iStacker™
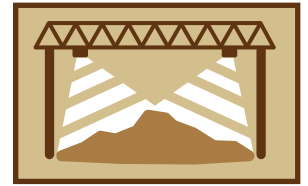# iStockpile™

Unique Radar Based Inventory Control

- · **Online stockpile volumetric measurement**
- · **3D visualization, height map and full statistics**
- · **Real time measurement and data processing**
- · **High accuracy under all conditions**
- · **Increased productivity and uptime**
- · **Long travel and dump height control**

indurad
The Industrial Radar Company

THE iStacker™/iStockpile™ CUTTING EDGE SOLUTION

The indurad´s cutting edge solutions are based on own technology and smoothly integrate into your existing infrastructure. Within rough material handling applications, iStacker and iStockpile provide valuable and unique monitoring features to operators, engineers, managers and maintenance.

iStockpile™

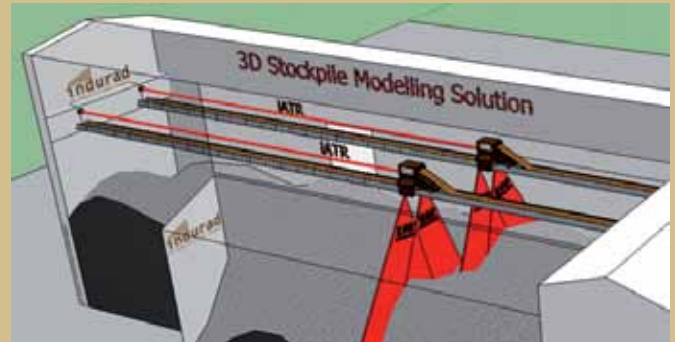## CRANE/TRIPPER CAR BASED LINEAR SCANNING

Typical Hardware

- 1D iATR tripper car linear positioning up to 1500 m
- 2D iDRR profile scanning with multiple sensors
- iRPU indurad Radar Processing Unit

Features

- permanent status of heap / stockpile information
- accurate tripper car / crane positioning
- 3D inventory scan + height map
- online real time volumetric information
- dead stock measurement at bin/bunker

Options

- ATEX Zone 21/22 Dust Ex IEC60079-31:2008
- assistance, tele commanding and automation
- iApron feeder control at car dumper
- iBelt 2D radar belt volume scanner

iStacker™

STACKER/RECLAIMER BASED SLEW SCANNING + LINEAR/ANGULAR POSITIONING

Typical Hardware

- 1D iATR linear positioning up to 1500 m
- 2D iDRR profile scanning from boom head
- iRPU indurad Radar Processing Unit
- integration of slew and luff angle

Features

- 3D inventory scan + volumetric information
- dump height control and dust mitigation control
- stacking windrow height control
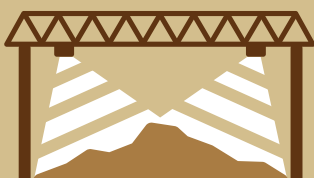- exact positioning (+/- 0.05m) for long travel control

Options

- predictive volume control for reclaimer
- assistance, tele commanding and automation
- GPS based sensor fusion instead angular encoders
- iBelt 2D radar belt volume scanner
- iProximity boom collision avoidance package
- iProximity vehicle collision avoidance package

steam   dust   rain

"After 10 cycles our model based stockpile has been drifted away completely"

„We do not want to send a surveyor once a month on the stockpile"

„Taking manual readings is a safety concern"

"Management, Market and Shareholders require fast and true information"

DISADVANTAGES OF STATE-OF-THE-ART TECHNOLOGY

Simulation/Model	Manual Surveying	Laser	1D Radar
– no dozer operation	– never up to date	– sensitive to dust, fog, snow	– inaccurate point probe
– stockpile slump	– specialized personnel	– frequent cleaning	– low update rates
– integration error	– safety & productivity	– annual maintenance	– no pile geometry

iWEB™ TECHNOLOGY - A TRUE HMI SOLUTION

indurad provides solutions, consisting of hardware, software and engineering. The superior usability is known within the industry: condensed information, suitable interfaces, easy to use software: iWEB™

iWEB™ visualizes current system status and important process data like:

· stockpile heightmap, 3D visualization
· statistics and volume history
· stacker position and orientation

iWEB™ updates live data using a push real time update technology. Multiple clients can be connected simultaneously using different user access levels, e.g. from operator to manager. All information can be downloaded for analysis (*.csv, *.xls, *.pdf).

The indurad iWEB™ is a human machine interface (HMI). Access is as easy as opening a webpage. iWEB™ allows secured access to all required information for setup, parameterization as well as visualization and process analysis. Cost intensive SCADA integration is avoided, no software installation is required.

SUBSTANTIAL CUSTOMER BENEFITS

Uniquely we mount our iDRR units right at the charging (discharging) point.
First it allows minimizing errors due to angular sensor offsets based on mechanical mounting.
Second it will immediately update the model. Both cannot be done with a pole based scanner.

Easy & Flexible

+ quick and easy installation
+ smooth plant integration
+ no maintenance, no cleaning
+ drag + drop selection pile zones
+ no software installation

Safe & Productive

+ measurement during operation
+ operable under all conditions
+ no surveyor required
+ dump height control and CAS
+ detect and measure dead stock

Transparent & Accurate

+ exact inventory control >98%
+ full statistics + production history
+ exact positioning stacker/tripper
+ single long travel updates inventory after dozer manipulation

snow	fog	wind	iStacker™

indurad
The Industrial Radar Company

specification	value
power consumption	< 100 Watt
voltage	24V DC
radar sampling rate	15 Hz
temperature range	–40°C to +80°C
accuracy	> 98%
installation	maintenance window, no special downtime needed, hot startup
sensor housing	2000 g robust aluminium IP66 enclosure
health and safety	non critical compliance with FCC and ETSI no precautions necessary no safety distance necessary (1% of the peak power of a cellular phone)
classification	R&TTE, CE 0682 health: DIN VDE 0848-1 safety: IEC 60950 radio spectrum: EN 301 091-1/2 FCC Rule Parts 15.253 ACMA LIPD CL 2000 P 48

data interfaces & plant integration

iStockpile and iStacker are highly customizable solutions that perfectly fit and complement existing infrastructures, on all levels:

- Process Interfaces
- SCADA Interfaces
- MES Interfaces

Beside the iWEB™ interface iStacker and iStockpile provide the following interfaces:

- Socket TCP/IP
- Ethernet IP
- Ethernet/WLAN
- Modbus TCP/IP
- Profibus DP
- CAN BUS
- DeviceNet
- Digital I/O
- 4...20 mA
- RS 232, 422, 485
- other interfaces upon request

iProximity™ iBelt™ iDome 3D™ iSilo 3D™ iTruck™ iApron™