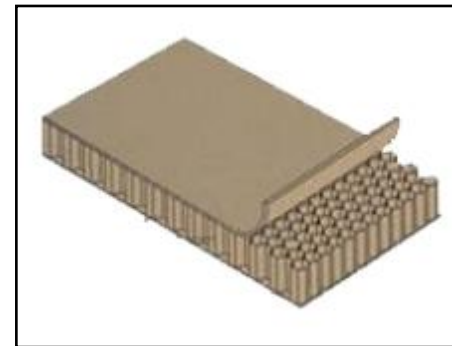
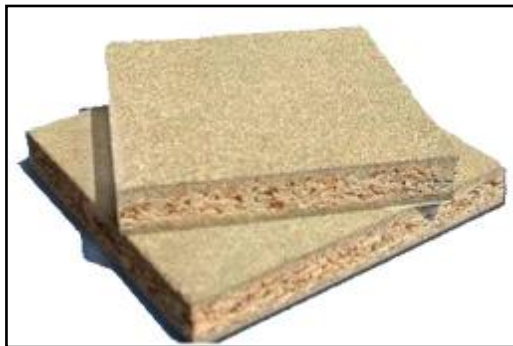
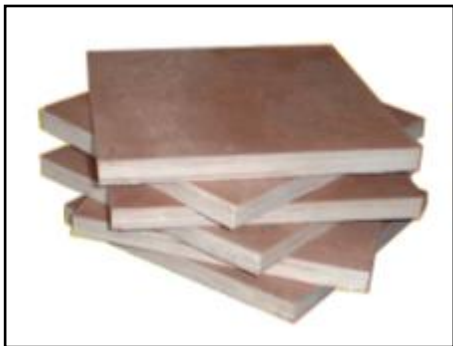


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## MDF POWDER COATING—GREAT POTENTIAL IN CHINA

- 209 million cubic meters Wood Fiber Board
- 49.70 million cubic meters MDF board.
- >2400 million square meters MDF Board using 20 mm thickness
- Particle board even honeycomb board can be used for powder coating in the very near future





## THERMAL CONDUCTIVITY OF DIFFERENT MATERIAL

Material	Thermal Conductivity [W/(m K)]
Aluminium	190
Steel	52
Oak	0.16
Plywood	0.12
MDF	0.07
Asbestos	0.07
Air	0.02

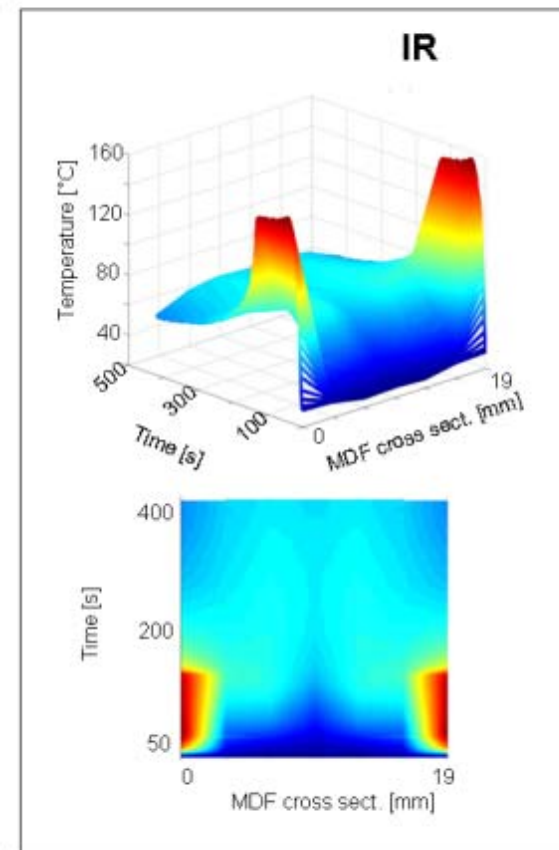
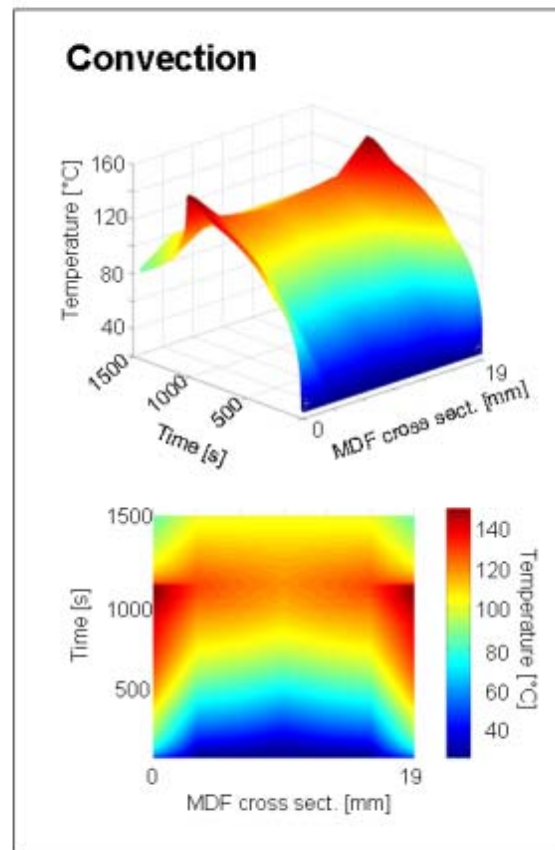
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## SELECTION OF HEATING SYSTEM





## COMPARISON BETWEEN MID WAVE AND SHORT WAVE EMITTER

color		Black	Blue	White
Mid Wave Emitter	Heating up time (s)	32	40	45
	Heating up out putpower density (KW/ m2)	30	30	30
	Holding time stage output power density (KW/ m2)	12	12	12
	MEK-20	Pass	Pass	Pass
Short Wave Emitter	Heating up time (s)	49	134	143
	Heating up out putpower density (KW/ m2)	30	30	30
	Holding time stage output power density (KW/ m2)	12	15	15
	MEK-20	Fail	Pass	Pass



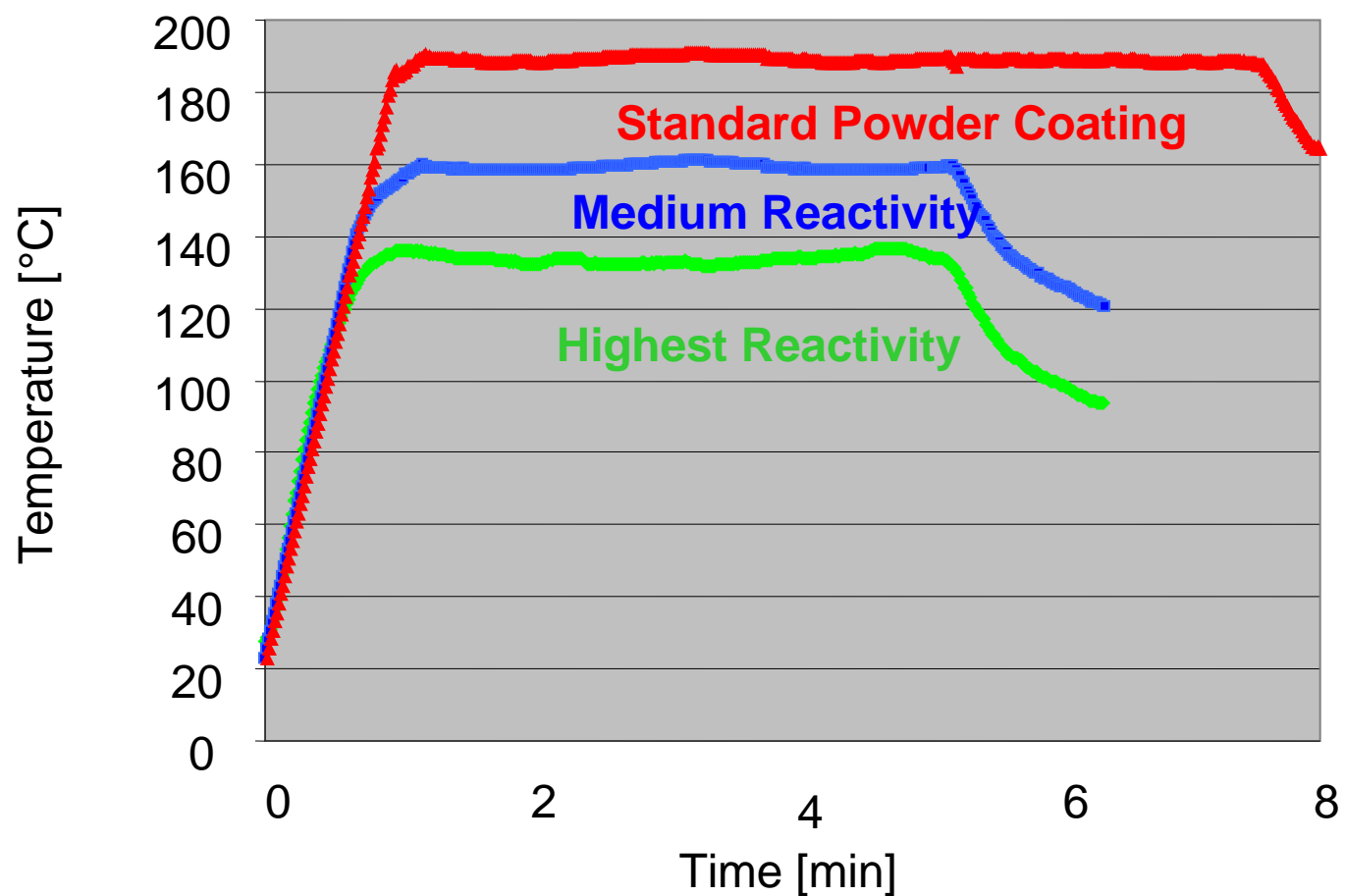
## COMPARSON OF MID WAVE AND SHORT WAVE

- Short wave emitter is not suitable for curing powder coatings on MDF due to the longer heating up time and higher output power density during holding curing temperature stage
- Mid-wave emitter should be used. There is not much difference between different colors. Black powder heating up has the shortest time, and white has longest time, the other colors, e.g. red, yellow, blue and grey are in the middle



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## REACTIVITY OF POWDER COATINGS



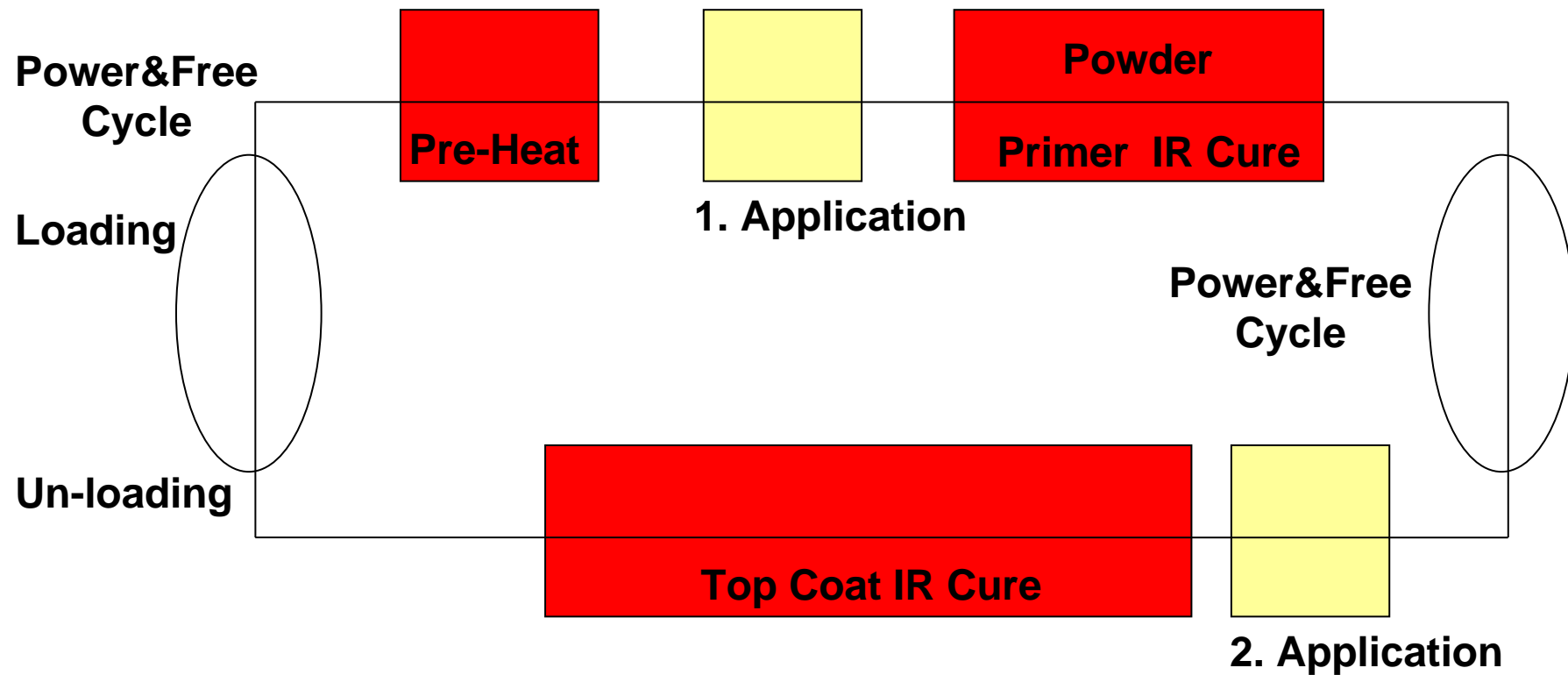
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## Online 2-Coat Powder Coating Line Layout:





## TOTAL SOLUTION

- To make MDF powder coating successful we have to have a total solution on the following aspects:
  1. MDF board quality control
  2. Right powder
  3. Right coating line
  4. Quality assurance





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# Award Winning Technology



## Powder Coating on MDF

*Hang Seng Pearl River Delta  
Environmental Awards*

*Out of 200 submissions for 2010-  
11:*

***Superl won the Silver prize***



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# Design flexibility

## ◆ Color and shape



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## Air quality improvement—Reduction of harmful VOC emissions





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**WOODCOAT**  
Pulverbeschichten von Holzsubstraten

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Green Towers

# Deutsche Bank Banking on Green



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ZIELE

WAS WOLLEN WIR ERREICHEN?

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AUSDRUCK UNSERER IDENTITÄT

PROJEKTSCHRITTE

WAS SIND DIE MEILENSTEINE?

TECHNIK

WAS ERREICHEN WIR WOMIT?





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**谢 谢!!**

**Thank you!!**



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