

### PALLET MARKING

#### Improve Print Quality and Reduce Cost of Operation

**Application:** Federal regulation mandates pallet manufacturers to mark an International Plant Protection Convention (IPPC) certificate logo on pallets. The IPPC logo certifies that the wood used on its pallets was heat-treated as required by the American Lumber Standard Committee (ALSC).



Currently, pallet manufacturers requiring a compliant IPPC heat-treated logo, resort to coding methods that are labor intensive and unreliable. Pallet manufacturers recognized the need for automated marking coders to improve quality, increase productivity and lower labor cost.

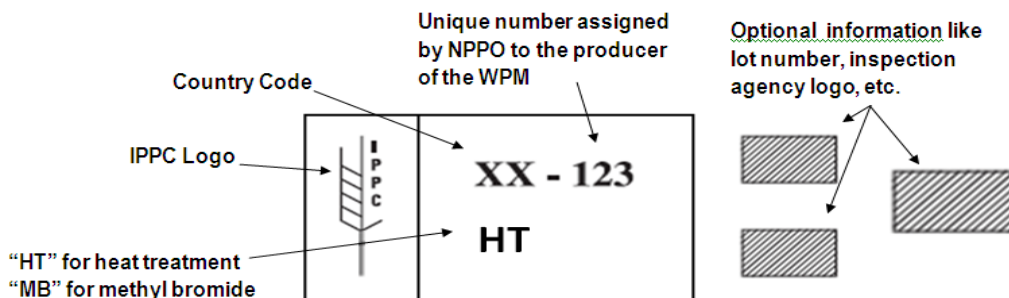
**Industry Requirements:** Wood material must be marked with the IPPC logo and a two letter ISO code for the country that treated the wood. The marking must also include the unique number assigned by the national plant protection organization to the company responsible for ensuring the wood material was properly treated, and either the abbreviation HT (heat treatment) or MB (methyl bromide).

Other requirements:

- Placed IPPC logo in two visible sides on each pallet, preferably on opposite sides
- Mark must be legible and permanent and it must indicate that the article has been treated as required
- Approved by the IPPC to certify that the wood packaging material has been subjected to an approved measure
- As of April 3, 2009, the regulations for the IPPC logo states that the size, font types, and position of the mark may vary as long as it is visible and legible to inspectors. The border may be square or rectangular, providing it is legible. Any agency logo must be outside of the rectangular border.

The **International Plant Protection Convention (IPPC)** is an international treaty organization that works to prevent the international spread of pests and plant diseases. Among its functions is the maintenance of lists of plant pests, tracking of pest outbreaks, and coordination of technical assistance between member nations. The IPPC was created in 1952 by the Food and Agriculture Organization of the United Nations. As of 2009, more than 170 governments have adopted the IPPC standards.

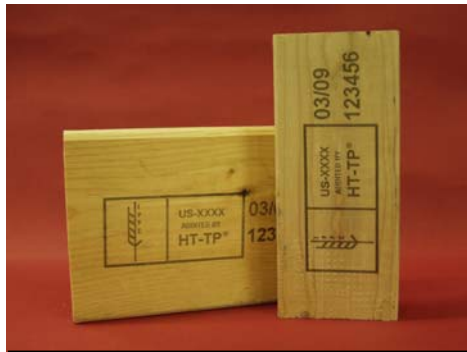
IPPC Certificate Logo Format:



**Current Stamping Process:** Pallet manufacturers currently use a manual rubber stamp or a hot brander iron to apply the IPPC logo. This logo is required to be printed on both sides of the pallet. The addition of a date and lot code is typically required and is hand stenciled onto the pallet. This manual process is often done offline. After the pallet is produced, a line operator will manually apply the mark with a rubber stamp to both sides of the pallet, and then stencil the variable date and lot information.

**Alternative Process:** Matthews' ink-jet printers improve print quality and mark durability, incorporate the date coding and the compliance logo into one application, and automate the marking process, saving time and money.

Matthews' ink-jet printer can be easily integrated into existing production lines. As the pallets are being manufactured, and fed through a conveying system, Matthews' printheads mount directly on the side of the conveyor line and automatically mark both sides of the pallet.



Ink-jet marking offers high print quality and capability of printing all required information in a single pass.

Changing from one message to another is quick and easy via the printer's controller. Important production information, including manufacturing date, lot number, pallet count, and even private label logos can be effortlessly incorporated into the marking. Offline coding and messy, costly rubber stamps and labor costs are completely eliminated.

Matthews offers superior ink formulations with excellent UV stability for outdoor storage, with the ability to work well on all types of wood, including green wood.

Matthews offers two distinct ink-jet technologies, both well suited for the pallet application.

- High Resolution Ink-Jet Piezo Technology - Model IP7000 Controller and 50mm (2") Printheads
- Drop-On-Demand Ink-Jet (DOD) – Model SX32e Controller and 8000/32v Printheads



Hand stamping onto pallets is costly, laborious, and inconsistent.

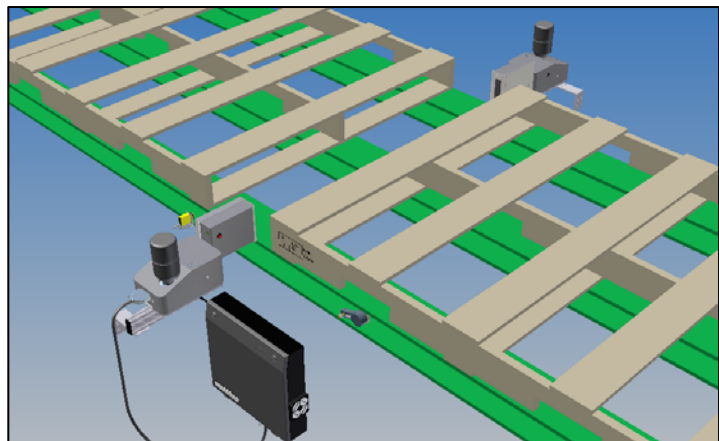


Illustration of a High Resolution Ink-jet Printer (IP7000) marking the IPPC logo, lot number and code, on two sides of a pallet.



### High Resolution Ink-Jet - Piezo Technology Model IP7000 Controller and Two (2) 50mm (2") Printheads

The **IP7000** is an industrial **high resolution ink-jet** printer capable of printing detailed graphics and text at speeds over 250 fpm. This printer codes pallets with a high contrast mark as they move in an automated system. The printheads can be installed on spring loaded brackets to ensure closeness to the product and therefore the best possible print quality.

#### KEY BENEFITS

- Higher resolution mark quality, for a more detailed graphic and accredited agency symbols
- Automate the marking process and eliminate labor cost
- Mark both sides with all required information in a single pass
- Lower cost per mark
- Pigmented ink provides good contrast on all wood types

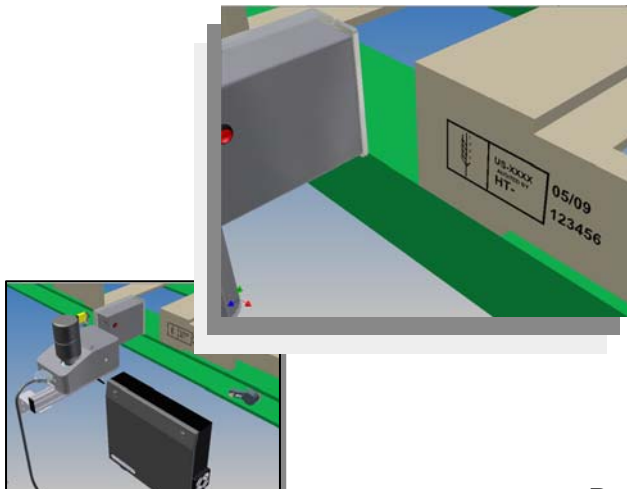
#### SAVINGS

Total IP7000 capital Investment for marking two sides of a pallet is \$18,009.00. Operation annual savings are estimated in \$80,000 to \$100,000 versus stamping and stenciling methods for a production of 5000 pallets per week. Capital investment is offset in about 10 weeks.

#### Equipment - Total Investment \$18,009.00

COST of OPERATION COMPARISON	Stamp & Stencil Coding	IP7000 Ink-Jet Printing
Avg. Cost per Each Pallet Marked	\$0.01	\$0.004
Labor	\$0.30	\$0.00
Avg. Cost for Warehousing, Inventory, Waste, and Variable Print Costs	\$0.01	\$0.00
Total Cost per Pallet	\$0.32	\$0.004
Total Cost per 1000 Pallets	\$320	\$4

IP7000 Controller	1
IP7000 - 50mm Printhead (2") Pigmented Scantrue II ink	2
Printhead Cable 10'	2
Slide Printhead Bracket Assy	2
Industrial 15" Flat Screen Monitor	1
Standard Keyboard with Touchpad	1
Encoder (includes encoder with 15' [4.5m] Cable and Wheel) 1220 ppr	1
Standard Encoder Angle Mounting Bracket	1
Diffused Photocell w/ Bracket	1



### Drop on Demand Ink-Jet - Valve Technology Model SX32e Controller and two (2) 8000/32 Valve Printheads

The DOD **SX32e** is an industrial designed **drop on demand valve ink-jet** printing system capable of printing up to a 32V pattern from each printhead mounted on each side of the production line. This technology is robust for very adverse installations, including being very tolerant of extended distances from the printhead to the pallet, defined as throw distance of the ink. This system has a variety of inks available including inks for wet, green wood.

#### KEY BENEFITS

- Automate the marking process and eliminate labor cost
- Great print distance from printhead to pallet
- Variety of inks available for wet, green wood
- Good UV stable ink, for product legibility after being stored outside
- Mark both sides with all required information on a single pass
- Lowest cost per mark

#### SAVINGS

Total SX32e/8000 capital Investment for marking two sides of a pallet is \$18,508.00. Operation annual savings are estimated in \$80,000 to \$100,000 versus stamping and stenciling methods for a production of 5000 pallets per week. Capital investment is offset in about 10 weeks.

COST of OPERATION COMPARISON	Stamp & Stencil Coding	SX32e Ink-Jet Printing
Avg. Cost per Each Pallet Marked	\$0.01	\$0.002
Labor	\$0.30	\$0.00
Avg. Cost for Warehousing, Inventory, Waste, and Variable Print Costs	\$0.01	\$0.00
Total Cost per Pallet	\$0.32	\$0.002
Total Cost per 1000 Pallets	\$320	\$2

#### Equipment – Total Investment \$18,508.00

I-Mark SX32e Control Unit	2
8000 Printhead – 32 Valve Midi Waterbased Ink (SCP300A)	2
Printhead Cable 8' (2.5 mm)	2
Ink & Cleaner Module – 2 x 1 liter bottles	1
Standard Connection Kit for 2 Printheads w/50' Tubing	1
Encoder 16' (5m) cable, 5000 ppr	2
Spring Loaded Encoder Holder	2
Wheel for Encoder .2 m circumference	2
Photocell with 10' (3m) cable and bracket	2

