kiln-direct.com®

Real lumber kilns, that just happens to be small.

Installation guide for kiln-direct's Small Lumber Kiln

(and small side-loaded pallet/firewood kiln)

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kiln-direct.com

Providing the lumber industry with quality kiln drying equipment and knowledge. Helping you build a better kiln more economically.

October 2008

Dear Sir.

Thank you for choosing our small lumber kiln design. This guide should provide you with all the details for installing our small lumber kiln. This unit comes ready to be placed on a concrete foundation. The unit is pre-wired and only need to have the power and gas supply connected plus a few other details. It is really as easy as placing the kiln on the concrete foundation, attached it, connect the electric and gas. Then a Kiln-direct service technician arrives for about two days to complete the installation, teach you how to operate this before we start a test run together.

We believe this complete kiln design in one portable unit offers the best combination of: Large loading capacity, low cost of operation, low initial investment, and future portability (should this be needed). The portable design also makes leasing it easier. The main advantages of the portable complete kiln design lies in the fact that you have very little on-site preparation for this system. You can often be in operation with one or two weeks of delivery, provided all the local conditions have been planed well.

For more general information about this pallet kiln, please visit: www.kiln-direct.com/smalllumberkiln.html

General time line for kiln installation:

1. During ordering you should have considered which side the controls and gas connection show be located. You quote confirmation should specify this. The controls and gas connection will be placed on either the right or left side when you are looking at the main door. (drawings in the back also show location)
2. The unit has been ordered and you will begin planning for the foundation. (Page 4 and drawings in the back)
3. Begin planning the power supply and communication to the office. All the kilns come with a wireless communication module, which will allow the kiln to communicate with the office computer without a land line. If the distance is too great or too many obstacles exist between the two points you may have to go with the wired communication. (Page 7)
4. Begin planning for the gas supply installation. This can be planned prior to the arrival of the kiln and will help us get the kiln operational faster. Make sure you are running the gas line to correct location (left or right side of kiln. (Page 8)
5. The kiln arrives on a custom designed trailer. In most cases, the truck driver can be helpful in getting the kiln placed on the foundation. On a few occasions however, we may have to use independent truckers who are not as familiar with the kiln. In either case, you can handle the kiln using small forklifts and loaders. IMPORTANT: Do not move the kiln with the door open. You will also have to fasten the kiln to the foundation with concrete anchors. (Page 6)
6. The electrician will connect the power supply and communication cable (if needed). (Page 7)
7. The gas company will connect the gas supply. (Page 8)
8. A Kiln-direct technician will arrive after the power and gas has been installed to complete the installation, teach the operators and often help you get the first kiln charge loaded and initiate the drying process.
9. The kiln operator is now ready to use the kiln. This whole installation process can take as little as one to two weeks.

The installation process has been designed to keep the overall installation cost to a minimum and allows us to get the kiln operational as economically as possible without encountering any unpleasant surprises after you have purchased the kiln. This detailed manual is also an attempt to make the installation easier and more efficient and to improve the overall planning of getting the kiln operational. We hope you understand the mutual benefits of working together during the installation process.

Meeting local regulation:

Foreword about meeting local regulation:

Meeting special local regulations may not be a requirement for you, but for many of our customers there are local regulations that need to met. The struggle remains who should pay to meet specific local codes and regulation? It is not fair to have people in Texas pay more for a kiln, because the legislature in Oregon has forgot to exclude equipment from a law designed to improve modular home construction. Every single year several states change, and often increase, regulation on equipment installed for industrial purposes; up to and including requiring structural calculation for the steel structure of the chamber by independent state authorized engineer. All this increases the cost of installing kilns and we have decided, that we do not want to raise the prices on all customers, which would put us in a disadvantage in low regulation areas.

Our side-loaded pallet kiln design has been installed in many places. However, only the small model has the best chance of meeting local requirements easily. In a few states, such as OR, WA, CA, ID we have had to add a geographical surcharge due to excessive requirements, such as (but not limited to) State building inspector visits to our facility at our cost. The extra deep and extra wide models do not have the documentation finished to help

I am sorry if your state, county, city, township, or renegade inspector causes you additional costs to comply. But I hope you understand our position and place the blame where it belongs with local legislative and administrative organizations.

What we have done to create a standard that will meet as many local requirements as is practical:

As you will see below we continue to raise our standard to meet the ever increasing and demanding regulation. This has led us in early 2008 to comply with NFPA 79 regulation. In addition, our side-loaded kilns can all meet 120mph wind load (140mph optional reinforcement) and 50 psf snow load. First we guarantee these loads for all complete side-loaded models; however, certain municipalities require full engineered stamped building calculation of the structure alone before we add the sheeting and rigid foam Only the standard small side-loaded model is ready with engineered calculations.

All Kiln-direct side-loaded kilns have been designed, constructed, and built to meet the following standard:

Electrical:	All electrical wiring and installation complies with NFPA 79. We do use IEC standard presentation methods, which you must accept officially. NFPA 79: Electrical Standard for Industrial Machinery, 2007 Edition. NFPA = National Fire Protection Association.
Structural:	Kiln-direct guarantees that our chamber can withstand 120 mph windload and 50 psf snowload. However, if your local authority requires the aluminum structure to meet this standard independent of the completed chamber then we can offer the standard model.

How we keep cost low for our mutual benefit.

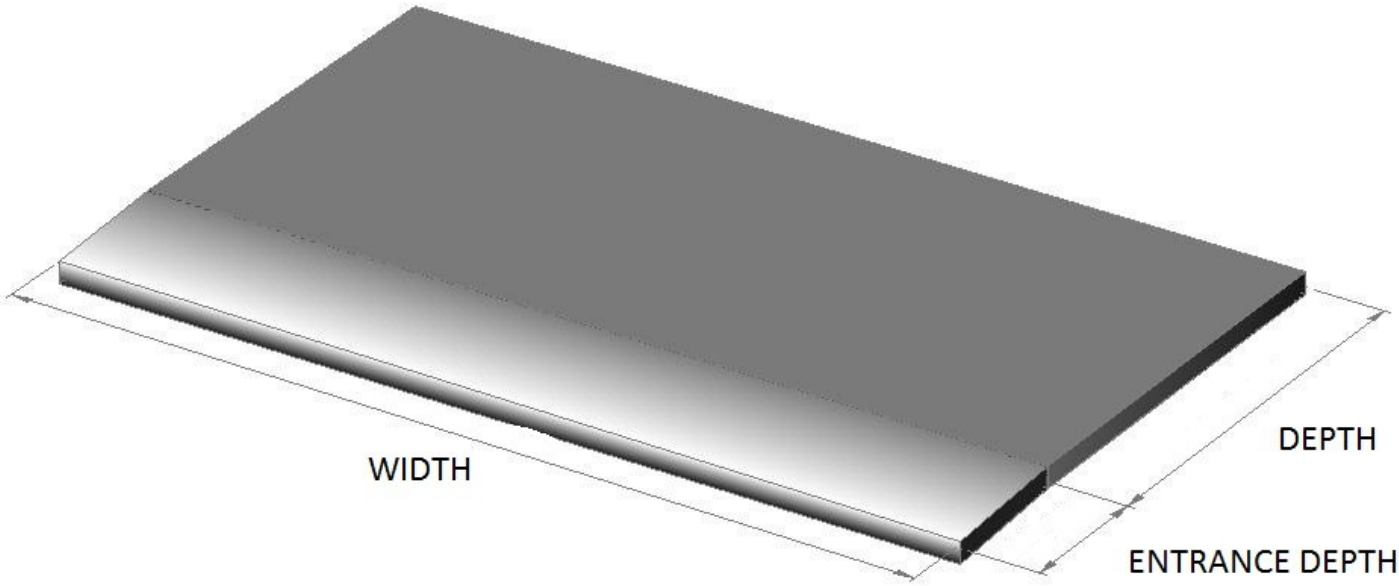
First we want to keep our and your cost of meeting local regulation down. The cost of getting local permits and meeting specific local regulation is your responsibility. However, see these examples on how we help both of us reduce expenses:

- If a local inspector/regulation requires a state certified electrical engineer to evaluate the equipment in order that they can permit the kiln to operate, then you are responsible for finding the electrical engineer that can perform the independent regulation. If you can arrange for this person to meet us during the installation visit we will make minor changes at no extra costs. However, if we need to return to make changes this will be billed to you or you can have a local electrician perform the changes at your cost.
- If local inspector/regulation requires a state certified structural engineer to provide stamped engineered drawings for the steel structure alone, then it will be for your cost. However, we have economical solution for 30-40 states, so contact us first.
- If NFPA 79 standard is not acceptable a local electrician will have to perform changes to meet the local codes. Any documentation we need to generate specifically for this is free, but the work on-site by kiln-direct or local company is for your costs.

Concrete foundation:

The foundation is normally a simply flat concrete surface, but in a few cases where higher clearance inside is needed you may place the kiln on a raise footing. This will add additional cost to the kiln doors or make an extension you can remove and place using a forklift.

Mono level concrete foundation:
The foundation can either be the exact size of the foot print of the kiln or it can be larger than the kiln. This will depend on your situation. We can advise you with our suggestions, but in the end it will be your choice to make.



Foundation foot print dimensions.			
	Width	Depth	Entrance depth
Standard: (8mbf)	28ft	12ft	Suggested 4 ft
Extra Deep (12 mbf)	28ft	16ft	Suggested 4 ft
Extra Wide (12 mbf)	42ft	12ft	Suggested 4 ft
Extra Deep+Wide (18mbf)	42ft	16ft	Suggested 4 ft
Entrance depth is on the front side of the kiln with the large loading doors. This distance can be any distance over 1 foot, but we recommend a minimum of 4 feet.			
Above width and depth is minimum dimensions for the kiln, but you make it larger so you can walk around the unit on a solid surface.			

Other specifications and suggestions:
We normally suggest a minimum of 2 feet between your existing building and our kiln. But local building codes may require more.

Placing the kiln on the foundation:

The kiln is often pulled directly onto the foundation. But in cases where this is not possible, you can use a couple of fork lifts to move the kiln. When you pick up the kiln, be certain to position the forks near the mounting plates where the wall structure is.

Using the kiln lift jacks or forklift(s) to lift the kiln free of the transport trailer.

After the kiln is lifted up then the Truck and trailer is pulled out before lowing the kiln.

The lower the kiln to the foundation.
You can move the kiln using two forklifts. Here there is one inside and one outside moving it left to the edge of the foundation.

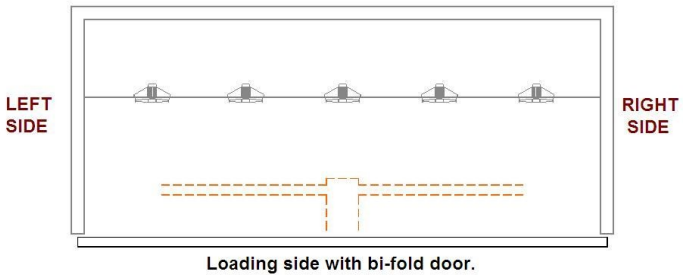
After the kiln has been placed on the foundation you need to anchor it using either mechanical or chemical anchors. We have mounting plates about every 4 feet on the side and back walls as you seen on the picture.

Important:
Before anchoring the kiln look at the main doors to be sure they look square, since this will be difficult to correct after the mounting holes have been drilled.

The space between the kiln and the foundation is often sealed with expansion foam or caulking depending on the gap. If expansion foam is used you will need to paint it with a metal roof coating.

Location of Electrical and Gas connection:

The control cabinet and gas connection can be located on either the left or the right side of the kiln. Your ordering information should specify this.

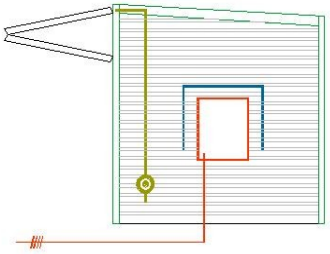


Loading side with bi-fold door.

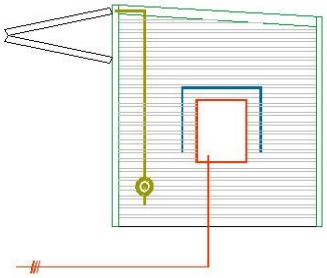
Electrical installation by local contractor:

First pull the three phase wires to the terminals in the lower left corner of the control cabinet. The electrician must install a fusible disconnect on the outside with the ability to be locked out.

Small lumber kiln	**110VAC**	**208VAC**	**230VAC**	**460VAC**
Single phase	10 A	---	---	---
Three phase	---	80 A	60 A	30 A



Then pull the single phase wires to the terminals in the lower left corner of the control cabinet. The electrician must install a fusible disconnect on the outside with the ability to be locked out.



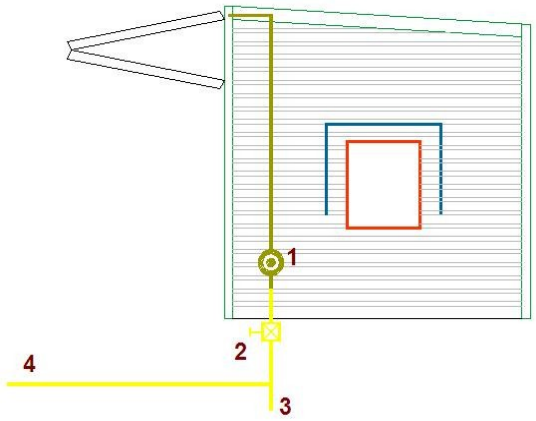
The kiln control system comes with a wireless communication system that connects to the office computer. If the distance is too grate for the communication or too many obstacles in the way you may need a communication cable. For a wired connection pull a CAT5 communication cable to the top right corner of the control cabinet and leave 4 feet inside for our technician. Then pull the cable to the office from which the computer will access the kiln. Leave a minimum of 10 to 15 feet of free wire.

Regardless of the communication method our technician will install the communication module and connect this to the computer plus install the computer software.

Gas installation by local contractor:

View of the side of the kiln where the control shed, heating and venting is located.

The burner is almost always pre-installed from the factory and the local gas company need only to install two regulators and a safety cut-off valve from us and then connect their gas supply line. However, they may need to install a step-down regulator before ours.



Gas line components to be installed on-site:

1: Low pressure regulator (comes with the kiln). Connect your supply here.
2: Manual valve with connection for pilot gas line. (Supplied by customer)
3: Drip leg placed before regulator.
4: Gas supply of either Natural and LP gas.

Name	Model	BTU supply
Small lumber kiln	SLK-271109	300000 btu/hr
Small side-load pallet kiln	SPHT-271109	600000 btu/hr

IMPORTANT ABOUT LOCATION AND INSTALLATION:

WE WILL ALWAYS SUGGEST INSTALLING THE KILN OUTSIDE.

CONSIDER THESE ISSUES WHEN PLANNING FOR THE INSTALLATION:

- Will you need a local building permit. Some municipalities consider it a building and other consider it an appliance. The latter is preferred.
- Does local building codes allow for an oven/kiln to be installed inside.
- Will you require additional installations to meet code, such as sprinkler system.
- Contact a local engineer and possible architect if in doubt.

IF YOU DO PLAN TO INSTALL THE KILN INSIDE A BUILDING OR STRUCUTRE MAKE SURE:

- Local building codes allow this.
- THAT EXHAUST VENTING IS ALWAYS DUCTED TO THE OUTSIDE.

GENERAL CONDITIONS AND WARRANTIES

Niels Jorgensen Company, Inc. stands behind any and all of its product line, namely Kiln-direct.com. Upon installation of a product, Niels Jorgensen Company, Inc. assumes full responsibility for both materials and workmanship of said product up to, and not exceeding, one year. This guarantee is valid in so far as said product is utilized under normal and ordinary conditions. As normal wear and tear is concurrent to the proper use of a given product, Niels Jorgensen Company, Inc. and Kiln-direct.com cannot be held liable for the natural deterioration of a said item due to use.

Niels Jorgensen Company, Inc. liability shall be limited to fixing or replacement of any warrantied equipment or its parts F.O.B. shipping points. Niels Jorgensen Company, Inc. and/or Kiln-direct.com designs kilns per customers specifications and sells any/all necessary equipment therein. We can provide the customer with all necessary equipment specifications for each component; however, Niels Jorgensen Company, Inc./ Kiln-direct.com cannot be held liable for any damage with regard to items, property, or persons not furnished by Niels Jorgensen Company, Inc. and/or Kiln-direct.com.

The installation of the unit is prepared by the customer and finalized by Niels Jorgensen Company, Inc./Kiln-direct.com as detailed earlier in the proposal.

If Niels Jorgensen Company/Kiln-direct.com provides the transportation of this unit to your location, we try to keep the freight cost as low as possible. Although the shipment will be insured, if any minor damage should occur during transport we will reserve the right to repair this on-site to look as new on the outside and seal the inside to meet our standards in making a near air tight chamber. This precaution is an economical advantage for the buyer, since we will be able to provide the transportation at best prices.

General building specifications:

Wind load:	120mph (without any raised footings)
Wind exposure:	C
Snow load:	40 psf.

A lumber kiln should be considered a drying machine or appliance. However, some local authorities and governments may consider this a building and therefore we have designed the kiln for above specifications. We can provide you and local building inspectors with a copy of the building plans and engineering letter from a North Carolina licensed engineer. If additional plans are needed with local engineered stamped specifications, any other unusual request for information, or legal fees comply with local rules we then reserve the right to bill the customer for these expenses +10% administration fee. Special rules apply to Canada, California, Oregon, Washington state, and Idaho, which we will deal with on a case by case basis and there will be an additional fee for these locations.

We hope this installation manual and preparation manual has been informative. If you have any questions or need additional information, please do not hesitate to contact us.

We are looking forward to working with you and your company on completing the installation of the kiln.

Best regards,

Niels Jorgensen
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