The Safest Solution for Crews Working Exit-Side HDD Operations

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Traditional Exit-Side Process

- Manual labor with heavy chain or tong wrenches
- Inefficiencies and dangers
- Precision limitations

Challenges in Traditional Process

"The most dangerous job in HDD"

- Over- and under-torqueing
- Worker safety risks
- Pipe damage and tool failure

Safety Concerns in Exit-Side Operations

- Worker injury risks with manual handling of pipe and tooling with straps and chains
- Catastrophic tool failures
- Workers at pipe joint
- Communication by radio typical over distances
- Stored energy downhole

Efficiency Issues in Traditional Methods

- Time-consuming processes
- Increased labor requirements
- Safety mitigation

TONGHAND®

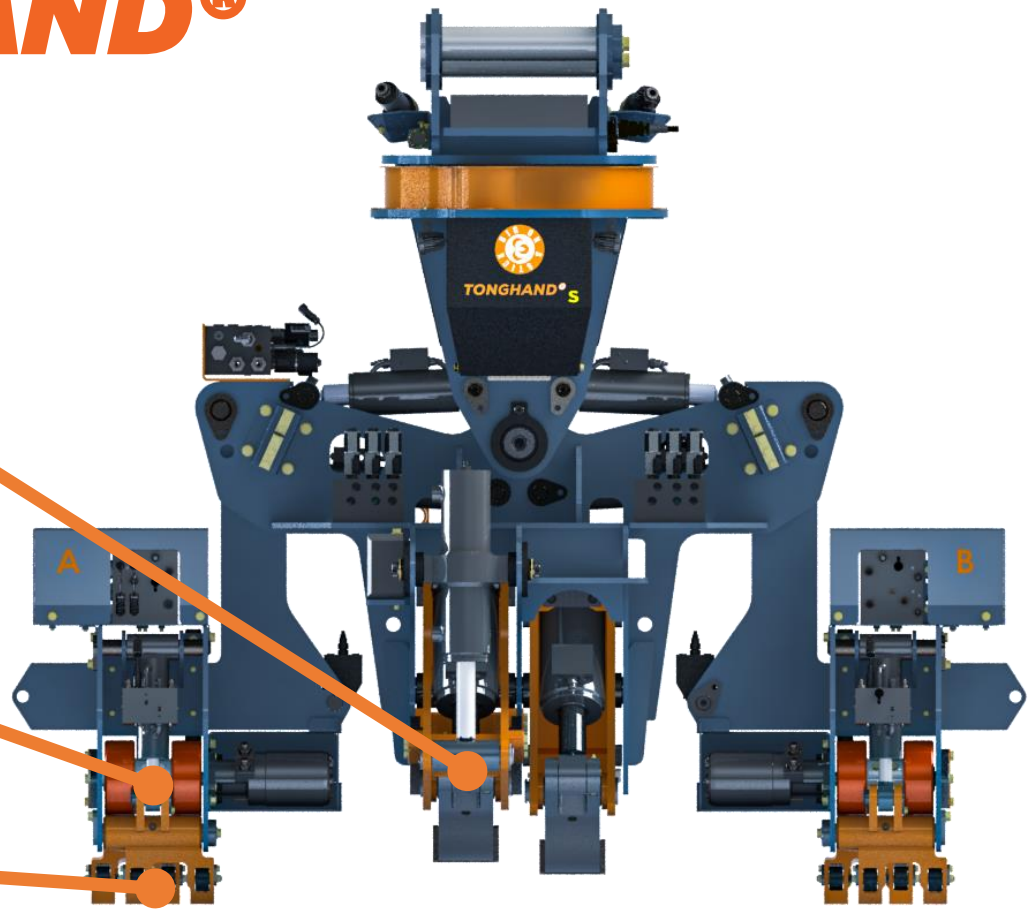
Exit-Side Wrench

- Developed and designed by LaValley Industries
- Automates exit-side operations
- Hands-free, keeps personnel out of harm's way
- Used on HDD job sites globally since 2015

RIG ON A STICK®

Key Features of TONGHAND®

- **TongVise™** allows operator to torque and untorque joints from safety of excavator cab
- **Roller Arms** thread and unthread tail strings up to 10 joints in length
- **Grab Arms** handle drill rod and pipe around the job site



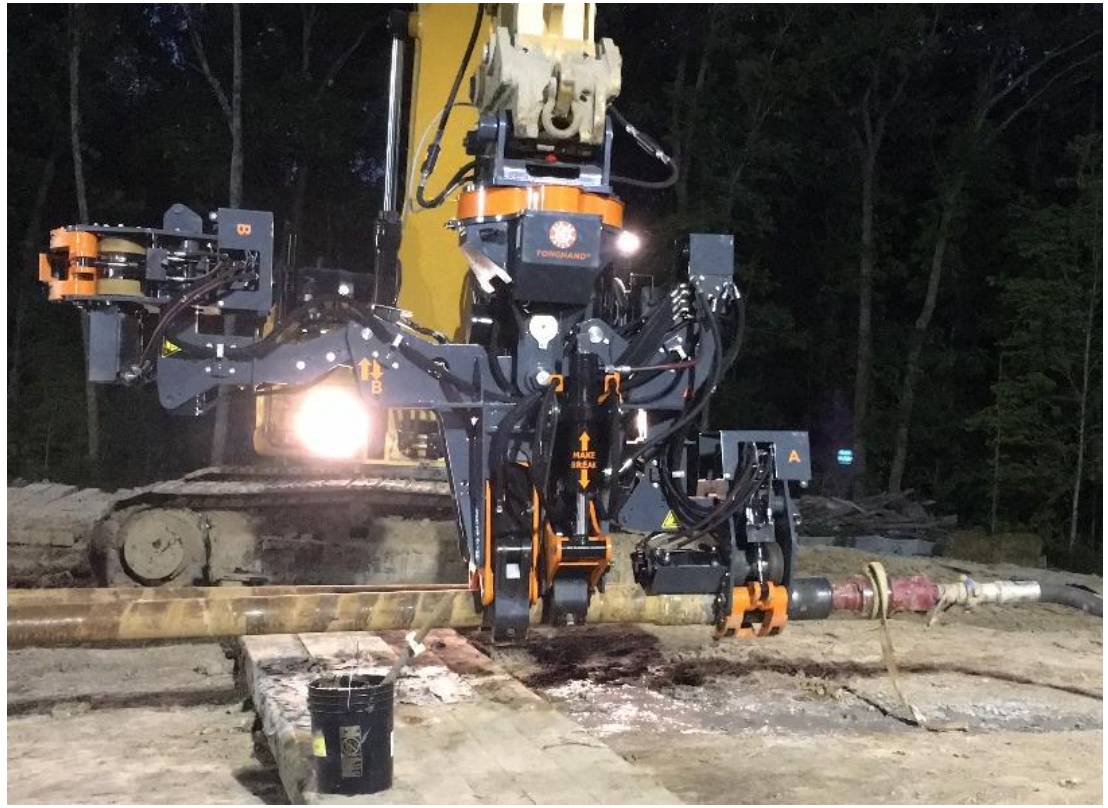
- No workers in area of tool joint
- **Gull Beams** raise to work with various tooling
- **TongVise™** torques and un-torques with precision directly at joint

TONGHAND® Controls

- Proportional control hand grips activate all TONGHAND® motions
- In-cab touch display sets all TONGHAND® operating parameters
- Monitor torque inputs in real-time

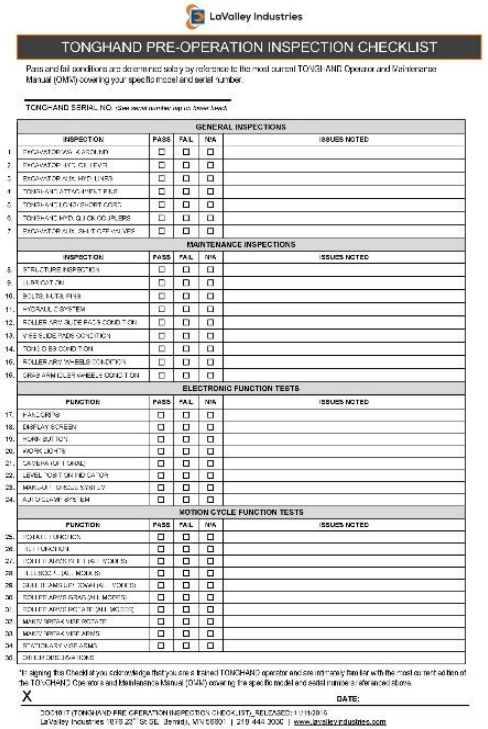
Precision Torque Application

- Measuring torque at the joint
  - Not at drill rig
- Preventing pipe/tool damage
- Real-time monitoring and adjustments
  - Sensors and indicators for torque verification



Safety Improvements

- Eliminates manual handling risks
- Removes workers from high-risk zones
- Operator training requirements


LaValley Industries

TONGHAND PRE-OPERATION INSPECTION CHECKLIST

Pass and fail conditions are determined solely by reference to the most current TONGHAND Operator and Maintenance Manual (OMM) covering your specific model and serial number.

TONGHAND SERIAL NO. (See serial number tag on Jaw Base):

	GENERAL INSPECTIONS				
	INSPECTION	PASS	FAIL	N/A	ISSUES NOTED
1	EXCAVATOR VISUAL CATCH-UP	☐	☐	☐	
2	EXCAVATOR HYD. OIL LEVEL	☐	☐	☐	
3	EXCAVATOR AUX. HYD. LINES	☐	☐	☐	
4	TONGHAND ATTACHMENT PINS	☐	☐	☐	
5	TONGHAND LOAD SHORT CORD	☐	☐	☐	
6	TONGHAND HYD. QUICK DISCONNECTS	☐	☐	☐	
7	EXCAVATOR AUX. SHUT OFF VALVES	☐	☐	☐	
	MAINTENANCE INSPECTIONS				
	INSPECTION	PASS	FAIL	N/A	ISSUES NOTED
8	STRUCTURE INSPECTION	☐	☐	☐	
9	LUBRICATION	☐	☐	☐	
10	BOLTS, NUTS & PINS	☐	☐	☐	
11	HYDRAULIC SYSTEM	☐	☐	☐	
12	ROLLER ARM SLIDE PADS CONDITION	☐	☐	☐	
13	VISE SLIDE PADS CONDITION	☐	☐	☐	
14	TONG DIES CONDITION	☐	☐	☐	
15	ROLLER ARM WHEELS CONDITION	☐	☐	☐	
16	GRAB ARM IDLER WHEELS CONDITION	☐	☐	☐	
	ELECTRONIC FUNCTION TESTS				
	FUNCTION	PASS	FAIL	N/A	ISSUES NOTED
17	HANDGRIP	☐	☐	☐	
18	DISPLAY SCREEN	☐	☐	☐	
19	HORN BUTTON	☐	☐	☐	
20	WORK LIGHTS	☐	☐	☐	
21	CAMERA FOR TRAVEL	☐	☐	☐	
22	LEVEL INDICATION INDICATOR	☐	☐	☐	
23	MANUAL / SPECIALTY VALVE	☐	☐	☐	
24	AUTO CLAMP SPEED	☐	☐	☐	
	MOTION CYCLE FUNCTION TESTS				
	FUNCTION	PASS	FAIL	N/A	ISSUES NOTED
25	TONG DIE FUNCTION	☐	☐	☐	
26	TILT FUNCTION	☐	☐	☐	
27	TONG DIE ASSIST FUNCTION (TONG DIES)	☐	☐	☐	
28	TILT BOOM FUNCTION (BOOM)	☐	☐	☐	
29	GRAB ARM SWING FUNCTION (TONG DIES)	☐	☐	☐	
30	TONG DIE ARMS SWING FUNCTION	☐	☐	☐	
31	TONG DIE ARMS ROTATE FUNCTION	☐	☐	☐	
32	MAKE/BREAK SIDE ROTATE	☐	☐	☐	
33	MAKE/BREAK SIDE ARMS	☐	☐	☐	
34	ROTATION ASSIST ARMS	☐	☐	☐	
35	OTHER OBSERVATIONS				

By signing this Checklist you acknowledge that you are a trained TONGHAND operator and are intimately familiar with the most current edition of the TONGHAND Operators and Maintenance Manual (OMM) covering the specific model and serial number as referenced above.

X _____ DATE: _____

DOC#1019 (TONGHAND PRE-OPERATION INSPECTION CHECKLIST), RELEASED: 11/16/2016
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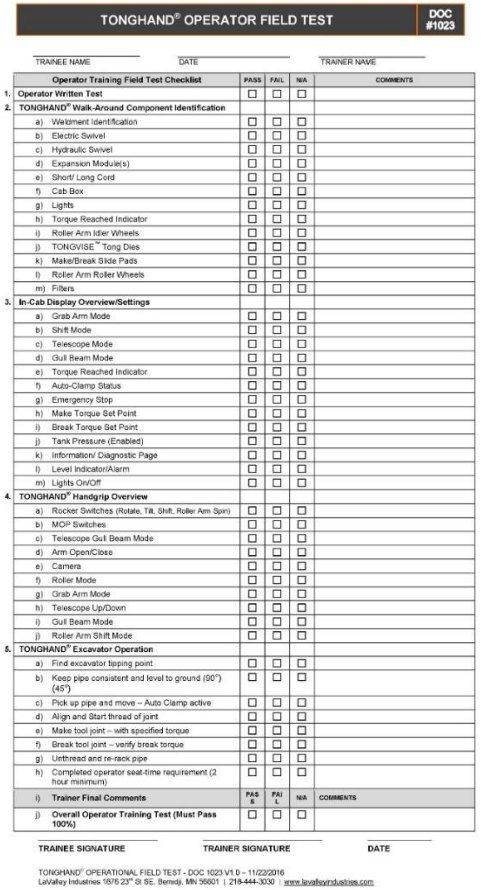
TONGHAND® OPERATOR FIELD TEST — DOC #1023

TRAINEE NAME _____ DATE _____ TRAINER NAME _____

	Operator Training Field Test Checklist	PASS	FAIL	N/A	COMMENTS
1.	**Operator Written Test**	☐	☐	☐	
2.	**TONGHAND® Walk-Around Component Identification**				
	a) Weldment Identification	☐	☐	☐	
	b) Electric Swivel	☐	☐	☐	
	c) Hydraulic Swivel	☐	☐	☐	
	d) Expansion Module(s)	☐	☐	☐	
	e) Short/ Long Cord	☐	☐	☐	
	f) Cab Box	☐	☐	☐	
	g) Lights	☐	☐	☐	
	h) Torque Reached Indicator	☐	☐	☐	
	i) Roller Arm Idler Wheels	☐	☐	☐	
	j) TONGVISE™ Tong Dies	☐	☐	☐	
	k) Make/Break Side Pads	☐	☐	☐	
	l) Roller Arm Roller Wheels	☐	☐	☐	
	m) Filters	☐	☐	☐	
3.	**In-Cab Display Overview/Settings**				
	a) Grab Arm Mode	☐	☐	☐	
	b) Shift Mode	☐	☐	☐	
	c) Telescope Mode	☐	☐	☐	
	d) Gull Beam Mode	☐	☐	☐	
	e) Torque Reached Indicator	☐	☐	☐	
	f) Auto-Clamp Status	☐	☐	☐	
	g) Emergency Stop	☐	☐	☐	
	h) Make Torque Set Point	☐	☐	☐	
	i) Break Torque Set Point	☐	☐	☐	
	j) Tank Pressure (Enabled)	☐	☐	☐	
	k) Information/ Diagnostic Page	☐	☐	☐	
	l) Level Indicator/Alarm	☐	☐	☐	
	m) Lights On/Off	☐	☐	☐	
4.	**TONGHAND® Handgrip Overview**				
	a) Rocker Switches (Rotate, Tilt, Shift, Roller Arm Spin)	☐	☐	☐	
	b) MOP Switches	☐	☐	☐	
	c) Telescope Gull Beam Mode	☐	☐	☐	
	d) Arm Open/Close	☐	☐	☐	
	e) Camera	☐	☐	☐	
	f) Roller Mode	☐	☐	☐	
	g) Grab Arm Mode	☐	☐	☐	
	h) Telescope Up/Down	☐	☐	☐	
	i) Gull Beam Mode	☐	☐	☐	
	j) Roller Arm Shift Mode	☐	☐	☐	
5.	**TONGHAND® Excavator Operation**				
	a) Find excavator tipping point	☐	☐	☐	
	b) Keep pipe consistent and level to ground (90°) (45°)	☐	☐	☐	
	c) Pick up pipe and move – Auto Clamp active	☐	☐	☐	
	d) Align and Start thread of joint	☐	☐	☐	
	e) Make tool joint – with specified torque	☐	☐	☐	
	f) Break tool joint – verify break torque	☐	☐	☐	
	g) Unthread and re-rack pipe	☐	☐	☐	
	h) Completed operator seat-time requirement (2 hour minimum)	☐	☐	☐	
	i) **Trainer Final Comments**	PASS	FAIL	N/A	COMMENTS
	j) **Overall Operator Training Test (Must Pass 100%)**	☐	☐	☐	

TRAINEE SIGNATURE _____ TRAINER SIGNATURE _____ DATE _____

TONGHAND® OPERATIONAL FIELD TEST - DOC 1023 V1.0 – 11/22/2016
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Purposeful Development

- Meets or exceeds international design and safety standards
- Full SE and RED testing for EMC compliance and equipment compatibility

ASME B30.20-2006
ASME BTH-1-2008
EN 13309:2010

Efficiency Gains

- Fewer personnel required in exit-side operations
- Additional functionality
  - Rod handling and alignment capabilities
- Increases production
- ROI achieved in months

Case Study 1:

- Pretec Directional Drilling
- Ohio

Case Study 1: Pretec Directional Drilling

- 10 crews working 24 hours/day
- Increased production by a minimum of 1 day/week/crew
- Reduced exit-side crew by 1 worker
- Eliminated over-torqueing issues
- Improved safety on exit-side, no OSHA recordables

- Used TONGHAND® to validate drill rig torque calibrations
- TONGHAND® now part of PreTec drilling SOPs

Case Study 2:

- Mears Group
- Pennsylvania

Case Study 2: Mears Group

- Increased productivity by 1 day per week
- Reduced exit-side crew by 1 worker
- Saved $40,000/week in project costs
- Improved safety on exit-side, no OSHA recordables
- Used TONGHAND® to validate drill rig torque calibrations
- TONGHAND® now part of Mears drilling SOPs

Case Study 3:

- SouthEast Directional Drilling
- New York

Case Study 3: Southeast Directional Drilling

- Deployed on intersect drill
- TONGHAND® used rig side to add and remove tooling in front of drill rig vises
- Eliminated over and under-torque issues
- Increased production by 1 day/week/crew

- Used to back up drill rig vises during maintenance and repair
- Used TONGHAND® to validate drill rig calibrations
- TONGHAND® is now part of SEDD drilling SOPs

Case Study 4:

- Hard Rock Directional Drilling
- Texas

Case Study 4: Hard Rock Directional Drilling

- 2x TONGHAND®s deployed to install twin lines underneath 13,000-ft Nueces Bay using two different barges
- Limited workspace on barge (40x120ft)
- Eliminated over and under-torque issues

- Increased production by 2 workdays per week
- TONGHAND® allowed operators on each barge to handle drill pipe safely, mitigating wave hazards

Case Study 5:

- Huxted (ECI Drilling)
- Boston Harbor

Case Study 5: Huxted (ECI Drilling)

- Deployed on anchor barge for shore approach project
- Dramatically improved safety on barge with limited space, no OSHA recordables
- TONGHAND® also used as drill rod handler
- Increased production by 1 day/week
- Used TONGHAND® to validate drill calibration

Case Study 6:

- O’Connor Utilities
- Cork, Ireland

Case Study 6: O'Connor Utilities

- Deployed utilizing very small footprint for exit-side operations
- Completed project 5 weeks ahead of schedule due to TONGHAND® efficiency
- Improved safety on exit-side by eliminating tong wrenches and supporting personnel
- Used on drill rig side to add and remove tooling in front of drill rig vises

Case Study 7:

- Gabe’s Construction
- Missouri

Case Study 7: Gabe's Construction

- Deployed on a site with expansive clay seam – 4,600 ft. shot with 10 in. pipe
- Ground characteristics required frequent tooling trip ins and trip outs
- TONGHAND® contributed to reduction in job length by 14 shifts (224 hours)
- Customer saw 40-65% increase in production related to tripping in and out
- Notable savings on spent material
- Increased safety on exit-side while changing out tooling

Case Study 8:

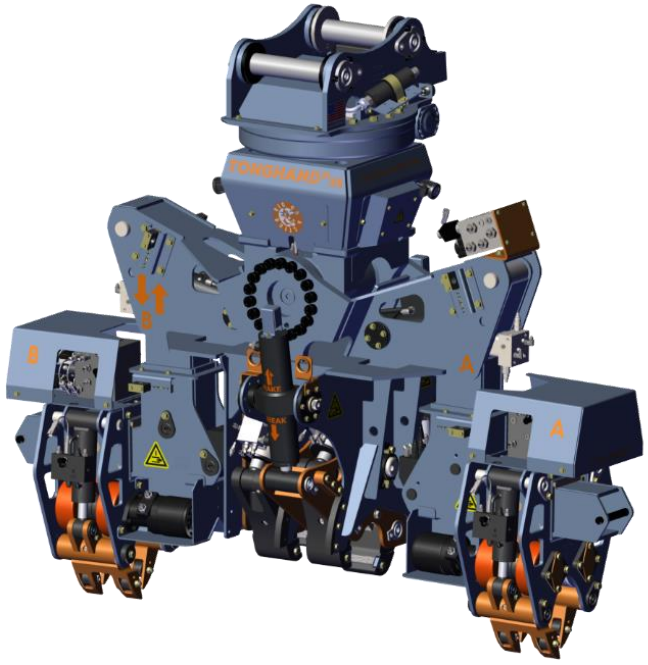
- Gateway Energy
- Oklahoma

Case Study 8: Gateway Energy

- Deployed TONGHAND®XS on large-scale pipeline install
- Threaded product pipe with 2.875”, 3.5” and 4.5” diameters, thin and thick wall
- Modified vise dies, reduction of hydraulic flow pressures to suit pipe characteristics
- Saw 45% increase in productivity (completed 15 man-hours of work in 8 hours)
- Installed 240,000 feet of pipe over 5 months of daily use

A Decade of Innovation
2015-2025

- IPLOCA New Technology Award
- Pipeline Industries Guild
  - Land-based Pipeline Technology
- NASTT No-Dig Innovative Product
- NSTT No-Dig Innovative Product



TONGHAND® XS

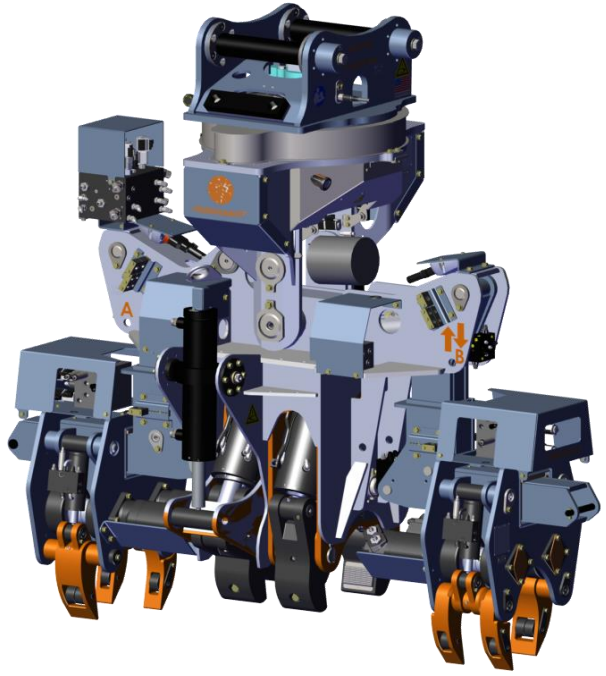
3.5 - 4.38 in. tooling

14-18 METRIC TON

TONGHAND® S

4.13 - 6.75 in. tooling

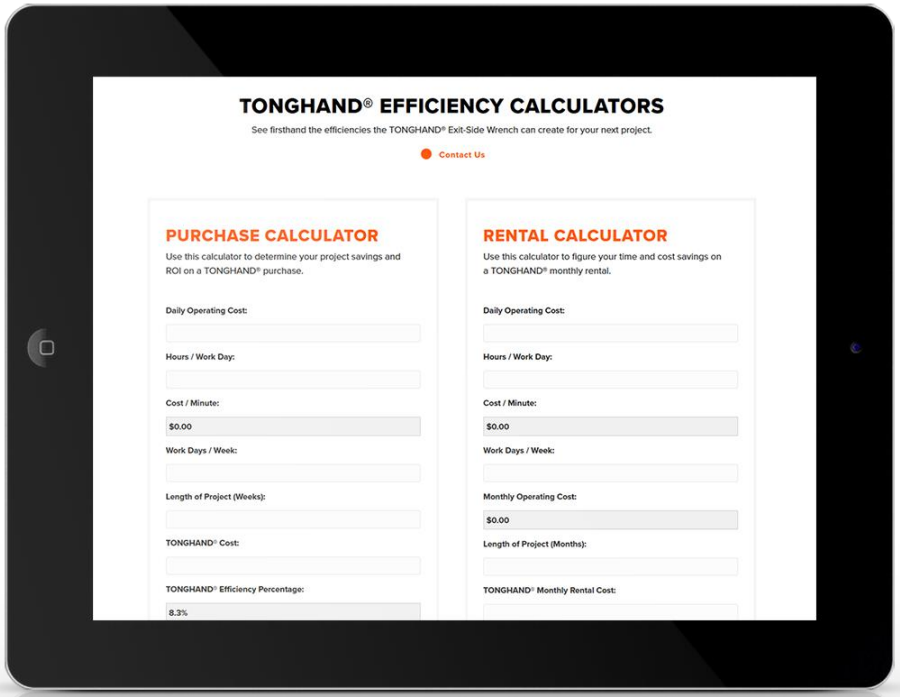
18-23 METRIC TON



TONGHAND®

6.5 - 10 in. tooling

30-36 METRIC TON



TONGHAND®

Efficiency Calculators

- Evaluate efficiency gains using TONGHAND® on the exit-side
- Based on efficiency rate of 8.3% (5 min. per hour)
- Estimate overall project cost savings and ROI

Implementing TONGHAND®

- On-site training and certification
- Optimization of workflow with TONGHAND® and existing equipment
- Ongoing product support & service

What is the cost of an accident?

TONGHAND® makes exit-side operations **safer**

Thank you!

Scan QR code to download product resources, our UIC presentation & more

TONGHAND®

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RIG ON A STICK
2015-2025

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