

OPTIMIZE YOUR OVEN EFFICIENTLY AND AFFORDABLE WITH ATMS's "THE BOX" & LINE SPEED CALCULATOR

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Companies are always looking for ways to optimize processes to increase operating profit. In the Powder Coating Industry, your oven is usually the bottleneck in getting more product coated and out the door. If you had the ability to optimize your oven efficiently and affordably, you could possibly run more product in the same amount of time, which has the potential to increase your Operating Profit. ATMS has just the system to help you to optimize your oven efficiently and affordably.

LINE SYSTEM

Advanced Temperature Monitoring System(ATMS) has developed a real-time temperature profiling system called "THE BOX" and Line Speed Calculator(LSC). When used together your company will have the ability to make informed decisions ***while the part is still in the oven.*** THE BOX with the LSC will help you determine the best line speed to optimize oven cure times for each part. THE BOX gives you the ability to watch the substrate temperature as it travels through the oven, which makes it extremely efficient in helping you optimize your oven. By using THE BOX and LSC you have the potential of paying for it in a short period of time. THE BOX is similarly priced to competitors' USB systems. Our system allows you to ensure your parts are cured to the manufacture specifications, which enhances your quality.

How does THE BOX and LSC work? Enter the numbers in black into the LSC as shown below. Hang THE BOX by the first part that's going into the oven. THE BOX software is recording in real-time the substrate temperature and how long the part has been in the oven. From the real-time data on our software read how long the part has been in the oven once the part reaches PMT (see below). Input this data in the box highlighted blue (OVEN TIME TO PMT). In the example below it was 20 minutes.

LINE SPEED CALCULATOR(LSC)

LINE SPEED CALCULATOR (LSC)			POWDER CURE TIME (@PMT)	BUFFER CURE TIME (SANDMAN)
OVEN CURE LENGHT (ft) 120	LINE SPEED(ft/min) 3.4	cure temp (F) 400	(min) (sec) 10 : 0	(min) (sec) 1 : 0
OVEN RESULTS BEFORE OPTIMIZATION				
OVEN TIME TO PMT (min) (sec) 20 : 0		CURRENT OVEN POSITION(ft) 68.00	TIME LEFT(min:sec) (min) (sec) 15 : 18	TOTAL OVEN TIME(min:sec) (min) (sec) 35 : 18
OVEN RESULTS AFTER OPTIMIZATION		OPTIMIZATION RESULTS FOR PRODUCT		
OPTIMIZED LINE SPEED (ft/min) 3.87		Numbers in black are inserted numbers in red are calculated	parts 1000	parts/ft 2
OPTIMIZED OVEN TIME (min:sec) (min) (sec) 31 : 0			OVEN TIME DIFFERENCE (min:sec) (min) (sec) 4 : 18	TOTAL TIME SAVED (min) (min) 18

-PMT (Part Metal Temperature) substrate temperature needed to start the curing process

-BUFFER CURE TIME - To account for fluctuations in building temperature that may affect substrate temperature before entering the oven. Enter in whatever your process needs.

- Cure time needed is calculated as POWDER CURE TIME (@PMT) + BUFFER CURE TIME. In this example, its 11 minutes

Enter into the LSC numbers that are in black, the numbers in red are then calculated for you.

- OVEN CURE LENGTH – Input the length of your oven for cure time
- LINE SPEED – Input the current line speed for product
- CURE TEMPERATURE - Input the manufacture's powder cure temperature
- POWDER CURE TIME - Input the manufacture's powder cure time
- BUFFER CURE TIME (sandman) – Input the buffer time of **YOUR CHOICE** to ensure powder is cured
- OVEN TIME TO PMT – Input the oven time recorded from ATMS software to reach PMT
- **CURRENT OVEN POSITION** – Calculates distance part has traveled to reach PMT
- **TIME LEFT** – Calculates time left after PMT for powder cure before optimization
- **TOTAL OVEN TIME** – Calculates oven time before optimization
- **OPTIMIZED LINE SPEED** - Calculates new optimized line speed
- **OPTIMIZED OVEN TIME** - Calculates new optimized oven time

- PARTS – Input the number of parts in current run
- PARTS/ft – Input the number of parts hung on your line per ft
- **OVEN TIME DIFFERENCE** – Calculates Cure time before optimization minus Cure time after optimization
- **TOTAL TIME SAVED** – Calculates total time saved on parts processed in current run

The LSC calculates your optimized line speed when you record the OVEN TIME TO PMT taken from our software. You would have saved approximately 18 minutes by using our system in the above example. Imagine the amount of time you might be able to save by using our system on all your products. If you could pick up 3 hours a month that has the potential to pay for THE BOX in several months after that it's profit, year after year. It also helps ensure the quality of your work by knowing the product is cured. THE BOX and the LSC allows you to efficiently optimize your oven at a very affordable price.

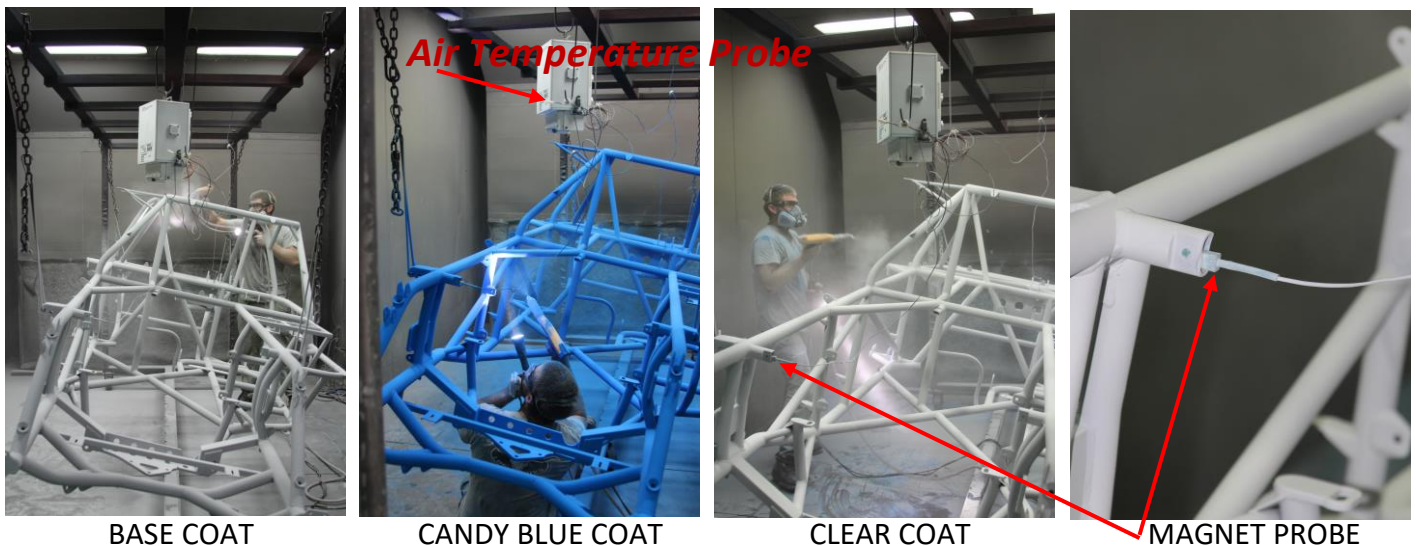
Our wireless system is very robust. With THE BOX sitting in our batch oven (enclosed metal box), which is around 200 ft. away, through several offices and pallet racking system, we still maintain a 45% wireless signal strength. We can add wireless repeaters to extend the range if needed.

REAL EXAMPLE OF HOW USING THE BOX OPTIMIZED OVEN TIME

A company with a line system needs to pre-heat parts before coating, because of outgassing issues. After their first run they were still having some outgassing issues. We took our system and quickly determined the best oven temperature vs time to pre-heat the part. The parts were then coated with excellent results. Now imagine doing this process with a USB system, over and over, waiting for the system to come out of the oven and cool down every time.

DJ Powder Coating(DJPC) operates two batch ovens. DJPC averages around 11 racks a week with a company we had for a year before THE BOX was developed. When we got THE BOX running the first parts profiled were these parts. The parts are fairly thick so they take a while to cure. After running THE BOX, we realized we could cut 5 minutes off each rack. Taking the average number of rack's 11, times 5 minutes we saved 55 minutes a week of oven time. By using ATMS' THE BOX to optimize the oven, DJPC could run 2 more racks a week. Assume \$275.00 a rack @ 2 racks a week for 50 weeks a year, DJPC could run \$27,500.00 more product every year. DJPC periodically runs parts already profiled as a quality check because the ATMS system is easy to use and setup.

ATMS software has timers which can be setup per manufacturer's powder cure specifications. This makes optimizing a part's cure time extremely efficient and easy to see. Unlike competitor systems, ATMS THE BOX and probes can be used while powder coating your parts. Powder that gets cured on THE BOX or probes can easily be removed. The picture below shows THE BOX being used to monitor a race car frame being coated. The frame has a base coat, candy coat and clear coat. The little bit of powder on the probe and THE BOX is also easily removed. There were two substrate probes on the car and one Air probe. The magnet probe is shown below and there is another probe at the rear of the car.



BASE COAT

CANDY BLUE COAT

CLEAR COAT

MAGNET PROBE

ATMS probes are the only probes on the market which give you the ability to coat the part while also monitoring the substrate temperature.



CERTIFICATION

CATLab, a very respected certification facility certifies THE BOX, to show that our system does meet the specifications that we publish. It has also been tested at elevated temperatures to test the “cold junction compensation”.

THE BOX is ISO 9002 certified by an independent facility CATLab. CATLab was the first Instrumentation Service Company in the southeast to earn UL Registration to ISO 9002 and then the first to achieve ISO/IEC Guide 25 accreditation, with two ISO/IEC 17025:2005 Accredited Laboratories.

Results from THE BOX during certification.
400°F was input in all channels.
THE BOX was at room temperature.
Internal temperature was 77.802°F.
Accuracy Specification is +/- .5°F.
Worse case results +.02°F CH1/- .106°F CH6

Sensor	Reading
☑ Internal	77.802 °F
☑ Channel 1	400.021 °F
☑ Channel 2	399.916 °F
☑ Channel 3	399.913 °F
☑ Channel 4	399.921 °F
☑ Channel 5	399.964 °F
☑ Channel 6	399.894 °F
☑ Channel 7	399.956 °F
☑ Channel 8	399.947 °F