



PLASTIC PALLETS

Made Profitable

SMART Ideas. SMARTER Results.

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Plastic Pallets Made Profitable

Manufacturing plastic pallets is very profitable with the right equipment, raw material, knowhow, and business model. This paper will seek to explain how this is accomplished. In doing so, we will discuss these key cost components to success:

EXAMPLE CONVERSION COST CALCULATOR

100% RECYCLED PLASTIC

Machine or System Sales Price	\$	1,500,000
Number of pallets or Parts Per Hour		25
KWH for the Machine or System		250
Price per KWH	\$	0.10
Labor Rate	\$	20.00
Estimated Resin Price Per Pound	\$	0.30
Part or Pallet Weight (lbs)		40
AMORTIZATION		
SALES PRICE/7 YRS/52 WEEKS/7 DAYS/24HRS/# PALLETS PER HOUR		
	\$	0.98
LABOR		
LABOR RATE / # PALLETS PER HOUR		
	\$	0.80
OVERHEAD		
LABOR RATE X 2.5 / # PALLETS PER HOUR		
	\$	2.00
UTILITIES		
TOTAL KWH X KW COST / # PALLETS PER HOUR		
	\$	1.00
RESIN COST PER PALLET		
RESIN COST X PALLET OR PART WEIGHT		
	\$	12.00
TOTAL COST PER PALLET OR PART		
	\$	16.78

EXAMPLE CONVERSION COST CALCULATOR

100% VIRGIN PLASTIC

Machine or System Sales Price	\$	1,500,000
Number of pallets or Parts Per Hour		25
KWH for the Machine or System		250
Price per KWH	\$	0.10
Labor Rate	\$	20.00
Estimated Resin Price Per Pound	\$	0.65
Part or Pallet Weight (lbs)		40
AMORTIZATION		
SALES PRICE/7 YRS/52 WEEKS/7 DAYS/24HRS/# PALLETS PER HOUR		
	\$	0.98
LABOR		
LABOR RATE / # PALLETS PER HOUR		
	\$	0.80
OVERHEAD		
LABOR RATE X 2.5 / # PALLETS PER HOUR		
	\$	2.00
UTILITIES		
TOTAL KWH X KW COST / # PALLETS PER HOUR		
	\$	1.00
RESIN COST PER PALLET		
RESIN COST X PALLET OR PART WEIGHT		
	\$	26.00
TOTAL COST PER PALLET OR PART		
	\$	30.78

Why is plastic raw material cost so important?

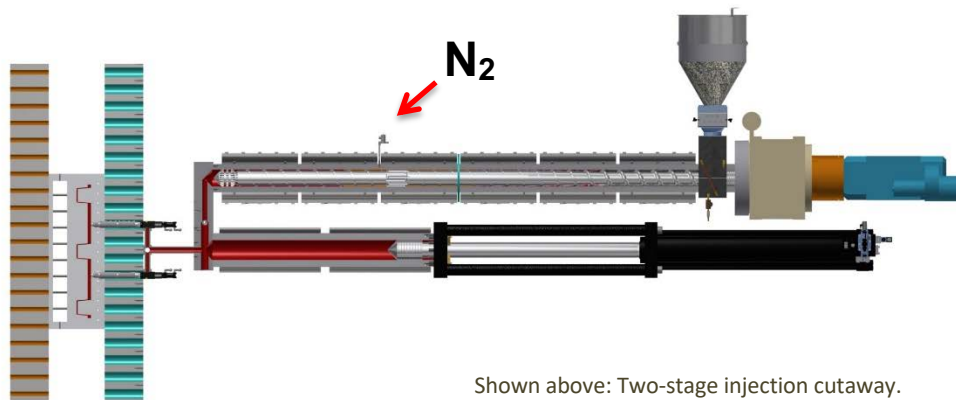
The plastic raw material cost is by far the greatest cost component of the pallet ranging from 60-90% of the total cost to produce the pallet. The most common plastic raw materials are polyolefins including high density polyethylene (HDPE), low density polyethylene (LDPE), or polypropylene (PP). They all have good physical properties, chemical resistance and are sustainable. They are all available as virgin plastic or as



Shown above: Recycled Flake HDPE

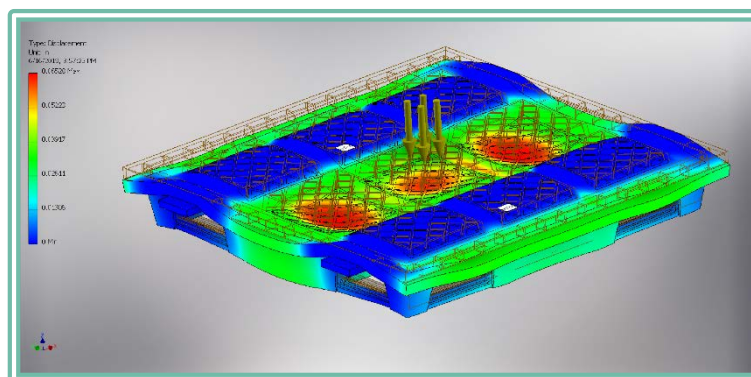
recycled plastic. As recycled plastic they can be in a more costly expensive pelletized granular form or in a less costly flake form. Virgin can be blended with recycled or either can be processed 100% by itself. Additives for stiffness, impact resistance, flame retardancy, and other properties are common. Alloys of different materials are also common. Comingled plastics including crystalline type plastics are achievable but less common.

Wilmington Machinery has designed its' injection molding machines to accomplish all of these raw material combinations. Its' machines have extruders with double mixing features that produce a homogenous highest quality melt mix from even the lowest cost flake form recycled materials.



This capability is essential to successful molding of these materials. It has a laboratory molding machine dedicated to proving raw material capabilities, prototyping and other services to assure pallet performance success.

Wilmington Machinery also provides plastic pallet design services that minimize pallet cost through weight reduction and predicted pallet performance (i.e. dynamic, static, racking load capacities, etc.). This service is enhanced by over 40 years pallet design experience plus the use of software tools (FEA, etc.).



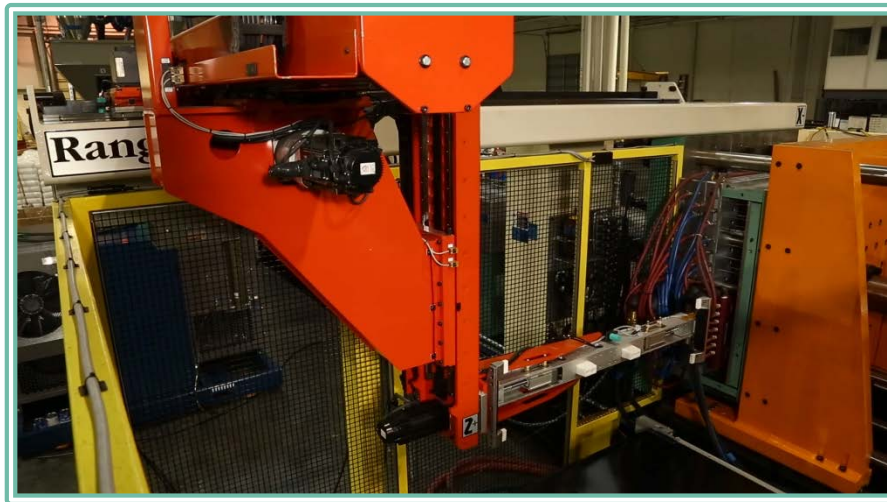
The Wilmington Machinery technology for plastic pallet molding is the low-pressure structural foam injection molding process. Most important is the foaming of the plastic for weight reduction, high stiffness to weight ratio, long machine and mold life, and of course strong, light and low-cost pallets! The molding machines are made for single molds, two molds, four molds and more. They produce from 200,000 – 800,000 pallets per year of the same or different sizes. Most important, they are designed and built to minimize plastic raw material costs by utilizing the lowest cost recycled materials and plastic density reduction. And, they last for on average of more than 20 years because of the low-pressure molding technology of Wilmington machines.

Why must labor cost be minimized?

Labor cost compared to raw material cost is a lesser cost component of the total cost of producing the pallet. It is however a cost that needs to be minimalized through automation, minimal operation skill level and multitasking of operators.

Wilmington Machinery has designed its' pallet molding systems for maximum automation including robotic pallet removal from the molding machine, conveyance of the pallets, and stacking of the pallets.

Additionally, the blending, mixing, and loading of the plastic raw materials and other services to the molding machine such as chilled water for mold cooling and Nitrogen gas dosing for foaming the plastic are all accomplished without the use of labor.



Shown above: Robotic pallet removal

Wilmington Machinery's intuitive controls for the molding machine and accessories provide the semi-skilled operator with fault detection alarms/diagnostics. The complete and well written machine manual provides full information for the operation, care, and maintenance of all components. Factory training at time of purchase plus ongoing support of operating personnel are provided by Wilmington engineers for troubleshooting of system components and processing. All of which is provided to support the semi-skilled operator.

Operators in addition to tending one or more pallet molding systems typically multi-task including performing secondary operations, logistical tasks, documentation and more. All of which seeks to minimize labor costs.

Why can factory overhead be a significant cost?

Factory Overhead can be a significant cost especially for the standalone, one machine plastic pallet molding operation. That is, where there is a factory with some warehousing and a management team however small. It can reach as much as 250% of labor and typically is the second highest cost component next to the raw material cost.

Wilmington Machinery has designed its' pallet molding systems for minimum factory floor space. It provides the support services described in the labor cost section of this paper to help small pallet molding operations minimize the management/technical team. To minimize overhead, the factory size must be small to minimize utilities and costs per square area (foot, meters). Outdoor storage of finished pallets is common. Just in time delivery of raw materials and finished goods is helpful.



Shown above: Stacks of plastic pallets

When pallet molding be part of a larger operation, the factory overhead still remains a significant cost component dependent upon how it is applied to the pallet molding operation unit. In any case, factory overhead is a cost that requires control and a molding system that minimizes requirements.

How significant are utility costs?

Utilities are typically a lower cost component of the total pallet cost compared to the raw material and factory overhead costs. Electrical costs are the greatest of utility costs and vary in different regions (places) in the world.

The most significant electrical cost for molding plastic pallets is the cost to melt the plastic material. It is approximately 80% of the entire molding system electrical cost.

Wilmington Machinery like most injection molding machines melts the plastic in a single screw electrically driven extruder. Its' extruders are carefully designed to maximize the number of pounds (kg) per hour per horsepower. The hydraulic components of the machine are carefully chosen for maximum efficiency. Accessory components such as mold chilling, resin handling, etc. are also chosen for energy efficiently.

Efficiency is the best way to reduce utility costs. An efficient molding system is best choice!

Turnkey Solutions

By now, you should have a good idea of what it takes to be profitable producing plastic pallets.

Wilmington Machinery stands ready to provide you with an engineered solution that will assure your immediate and long term success at plastic pallet making.

Our offer is complete including pallet design, molding machine, molds(s), accessories, knowhow, training, startup, and ongoing support. And, we have been doing this for over 40 years.



Shown above: PM-1S Turnkey System