

**SANDVIK**

# DR410i

PRODUCTIVITY UNMATCHED





SANDVIK

DR410

DR410

# iSERIES FAMILY

The iSeries family of rotary blasthole drill rigs represents the next generation of surface drilling technology. Designed for the future, these automation capable drills are equipped to meet your needs today and in the future.

iSeries drill rigs simplify operation using automated functions while an intuitive user interface delivers a consistent operator experience across multiple drill models. The comprehensive Sandvik Intelligent Control System Architecture (SICA), a key component of our iSeries family, provides the operator with real-time feedback regarding the machine's performance and health, along with tools for drill planning, reporting and analysis ensuring quality and consistency hole-to-hole.



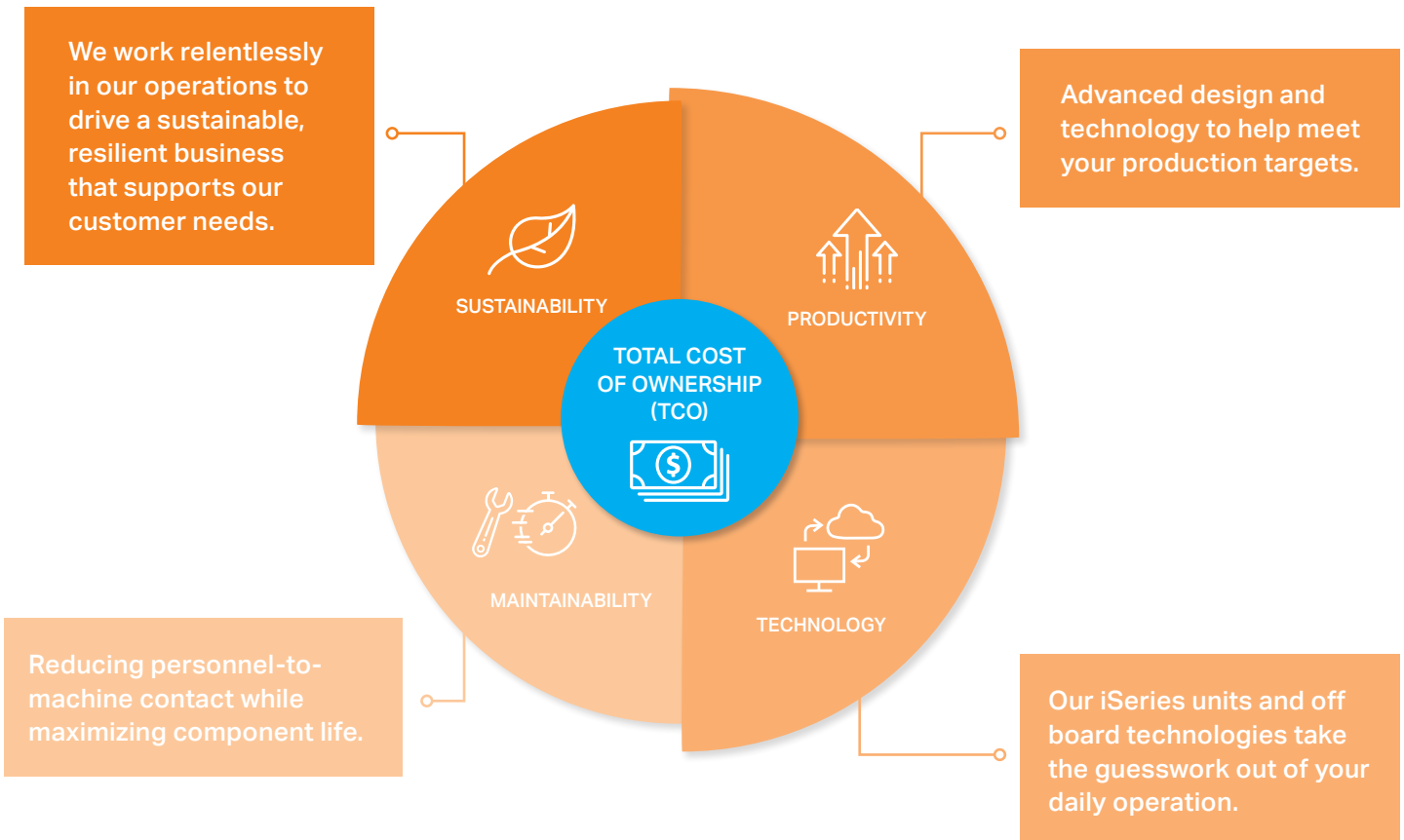
# THE DR410i

## PRODUCTIVITY UNMATCHED

Compact, powerful and technologically advanced, Sandvik DR410i is designed to deliver unmatched productivity and return on investment for 152-251 mm (6-9<sup>7/8</sup> ) rotary and DTH holes, with a standard mast offering a first pass capability of 10m or 33 ft and a max depth of 46.6m or 153ft. The extended mast option delivers a first pass option of 14 meters or 46ft with a total depth capacity of 32.3m or 106 ft. across all recommended pipe diameters.

The Sandvik DR410i is AutoMine® ready providing functionality for both on-board and off-board automated needs. This scalable solution, from on-board automation that increases drilling efficiency to full autonomous operation, is designed to meet customer needs both now and in the future.

The four key principles that led to the innovative design efforts that brought the DR410i to life are:



# MACHINE SPECIFICATIONS

## DR410i

	METRIC	IMPERIAL
Hole diameter	152-251 mm	6 - 9 7/8 in
Maximum hole depth - Std. Mast	46.6 m	153 ft
Maximum hole depth - Ext. Mast	32.3 m	106 ft
First pass capability - Std. Mast	10 m	33 ft
First pass capability - Ext. Mast	14 m	46 ft
<b>FEED</b>		
Maximum pulldown	222.4 kN	50,000 lbf
Weight on Bit	258 kN	58,000 lbf
Feed rate up	0-33.5 m/min	0-110 ft/min
Feed rate down	0-25.6 m/min	0-84 ft/min
<b>POWER GROUP</b>		
Engine options:		
Cummins QSK19 (Non tier 4)	563 kW	755 hp
CAT C18 (Non tier 4)	521 kW	700 hp
CAT C18 (Tier 4)	563 kW	755 hp
Compressor options:		
Rotary drilling	45.3 m <sup>3</sup> /min @ 6.9 bar	1,600 scfm @ 100 psi
DTH drilling	41 m <sup>3</sup> /min @ 24.1 bar	1,450 scfm @ 350 psi
<b>ROTATION</b>		
Power	112 kW	150 hp
Speed	0-160 rpm	

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# KEY PRODUCT FEATURES

## 01

### DRILLING CAPABILITY

*Designed to perform to your specifications.*

- 152 – 251mm (6" – 9 7/8") Diameter Blasthole
- First Pass Capacity 14m (46ft) with Extended Mast\*
- Max Hole Depth 46.6m (153ft)

## 02

### iDRILL AUTOMATION

*Increasing productivity through AutoMine® automated features.*

- AutoLevel
- AutoMast
- AutoPipe
- AutoDrill\*
- Remote Operation\*
- High Precision Navigation\*

## 03

### OPERATOR ENVIRONMENT

*Comfort and safety are paramount.*

- FOPS Tested to Meet ISO 3449 Level II
- Superior Visibility of Drilling Operation
- Function Lockout Fail-Safe Programming
- Seat-Mounted Touchscreens for Ease of Operation

## 04

### ACCESSIBILITY & MAINTENANCE

*Improving serviceability through ease-of-access.*

- Hydraulic Actuated Main-Access Stairway\*
- Safer, Improved Mast Access with Certified Tie-Off Points and FRP Mast Infill\*
- Centralized Service Center to Speed Replenishment of Machine Fluids
- Open Design with Walkways for Safe, Easy Maintenance

## 05

### COMPRESSOR MANAGEMENT

*Our solution to the inherent inefficiencies of blasthole drilling.*

- Reduces the Compressor Load
- Reduces Wear and Tear on Engine and Compressor
- Reduces Fuel Consumption
- Extends Maintenance Intervals
- Reduces Environmental Impact

## 06

### PROVEN DESIGN

*Built with a wide range of needs in mind.*

- Designed to operate in conditions ranging from extreme cold to intense heat

\*Optional

# DR410i

01

03

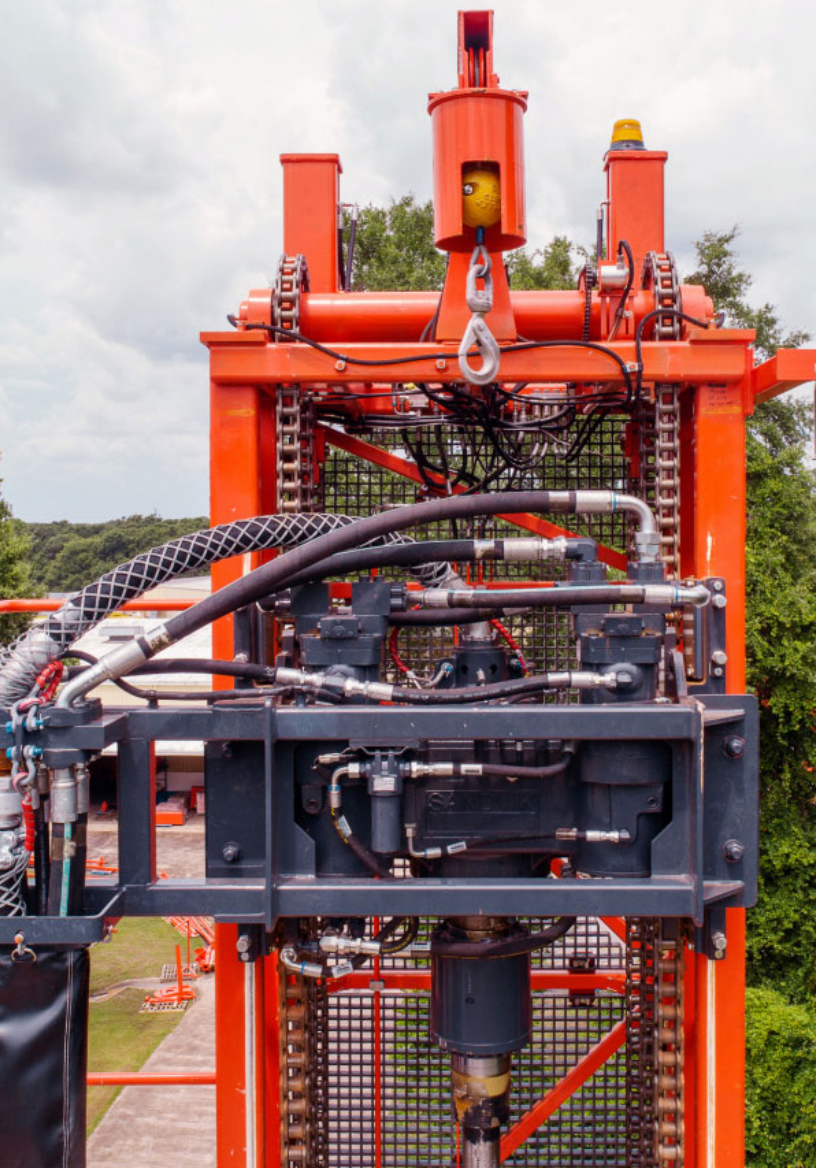
05

04

02

06





# iDRILL SCALABLE AUTOMATION PLATFORM

The scalable iDrill on-board automation platform provides automation options and digital services designed to speed up your production process and support your mine operations. You can use as much or as little technology as you need, knowing more is available when you need it.

AUTOMINE® (REMOTE OPERATION)

## AUTONOMOUS

- Fully automated drilling cycle with hole-to-hole tramming



Fully autonomous drilling cycle and hole-to-hole tramming boosts productivity, lowers operating costs and enhances safety

## CONTROL ROOM

- Operating from a central on-site control center
- Fully automated drilling process for multiple drill rig operation via control room-based tele-remote station



Single rig operator becomes a fleet supervisor, capable of controlling multiple highly-automated rigs from a control room ensuring high productivity with high level of safety

## LINE-OF-SIGHT

- Operator in a movable drill station with line-of-sight view to drilling area
- A single operator able to control up to 3 rigs from the same station



Increased operator productivity  
Keeps mine personnel out of the hazardous areas

iDRILL (ONBOARD OPERATION)

## NAVIGATION

- High-precision drilling with TIM3D Navigation System
- Navigate based on drill plan with integrated drill to elevation capability
- Wireless plan transfer and basic reporting



Up to 23%\* increased productivity compared to manual operation

Sandvik TIM3D drill navigation system guarantees precise drilling process from tramming and hole positioning to actual drilling

## PERFORMANCE

- iSeries drill rig operated from cabin
- Automated drill functions (e.g. auto drill, auto level, etc) capable of being executed with the push of a button



Up to 15%\* increased productivity compared to manual operation

Improved drilling accuracy

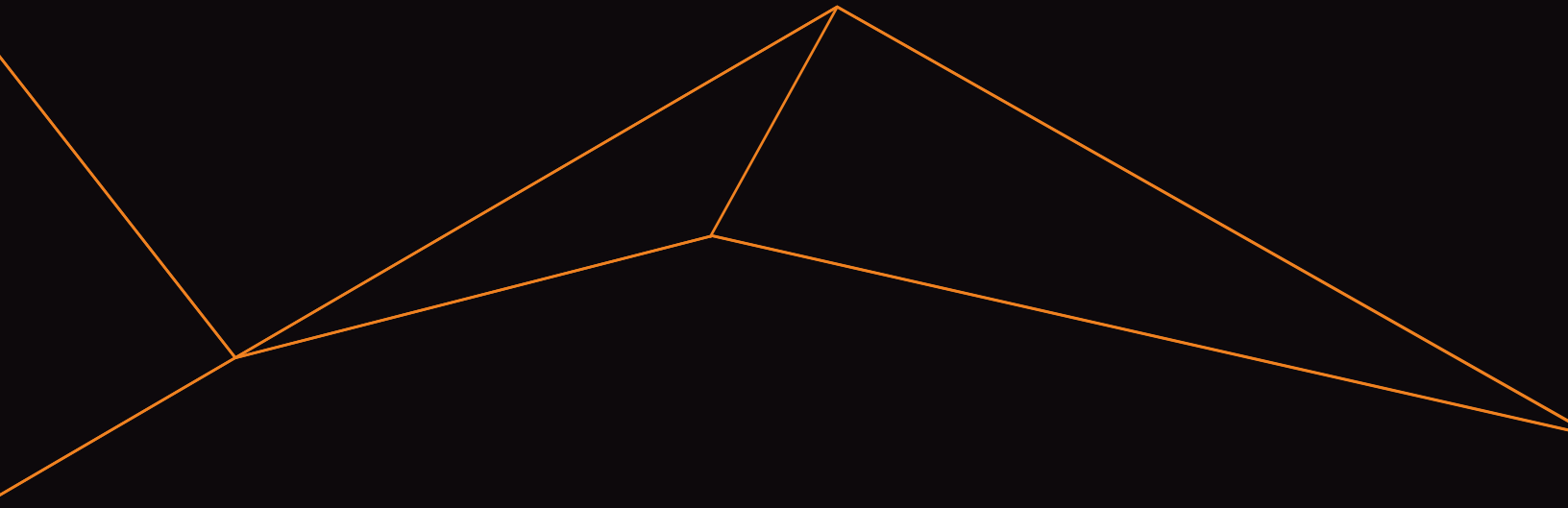
Increased operational safety

\*Result from field data. Results and calculations are to be considered as results reached under certain and controlled conditions. These results and calculations should not be treated as specifications and Sandvik does not guarantee, warrant or represent the outcome of results or calculations in any or all circumstances.

# iDRILL PACKAGE FEATURES IN DETAIL

	FEATURE	DESCRIPTION	PERFORMANCE iDRILL	NAVIGATION iDRILL	LINE OF SIGHT AUTOMINE	CONTROL ROOM AUTOMINE	AUTONOMOUS AUTOMINE
ONBOARD AUTOMATION	Automated Mast Incline	Automate the rising/lowering of the mast in 5° increments to 20° with the extended mast and 30° with the standard mast.	✓	✓	✓	✓	✓
	Automated Levelling	Brings the drill rig to a stable, level position prior to drilling and unlevels after drilling completes.	✓	✓	✓	✓	✓
	Hole Collaring Automatics	Hole collaring algorithm reduces the chance of hole collapse during drilling.	✓	✓	✓	✓	✓
	Adaptive Auto Drill Functionality	Automatically adjusts drilling parameters during operation based on ground conditions.	✓	✓	✓	✓	✓
	Automated Pipe Add/Removal	Ability to automatically add and remove drill pipe until desired depth is reached.	✓	✓	✓	✓	✓
	Intelligent Hole Finishing Sequence	Automated functionality to clean the finished hole based on the depth and/or the final hole elevation.	✓	✓	✓	✓	✓
NAVIGATION	TIM3D High Precision Navigation	GPS based hole navigation system that assists the operator in positioning the drill bit to within 10 centimeters.		✓	✓	✓	✓
	Onboard/Wireless Pattern Creation	Capability to wirelessly transfer drill patterns, load drill patterns via USB, or create a pattern onboard using the current bit position.		✓	✓	✓	✓
	Delay Status Tracking	Ability to track operator/equipment states/reasons throughout a shift based on an operations time utilization model.		✓	✓	✓	✓
	Driller's Notes Hole Logging	Allows the operator to collect and store drilling information at specific depths while drilling.		✓	✓	✓	✓
	Measurement-While-Drilling	Logging of drilling component measurements for future analysis while drilling.		✓	✓	✓	✓
	Onboard Diagnostics	Onboard diagnostics of alarms and system health parameters.		✓	✓	✓	✓
REMOTE AUTOMATION	Onboard AutoMine® Kit	Hardware components on the drill allow connectivity and access to the onboard controls and automation features.			✓	✓	✓
	AutoMine®: ACS Safety System	Safety system with physical safety key lock-out and remote E-stop.			✓	✓	✓
	AutoMine®: TeleControl	Control of all rig functions with same onboard station and controls.			✓	✓	✓
	AutoMine®: InfoDrills	An overview of the key info from all rigs in the fleet and ability to switch control to a different drill (FleetView).			✓	✓	✓
	AutoMine®: InfoView	High-quality video, PTZ controls and audio and rig info.			✓	✓	✓
	AutoMine®: InfoMap	Drill plan view to show location of all rigs and drill patterns with touch-screen move, zoom and rotate.			✓	✓	✓
	AutoMine®: InfoGeoPhoto	Ability to load georeferenced photos as the background image for the drill map view with on/off toggling.				✓	✓
	AutoMine®: TeleGeofence	Predefined area where remote-operation is allowed only inside the area. Proximity to area boundary alerts remote operator.				✓	✓
	AutoMine®: TeleDetect	Sandvik obstacle detection system (separate HW option). Proximity to object alerts remote operator.				✓	✓
	AutoMine®: Autocycle	Autonomous drilling cycle where work proceeds through drilling cycle including hole-2-hole tramming without operator involvement.					✓
	AutoMine®: AutoPlanning	Plan the rig work sequence by selecting holes or adding waypoints. Planning is enabled while rig is working.					✓
	AutoMine®: AutoGeofence	Predefined area where autonomous tramming is allowed only inside the area. Proximity to area boundary stops a rig during auto tramming.					✓
AutoMine®: AutoDetect	Extension to TeleDetect to stop autonomous tramming when obstacles are detected.					✓	





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