Brokk and Bricking Solutions

The Circle of Refractory Maintenance

BRICKING SOLUTIONS
A DIVISION OF BROKK

BROKK®

Safety, Speed, Quality

Bricking Solutions, located in Monroe, Washington in the U.S.A., is the worldwide leader of custom manufactured rotary kiln bricking machines and related equipment. Design and development of a more efficient way to install refractory created the Pneumat-O-Ring in 1966 followed by the Mult-O-Ring in 1974 and then the newest innovation Flat Deck Series of bricking machines in 2004.

Brokk AB, based in Skelleftea, Sweden, is the world's leading manufacturer of remote controlled demolition robots. First designed in 1976, Brokk continues to improve and develop their machine models for use in tough environments. The newest Brokk 260 optimizes power, capacity, and dimension for use in precise demolition within the cement industry.

Working together as subsidiaries of Lifco of Sweden, Brokk AB of Sweden and Bricking Solutions are the two most respected names in refractory tear out and installation equipment. Our synergism as key players in The Circle of Refractory Maintenance system has already met the unique needs of cement plants in over 75 countries worldwide. With our continued focus on minimizing kiln downtime by creating products to improve safety, speed, and quality of every step in your maintenance process utilizing our Circle of Refractory Maintenance System, your kiln will be back in operation quicker and turning profits longer.

It is Bricking Solutions' tradition to use the highest quality craftsmanship and custom design with high strength aircraft aluminum (6061 T6) material. Our in house certified aluminum welders have over 40 years of combined fabrication experience. Our research and development department has a combined 80 years under their belt coupled with over 43 years of custom engineering design experience from our certified, professional engineer. Our worldwide network of agents and dealers are eager and experienced to meet sales and service needs of our customers.

Likewise, Brokk AB continues to use their vast know-how and technical expertise to focus on well balanced machines that are stable during operation as well as transportation. With the combination of a remarkable cutting force of 170 tons and the expansive reach of 5.8 meters Brokk 260 is a perfect match for bigger kiln dimensions. Safety has always been a main priority allowing the operator to control debris removal from a safe distance using the portable, lightweight, and comfortable remote control box. And the machine's electrical power means the operator is at no risk of being exposed to dangerous fumes.

We have both always tried to listen to our customers, bringing their ideas forward allowing us to create kiln maintenance solutions by building products customized to suit their specific needs. Our continued close relationship with our customers creates a partnership that will lead the refractory maintenance industry into the future. It is our desire to include you in that future whether this is the first introduction to our products or a second glance at how we can continue to provide solutions with which to improve your safe working environment, productivity, and bottom line.

Custom Solutions

Kiln access is a critical factor in the smooth operation of your refractory installation. Our kiln access ramps are constructed of lightweight aluminum and are custom designed to meet our customers' needs. Each ramp is designed to hold a forklift loaded with a pallet of brick. Proper kiln access with a lightweight easy to install kiln ramp will increase production, safety, and reduce downtime.

Kiln Access

Tilden/Cliffs Mine's previously used steel ramp took 3 hours to install and their new lightweight aluminum ramp took 30 minutes.

Read more case studies and testimonials at www.brickingsolutions.com

Features and Benefits
Designed for working demolition equipment
Full access ramps as well as Personnel Ramps are available
Install in less than one hour
Lifting lugs maximize use of forklift installation
Bolts and pins connect modular sections for easy assembly
Lightweight T-6 aluminum construction
3/8" (9mm) non-skid diamond plate decking
Designed with removable heavy duty fall guards
Radius nose matches kiln
Supports 15,000 lbs (6810kg) with 3:1 safety factor
Stackable design for easy storage

NOTE: Ramp bridge sections longer than 20ft (6M) may require optional loading devise or our assistance to come up with the best approach

The inside of a kiln during an outage is a hostile and dangerous environment. When cooling down, coating in the burn zone cools at a different rate than the brick and kiln shell. This causes seperation and cracks causing coating to tumble down with hardly any warning. When it is not practical to use a Brokk to remove the coating, we developed the Safety Inspection Cage and Personnel Protection Tunnel to safe guard workers during inspections and repairs.

Kiln Safety

R&D Partner Essroc Picton have been successfully using our Personnel Protection Tunnel and Safety Inspection Cage since October 2003

Read more case studies and testimonials at www.brickingsolutions.com

Features and Benefits

Designed and certified by a professional engineer
Rated for 250 lbs (113.5kg) dropped from 24 inches (60cm) with 3:1 safety factor
Shock absorbed columns increase safety
Open air construction for ease of inspection without leaving the “safe zone”
5ft cages easily carried by 2 people using flip-up handles
Shoulder harness is standard for increased stability
Adjustable legs for varying surfaces and thickness of coated kiln
Fabricated from 6061 NT-6 aluminum
Several transporter options for larger cages and tunnel systems

Utilizing an access ramp Brokk demolition machines provide safer, more precise, and quicker refractory tear out than other methods. A remote control system allows the operator to stand clear of vibrating equipment and falling debris. Electically powered the Brokk eliminates hazardous fumes creating a safer work area.

Kiln Tear Out

CMPC in Santa Fe, Chile reduced their tear out time from 120 hours with manual removal techniques to 30 hours utilizing a Brokk Demolition Robot

Read more case studies and testimonials at www.brickingsolutions.com

Features and Benefits

Remote controlled provides safe work area
Electrically powered reduces hazardous fumes
Designed for confined spaces
Lightweight enough to fit in most elevators
Multiple accessories for every job
Articulated arm reduces chances of kiln shell or good brick damage
Meets International Standards

Brokk 50
(Electro hydraulic driven)
Equipped with:
SB52 with hammer, 3 piece boom 245 rotation, extra hydraulic function, auto greasing, hydraulic outriggers, remote control box w/30ft cable, quick hitch, operator manual, spare parts book, & rubber tracks.

Brokk 90
(Electro hydraulic driven), Rev E
Equipped with:
SB150 with hammer, 3 piece boom 245 rotation, extra hydraulic function, automatic greasing, hydraulic outriggers, remote control box w/30ft cable, quick hitch, operator manual, spare parts book, & rubber tracks.

Brokk 180
(Electro hydraulic driven), Rev D
Equipped with:
SB200 with hammer, 3 piece boom 360 rotation, extra hydraulic function, automatic greasing, dozer blade, remote control box w/30ft cable, quick hitch, operator manual, spare parts book, & rubber tracks.

Brokk 260
(Electro hydraulic driven)
Equipped with:
SB302 with hammer, 3 piece boom 360 rotation, extra hydraulic function, automatic greasing, hydraulic outriggers, remote control box w/30ft cable, quick hitch, operator manual, spare parts book, & steel tracks.

Brokk 400
(Electro hydraulic driven), Rev B
Equipped with:
SB552 with hammer, 3 piece boom 360 rotation, extra hydraulic function, automatic greasing, hydraulic outriggers, remote control box w 30ft cable, quick hitch, opeartor manual, spare parts book, & rubber or steel tracks.

Pupose Built | Remote Controlled | Electic | Compact | Light-weight | Precision | Flexible

	Brokk 50	Brokk 90	Brokk 180	Brokk 260	Brokk 400
Weight w/o attachment:	1037 lbs.	2,050 lbs.	4,190 lbs	6,724 lb.s	10,583 lbs.
Length minimum:	54.3” (4’ 53”)	72” (6’)	98” (8’-2”)	146” (12’-2”)	164” (13’-8”)
Height minimum:	37” (3’ 1”)	48” (4’)	54” (4’-6”)	60.2” (5’)	67.8” (5’-7”)
Width minimum:	23.2” (2’)	31” (2’-7”)	31” (2’-7”)	47.2” (4’)	59” (4’-11”)
Width Outriggers Down:	45.3” (3’ 78”)	63” (5’-3”)	64” (5”-4”)	88” (7’-4”)	96” (8’)
Reach Overhead w/hammer:	118” (9’ 83”)	156” (13’)	186” (15’-6”)	243” (20’-8”)	278” (23’-2”)
Working Area (radius est.):	98” (8’ 17”)	142” (11’-10”)	179” (14’-11”)	270” (23’-6”)	
Reach Forward (est.w/ham.):	70” (5’ 10”)	108” (9’)	138” (11’-6”)	193” (16’)	209” (17’-5”)
Reach Down (est.w/ham.):	36” (3’)	51” (4’-3”)	79” (6’-7”)	126” (10’-6”)	157” (13’-1”)
Motor Output:	4.5 kw (7.5 hp)	11 kw (15 hp)	185 kw (25hp)	22 kw (30hp)	30 kw (41hp)
Generator Recommended:	20 kw	25 kw	45 kw	60 kw	60 kw
Voltage/Freq.:	480v / 60hz	480v / 60hz	480v / 60hz	480v / 60hz	480v / 60hz
Motor Amp. Max.:	11A	23 A	38 A	45 A	59 A
Power Cable gauge min:	12	10	8	8	6
Oil Pressure min:	2610 psi.	2400 psi.	3500 psi.	3500 psi.	3500 psi.
Oil Flow:	4.8 gal/min	11 gal/min	20 gal/min	25 gal/min	42.3 gal/min
Attachment Weight max.:	154 lbs.	330 lbs.	550 lbs.	871 lbs.	1,320 lbs.
Break Out Force:	1,663 lbs.	3,712 lbs.	8,052 lbs.	na	20,752 lbs.
Lifting Capacity max:	na	1452 lbs	4400 lbs	na	8250 lbs
Fully extended:	na	374 lbs	814 lbs	na	1,600 lbs

Do your own profitability calculation

Conditions

Demolition of coating and lining, - kiln section (m)

Diameter of the kiln (m)

Daily production (tonne) — Fill in the current daily production

Time savings

Time requirements, man. work (days) — Enter the estimated time required to demolish the coating and lining of the kiln in question, using your current method.

÷4=

Time requirements, Brokk — Divide above figure by four.

Decreased downtime — Subtract »Time requirements, Brokk « from »Time requirements, manual work«.

X

No. of downtime periods per year

=

Total decreased downtime — Multiply decreased downtime by no. of downtime periods, the result is your »Total decreased downtime«.

Result and profit per year

Decreased downtime per year

X

Daily production

=

Increased annual production — Calculate the increased annual production, by multiplying the decreased downtime value by the current daily production.

X

Net profit per tonne of cement — Multiply above value by your »net profit per tonne of cement«.

=

Profit per year — The resulting amount is your annual profit.

In addition, please refer to the example below. You can also contact your nearest Brokk representative for a complete profitability calculation.

Calculating profitability*

Conditions

Demolition of coating and lining - kiln section	25.0 m
Diameter of the kiln (m)	5.6 m
Daily production (tonne)	7,500 tonnes

Time savings

Time requirem., man. work (days)	4 days
Time requirements, Brokk	1 day
Decreased downtime	3 days
No. of downtime periods per year	2 periods
Total decreased downtime	6 days

Result and profit per year

Decreased downtime per year (6 days) x daily production (7,500 tonnes) = increased annual production of 45,000 tonnes

Net profit per tonne of cement $12 US dollars

Profit per year **$ 540,000 US dollars**

* Brokk compared to manual demolition in the cement industry. Estimate made at a cement works in Thailand.

Tear-out is fast and easy with a Brokk, but removing debris can slow down the process because of the round kilns. The Muck-It Bucket's radiused bottom was custom made to allow full surface contact. Universal quick hitch installs on most skidsteers and its hardened radiused front edge helps to penetrate rubble decreasing machine and operator impact making it the most efficient and safest method for removing debris.

Debris Removal

Combining the power of a Brokk Demolition Robot for tear-out and using the Muck-It Bucket for debris removal, St. Lawrence Cement shaved 24 hours off of previous outages.

Read more case studies and testimonials at www.brickingsolutions.com

Features and Benefits

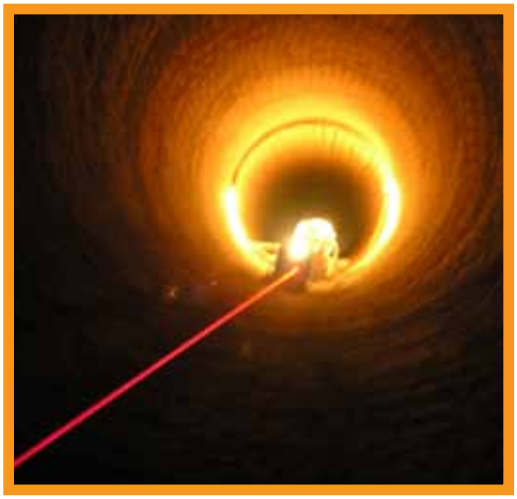
Universal quick-hitch for most models of skidsteers (custom hitches available)
1/2” Wear plates on sides and bottom ensure long life
Radiused bottom matches curveture of shell for more efficent loading
1/2” T-1 Steel beveled leading edge increases life and strength
Increase cubic capacity for faster muck out
Radiused leading edge to penetrate rubble and reduce impact

The Radialign met the needs of a continuous demand for a simple accurate method to ensure brick was installed radially aligned. Producing a continuous laser light parallel to the kiln's axis intercepted by a rotating penta-prism device, the Radialign refracts the laser line perpendicular onto the kiln shell's circumference. Points along the kiln can then be marked and used as exact references for brick installation as well as setting a new nose ring.

Brick Alignment

refrAK Bricking Systems S.A. noted the use of an alignment laser ensures the masons have the references necessary to accurately install brickwork perpendicular to the kiln.

Read more case studies and testimonials at www.brickingsolutions.com



Features and Benefits

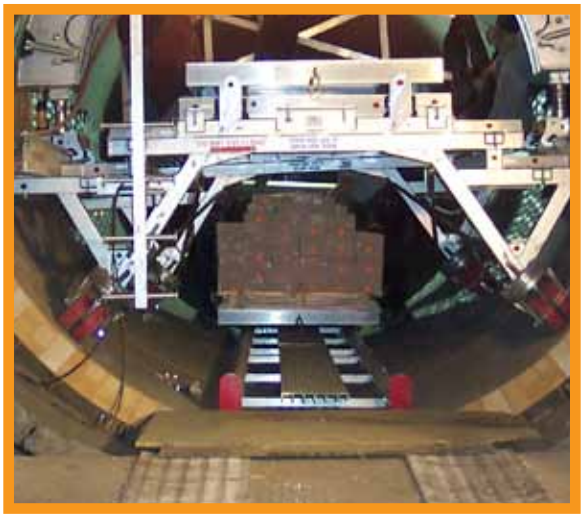
Ensures precise placement of each row of brick which is vital for longer brick life
Radialign can be assembled and ready to use in less than 30 minutes
Durable transport storage container holds the brick alignment device.
Comes standard with rechargeable batters and A/C adapter
Also used to confirm radial alignment of retainer rings

Transporting brick on a pallet not only speeds up refractory installation, but also avoids potential injury and fatigue to workers as well as possible individual brick damage. The Port-A-Trac modular system allows the transport a full pallet of brick into the kiln and under the bricking machine platform. Best used for smaller kilns or when there is no fork truck access under the bricking machine.

Material Handling

Ash Grove in Midlothian, Texas found the addition of a Port-A-Trac supported a pallet of brick for the bedding crew keeping a constant brick flow and increasing productivity.

Read more case studies and testimonials at www.brickingsolutions.com



Features and Benefits

Modular aluminum track can be built to any length using modular 5ft (1.5M) and 10ft (3M) sections
Multiple transfer carts can run along same track
Lightweight track can easily be assembled and manually moved up kiln as brick work progresses
Power winch
Two men can push a 3,000 lbs (1,361kg) pallet of brick up kiln

Transportation of material into and out of a rotary kiln or furnace is critical to the speed of a maintenance operation. Conveyor systems reduces worker fatigue. Exposure to confined spaces reduces lost time and injuries. Made of lightweight aluminum with hydraulic drive motors, conveyor sections are easily handled and assembled.

Conveyor Systems

Plant personnel at Cemento Melon in Chile commented after using their conveyor for the first time that it contributed to better installation quality by reducing manhandling of bricks.

Read more case studies and testimonials at www.brickingsolutions.com

Features and Benefits

Multiple plant uses - Cooler, Kiln, & Cyclone Maintenance
Reduces or eliminates brick damage due to handeling
Lightweight aluminum modular sections are easy to handle
Lengths up to 85m (280ft) and widths of 30.5cm (12”), 50.5cm (20”), and 76.2cm (30”) available
System can be set up on the ground, springboards, or elevated on standard adjustable legs
Belt sections are easily assembled with hinged lacing and spring pin design
Systems have interchangeable sections
Rigid tension connection
Great for kilns with limited access

Increasing installation speed while improving safety & quality are the main goals behind our bricking machines. Our Premium EZ Flexx brick lining machines have the largest work platform in the industry 5.2M (17 ft). The double arch system adjusts in 10 minutes to meet any kiln distortion. Our three-way master valve (one for each arch) allows cylinders on each arch to be individually or collectively deployed.

Refractory Installation

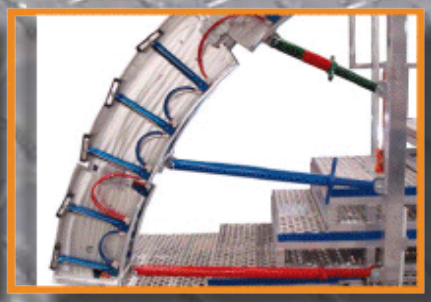
Monsanto in Idaho found the EZ Flexx adjustments took less than 10 minutes each, dierctly saving an estimated total of 3 days outage.

Read more case studies and testimonials at www.brickingsolutions.com

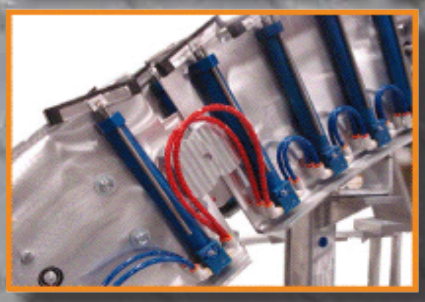
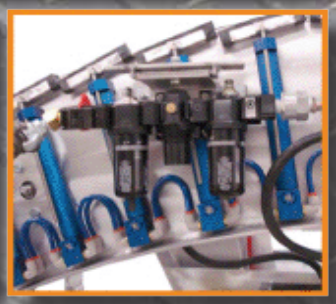
Features and Benefits for Premium Machines

Unique adjustable double arch system adjusts to varying brick sizes speeding installation by allowing Wing Masons to start the next row while the Key Mason keys the last row
Cantilever design extends beyond flat deck for closing out up kiln
Cut-away key section give the Key Mason easy access to down kiln arch
Ergonomical stair-step design incorporated into the arch trolley reduces worker fatigue increasing safety and productivity
Safety features include fall protection, check valve, & lighting
Flat Deck design provides added protection under rig from dropped items
Three-way master valves (one for each arch) controls cylinders independently or simultaneously with no need to reset individually
Flat Deck machines are rated 6,8910kg (15,000lbs) capacity
Lightweight heavy duty construction makes our bricking machines lightest in the industry
All bricking machines assemble easy with use of color coded system



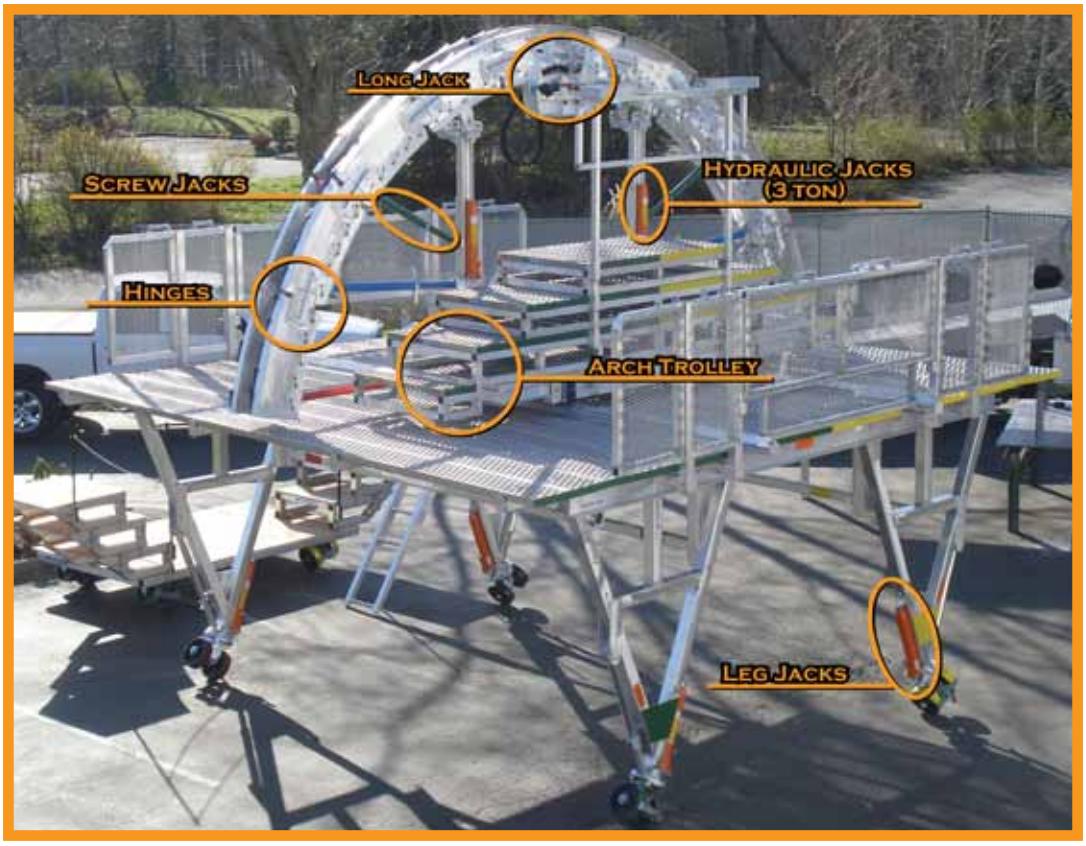



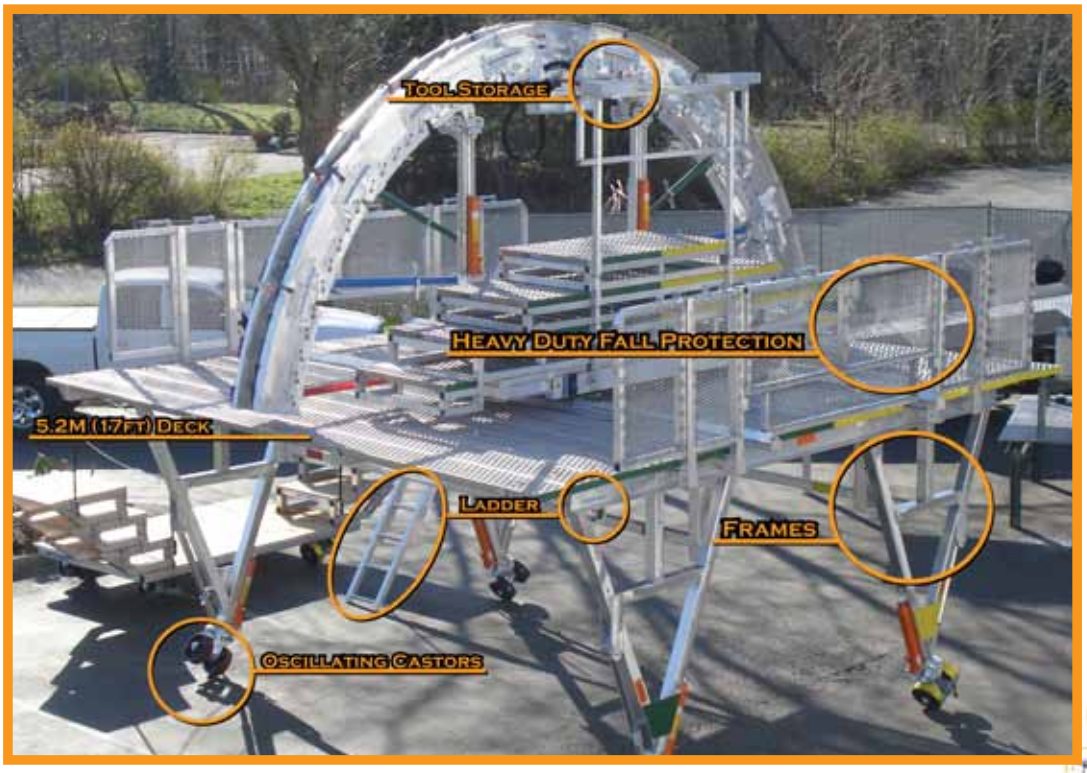


FEATURE	BENEFIT	RESULT
6,810 kg (15,000 lbs) capacity with a 17 ft deck	3 Pallets of brick on deck; Reduces brick damage; More efficient installation	Reduce cost of refractory; Less material handling = increased profit
Fewer assembly fasteners	Reduce assembly/disassembly time - 80 to 100 fasteners	Assembly in under 3 hours; 50% assembly time savings
Center arch support on arch trolley	Stable arch; Arch trolley rails = easy & efficient movement with one hand	Reduce time to move arch; Increase easier installation; Save 20% work time
Cantilever positioning of arch	Safer & efficient installation of first row & closeout of last row	Faster installation method at retaining ring & closeout
Dual arches	2 rows of brick installed simultaneously; More effective	Increase installation time by 50% over other methods
Up kiln arch with cut away key section	Easy & efficient access of key area	Reduces key out time & fatigue of masons
Accessible quick connect cylinder fittings	Easy access & removal for maintenance & replacement	75% faster on emergency repairs during outage
Cylinder mounted valves	Allow for independent or simultaneous extension & retraction of cylinders	Reduces lost time during installation reducing outage costs
Dual master valves on each arch	Independent or coordinated retraction or engagement on both arches	30% more effective than moving from one ring to the next
Hinge sections, hydraulic jacks, & screw jacks on arch	Quick & easy adjustments of both arches in kiln through kiln distortions	90% faster arch adjustment
Dual polyurethane castors with integrated kick brakes	Protects newly installed brick; Smooth & easy movement; Added safety	Safely, easily, efficiently move machine
Hydraulic leg jacks	Safe & easy leg adjustments in kiln without need of fork truck	Reduce raising & lowering time of deck level by 30%
Machine weight est. 2,450 lbs	Unique design using 6061 T6 aircraft aluminum; As strong as steel at 1/3 weight	Safer & easier with 50% less time for assembly/disassembly

Machine Anatomy





Do your own profitability calculation

Ash Grove Midlothian, TX
Previous method: Single Arch POR

Conditions

Lining of kiln section (m)	30.5M / 100’
Diameter of the kiln (m)	3.7M / 12’
Daily production (tonne)	3000 TPD — Fill in the current daily production

Time savings

(A) Time requirements, work hours (current method used)	66.3
	-
(B) Time requirements, Bricking Solutions bricking machine	29.6
	=
Descreased downtime	36.7 — Subtract B from A
	X
No. of downtime periods per year	2
	=
Total decreased downtime	73.4 — Multiply decreased downtime by no. of downtime periods, the result is your Total decreased downtime in hours
	/ 24

Result and profit per year

Decreased downtime per year in days (hrs/24)	3.05 DAYS
	X
Daily production (i.e. 3000 tpd)	3000 TPD
	=
Increased annual production	9150 TPD — Calculate the increased annual production, by multiplying the decreased downtime value by the curent daily production
	X
Net profit per tonne of cement	$14 USD — Multiply above value by your net profit per tonne of cement
	=
Profit per year	$128,100 — The resulting amount is your annual profit

In addition, please refer to the example below. You can also contact your nearest Bricking Solutions representative for a complete profitabilty calculation.

All bricking machines are NOT created equal.

The features of the Premium EZ Flexx translates into a 40% FASTER AND SAFER installation in an average 5m kiln without tapers. Up to 75% FASTER AND SAFER installation when bricking through a 3m taper. Bottom line: $3000 to $5000 USD profits PER HOUR SAVED in a 3000 tpd cement plant.

Do your own profitability calculation

Conditions

Lining of kiln section (m)

Diameter of the kiln (m)

Daily production (tonne)

Fill in the current daily production

Time savings

(A) Time requirements, work hours (current method used)

Enter the estimated time required to install lining of the kiln in question, using your current method

(B) Time requirements, Bricking Solutions bricking machine

Descreased downtime

Subtract B from A

No. of downtime periods per year

Total decreased downtime

Multiply decreased downtime by no. of downtime periods, the result is your Total decreased downtime in hours

Result and profit per year

Decreased downtime per year in days (hrs/24)

Daily production (i.e. 3000 tpd)

Increased annual production

Calculate the increased annual production, by multiplying the decreased downtime value by the curent daily production

Net profit per tonne of cement

Multiply above value by your net profit per tonne of cement

Profit per year

The resulting amount is your annual profit

In addition, please refer to the example below. You can also contact your nearest Bricking Solutions representative for a complete profitabilty calculation.

Calculating Profitability* (Actual Case Sample)

Conditions		**Result and profit per year**	
Lining of kiln section	20.0m	Decreased downtime per year (4 days)	
Diameter of the kiln (m)	4.6m	x daily production (3,000 tonnes) =	
Daily production (tonne)	3000 tonnes	increased annual production of 12,000 tonnes	
Time Savings			
Time requir., current method	4 days	Net profit per tonne of cement	$14 US dollars
Time requir., Bricking Solutions	48 hrs		
Decreased downtime hrs/24	2 days	**Profit per year (12,000 x $14 USD)**	$168,000 US dollars
No. of downtime periods per year	2 periods		
Total decrease downtime	4 days		

*Bricking Solutions bricking machine compared to manual installation in the cement industry. Estimate made at a cement works in India.

12 Important Questions to Ask

when purchasing a Refractory Installation Machine

Refractory costs are only about 5% of the capitol cost of operating a cement plant. And yet almost 50% of plant outages, which result in lost profits coupled with maintenance costs, are a result of refractory related problems. Quality refractory installation facilitated by the best equipment for proper maintenance is critical to bottom line performance.

We encourage you to be careful when purchasing refractory maintenance equipment, because it's easy to purchase on price alone only to have this decision come back to haunt you with increased outages, increased downtime, and ultimately lost profits. The following 12 questions will help ensure you maximize your return on investment when considering the purchase of refractory maintenance equipment. If your answer to any one of these questions is NO, you need to decide if you want to be a HERO or a ZERO:

1 ***Is the machine built to International Design, Welding, Fabrication & Safety Criteria Standards?***

Be sure the equipment you choose is designed, welded & fabricated to International Standards with reviews by an independent certified professional engineer.

ANSI American National Standards Institute · American Welding Society · Europa Gateway to the European Union · CE · ASME Setting the Standard

2 ***Does the supplying manufacture have a reference list indicating years of experience & satisfied customers?***

Look for a company that has supplied equipment to major cement companies around the world & can supply a comprehensive reference list.

Buzzi Unicem · Holcim · PPC Cement · Essroc Italcementi Group · LAFARGE · Dalmia Cement

3 ***Is the manufacture of Refractory installation equipment the main business of the supplier?***

The manufacture of maintenance equipment for Refractory Installation should be the main business & focus of your supplier.

4 ***Does the manufacture have local representation for sales, technical information & after sales service and support?***

Make sure your supplier is represented by a World Wide organization of local offices or independent sales, service & support agents backed up by factory direct representatives.

5 ***Does the equipment design consider easy movement into & set-up in the kiln with color coded match marks, minimal yet strong component weight & easy to read manuals?***

Make sure the manufacture designs for the lightest weight yet strongest equipment with color coded match markings for easy assembly with easy to read manuals.

6 ***Will the bricking machine frame support two pallets of brick plus the work crew to facilitate the installation of two shape bricks used by most cement plants (can weigh up to approximately 1800 kilos)?***

Make sure the bricking machines standard frame supports 4500 kilos or 10,000 lbs net.

7 ***Does the machine brick placement arch have a cut away center section on the up kiln arch for easy access to the keying area & valve in base cylinders on both arches with a master valve for each arch to allow independent operation of all cylinders or simultaneous cylinder operation to speed up the movement of the arches & thus speed up the installation of refractory?***

A clear view of the previously keyed ring in keying area allows the key mason to use the previously keyed ring as a guide line to maintain radial alignment. A key factor to quality installation. Master valves on both arches speeds up the release of cylinders in order to move the arches & greatly speeds up the installation process.

8 ***Does the bricking machine come with standard accessories such as keying jack, shim driver, filter lubricator unit, fabricated storage area plus independent storage trays for shims, keying jack and other tools?***

It is the little things that make a big difference. Providing the masons with these key accessories further insures quality of the installation.

9 ***Is the bricking machine arches furnished with air pressure gauge & regulator & hydraulic keying jack pressure gauge?***

Gauges are the feed back system for the bricking machine help maintain consistency of installation.

&

10 ***Is the equipment designed for ease of maintenance?***

Quality equipment is designed for easy access to all components & with quick disconnects for easy replacement of parts while in the kiln or in the maintenance facility.

11 ***Is the machine shipped in quality crates or storage containers?***

Storage containers help keep maintenance equipment from being damaged or contaminated by the ambient environment in between outages.

12 ***Does the manufacture support the machine with Commissioning & training?***

Be sure your supplier supports all of its equipment with trained commissioning experts.

REMEMBER - IT IS BETTER TO BE **CAREFUL** THAN **SORRY**, PARTICULARLY WHEN YOU ARE DEALING WITH COSTLY OUTAGES.
THE MAIN GOAL IS TO KEEP YOUR FLAME BURNING!

To support the Cement Plant and the personal responsible for the plants SOP, Risk Assessment, Training and Supervision of the use of refractory installation or removal equipment by performing an equipment evaluation, Safety Audit and General Operation and Maintenance Training / Certification for the plant's or contractor's Bricking Machine. This should be done far enough in advance of a planned outage to ensure readiness should corrective action need to be taken during our after the evaluation.

BBS Services

- Safety inspection / Audit of Bricking Solutions Bricking machine and its associated accessories or components to the plants current kiln refractory safety policy and current bricking rig safety standard.

• Inspection of all Bricking Machine frames and work deck, welds structural integrity, wear, fasteners, and casters, caster and arch trolley brakes, plus overall fit of components.

• Review of safety labeling, color coding or match marking etc.

• Inspect the Bricking Machines Arch for structural integrity, hinge connections, fasteners, cylinder function, hose and fittings fitness and component functions.

- Evaluation of set up procedures, tools, hardware and set up fixtures or accessories, inspection of certified lifting devices used for transportation of components, in kiln movement and or adjustment of the machine, procedures for bricking through tapers, including a review in-kiln policies and procedures to the plants bricking rig safety standards.
- Training and certification of a “competent person” capable of inspection and review of overall machine, assembly, disassembly, operation and safety procedures consistent with the plants Bricking Rig Safety Standards. This person will be competent to sign a documented inspection sheet.
- Training for general and preventative machine maintenance.
- Training and discussion of proper disassembly techniques, handling and storage techniques per the plants bricking rig safety standards and maintenance.
- Should a Dye Penetration weld test (non-destructive test) be deemed necessary, we will perform this service or help arrange for a local inspection company to perform this test under our supervision.

We take pride in designing, engineering, and building products that are the best in the industry. By maintaining close relationships with installers, contractors, plant designers, and refractory manufacturers, we adapt our products as their needs evolve. When any new problems are encountered, we are happy to help find solutions. Afterall, solutions is all we do!

More Solutions

Bedding Cart

Speed up bottom kiln bedding while providing safe, ergonomical working platform
Stair steps allow higher brick placement
6,000 lbs (2,724 kg) capacity

Bricking Cart

6,000 lbs (2,724 kg) capacity
Reduces chance of brick damage
Transports brick faster to the masons
Steering mechanism to assit in tracking in rotary kiln

Fork Truck Bracket

Move bricking machine arch and platform frames in and out of kiln without disassembly
Saves time with assembly and disassembly of bricking machine

Shim Driver

Pneumatic hammer with shim driving head designed exclusively for Bricking Solutions.
Slotted shi driver head allows for high impact on shim & ensure tight radial installation

Refractory Jacking Equipment

Pneumatically operated hydraulic jack with pressure guage for consistent installation pressure on each ring of brick
Swivel foot braces adjust automatically to brick angle
Finger-tip control located on jack for ease of use & safety

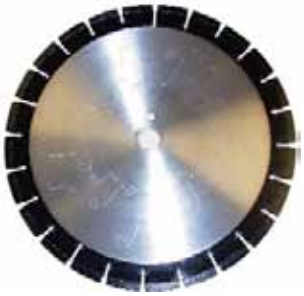
Partner Solutions

Core Cut Masonry Saw

- 5 HP / 7.5 HP - 3PH Electric (Custom V)
- 20” (8” cut depth) / 24” 10” cut depth) blade capacity
- Stay level blade guard and enclosed blade shaft
- Foot pedal controlled operating head leaves operator hands free to guide material
- Open back design
- Counterbalanced stay level blade guard assures head is parallel to cutting cart.
- Easy rolling 16” x 25” aluminum cutting cart with Vulcanized rubber non-slip top
- Water pump standard on all models
- Replaceable conveyor rails
- Durable 3/16” steel frame
- 2 V-belt drive

Core Cut Silent Core Masonry Blades

- Special laser anchor slots near the segments provide for dramatic noise reduction
- Silent Core Masonry Blades feature patented epoxy-filled laser cut harmonic dampeners to reduce vibration. Blade noise is reduced by -10dB.



Hoganas Linometer XLNT

Laser Guide
Accurate to within ± 1.5 mm, the Leica® precision digital laser guide makes it possible for the operator to accurately and repeatedly select the correct measurement points on the length of the kiln. It also offers many additional features, such as volume calculation, max and min measurements, built-in level and illuminated 4-line display.

Carrying case - Case securely houses all components for safe transportation.

Linometer XLNT
Unnecessary delay is red ink on your balance sheet. With Linometer XLNT, you can complete lining measurement quickly, easily and accurately, supporting proper preventive maintenance at the same time you minimize unproductive downtime.
Weighing only 845 g, the Linometer XLNT hangs from a strap around the operator’s neck, leaving hands free to do the work. The easy-to-navigate keypad gives the operator powerful measurement capabilities, and possibility to compare with earlier measurements. Digital graphic display provides a clear picture of lining thickness variations

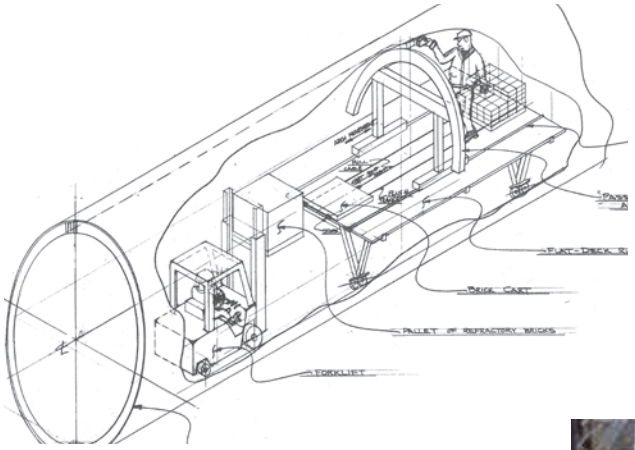
Extension arm
Aluminum monopod extension arm can telescope up to 1.5 m (5’), extending the operator’s reach. Easy snap-on connection locks probe securely in place.

Measuring probe
Rugged PVC-encased probe withstands rough treatment. Securely attaches to the Linometer XLNT via a DIN connection. Only a small patch of brick needs to be cleared for the probe to take an accurate measure.

Custom Solutions

EZ Flexx Hybrid

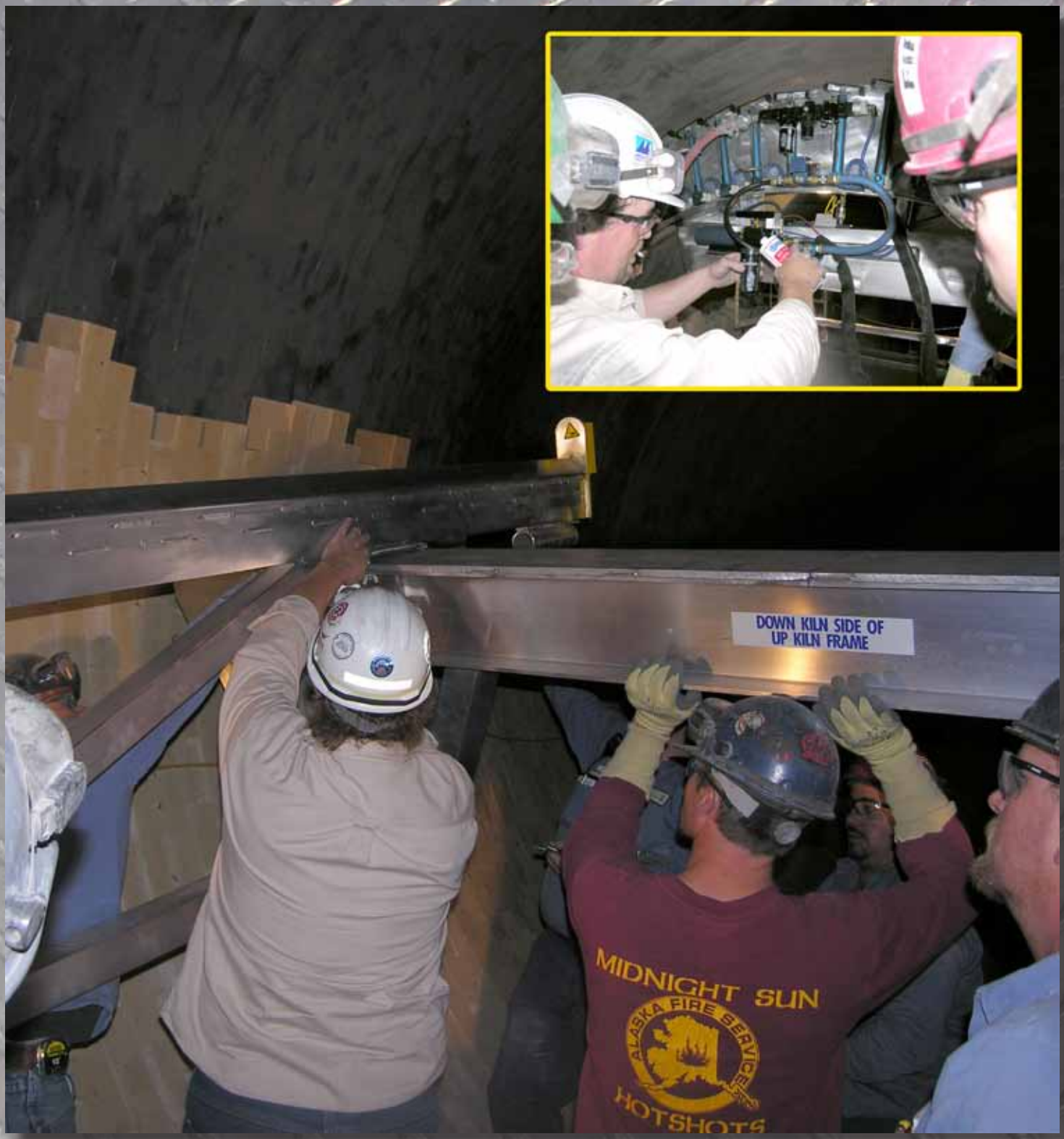
Flat deck wing step lowers the platform wing area to provide excellent back relief (less bending) for wing masons. Keeps work closer to waist level. Reduces chance for back injury, increases morale of wing masons boosting platform efficiency



R.T.F – Refractory transfer system provides brick placement cart that rolls along designated platform rails for brick pallet movement up kiln under arch to masons. Eliminates wasteful personnel / brick management

Adustable Safety Inspection Cage

Adjusts in a 5M kiln with 300mm coating to 700mm coating.
Secure adjustable bolt pattern allows for adjustments to be made safely inside kiln



Bricking Solutions is there for our customers every step of the way. From the first inquiry all the way down to learning the best way to use each customized product. Your ability to decrease downtime is based more than just on products. The most important aspect is understanding how to effectively use the products, which is why we are available for training on any of our products.

Product Training

Industry Training

We are available for basic industry training including the importance and benefits of upgrading maintenance equipment. Classroom discussions often include hands on opportunities as well.

Conference Training

At local and worldwide conferences, getting your hands on any of our products is always available. In fact, we make it a priority. Although a picture says a thousand words, actual contact says a million more.

On-Site Training

Manuals come with every product and are very helpful - if you read them. Even though assembly and usage instructions are also available in PowerPoint format, we have found on-site training to be worth its weight in gold. Inquire about it when inquiring after one of our products or if you need a solution we haven't tackled yet.

Worldwide Agents

Our worldwide network of agents is eager to serve your sales and servicing needs. Call or visit our website to find the Brokk or Bricking Solutions representative in your country, and let us customize a solution to your bricking requirements.

Parts for Immediate Delivery

Brokk and Bricking Solutions maintains a complete inventory of parts and supplies for immediate delivery anywhere in the world.

Custom Design & Engineering

All bricking machines are custom designed to meet your unique specifications for kiln diameter, refractory thickness, and entry door dimensions. Our in-house engineering and design shop is at your disposal to adapt any machine or tool to your needs.

Training

We offer a worldwide training service to assist customers in operating all of our bricking and demolition machines. Our expert staff is on call to help install, operate, and maintain everything we sell, and to offer advice on how to make your refractory process easier and more efficient.

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