

MECHANICAL CUTTING DIVISION

DIGITAL MACHINE INFORMATION



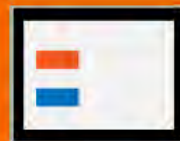
Product Management Roadheaders & Digitalization



Download



Upload



Visu

FDM Statistics

Downloaded: 0

Uploaded: 0

SAFETY FIRST



Sandvik's objective is zero harm to our people, the environment we work in, our customers and our suppliers.



**PROTECTIVE
EQUIPMENT**



**FIRST AID
KIT**



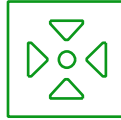
ALARM



**EMERGENCY
NUMBER**



**EMERGENCY
EXIT**



**ASSEMBLY
POINT**



**HEALTH &
WELLBEING**



**PSYCHOLOGICAL
SAFETY**



SITE ZELTWEG
← CLICK ICON FOR MORE DETAILS





COMPLIANCE

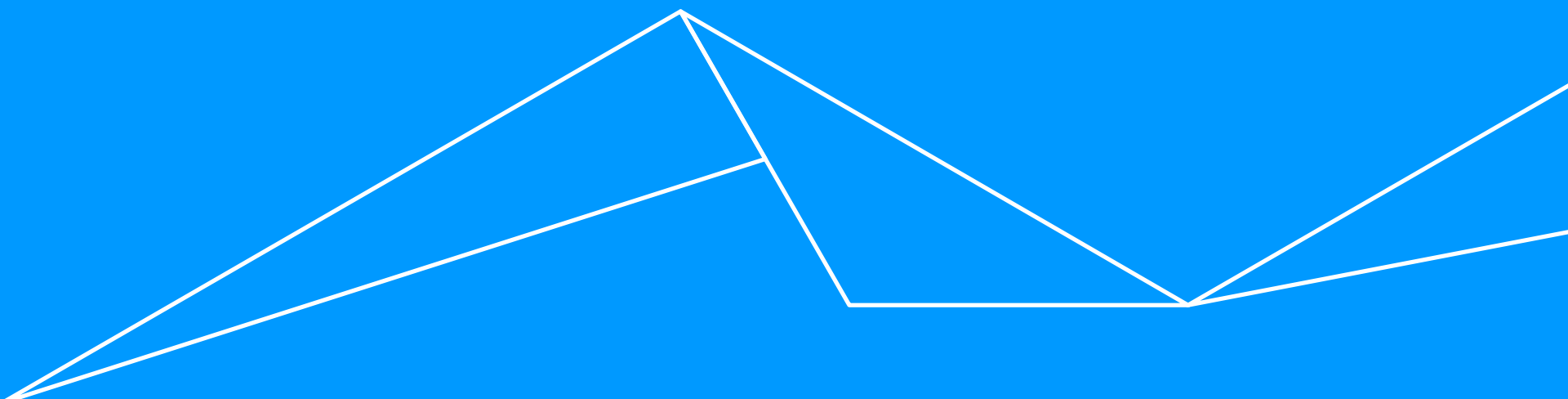
COMPLIANCE

We've always been committed to conducting business with high integrity and in a legal and ethical manner. We embrace our corporate responsibility to combat corruption.

TABLE OF CONTENTS

DIGITAL MACHINE INFORMATION

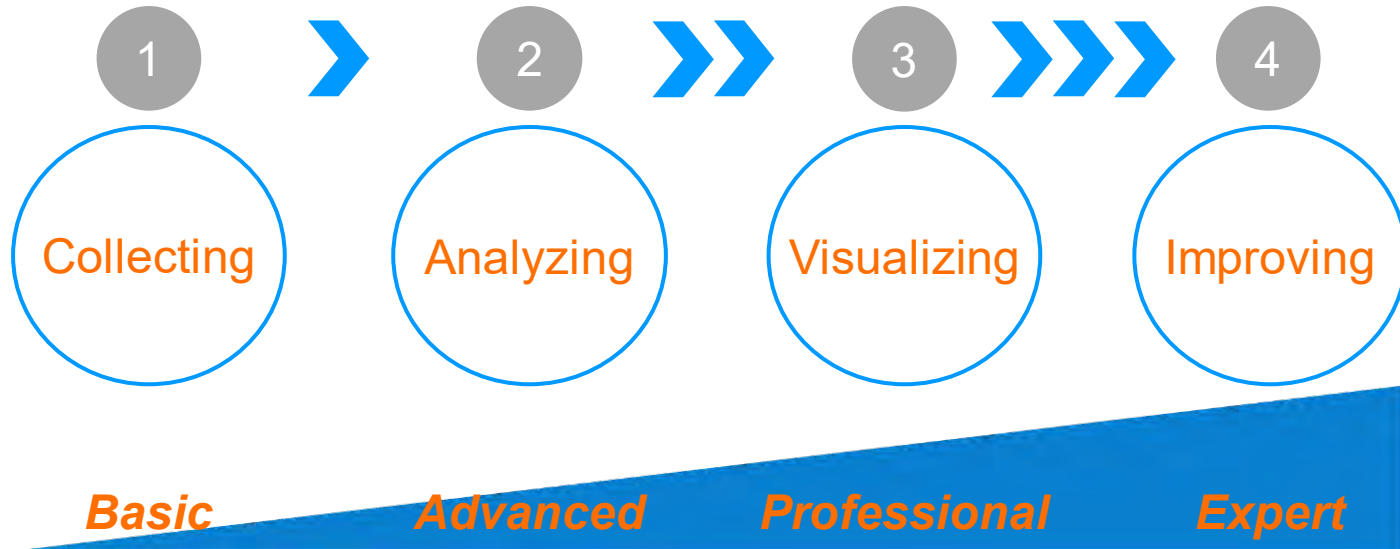
- Introduction, Principals & Basics
- Data Collection & Transmission
- Data Storage & Analysis



INTRODUCTION, PRINCIPALS & BASICS

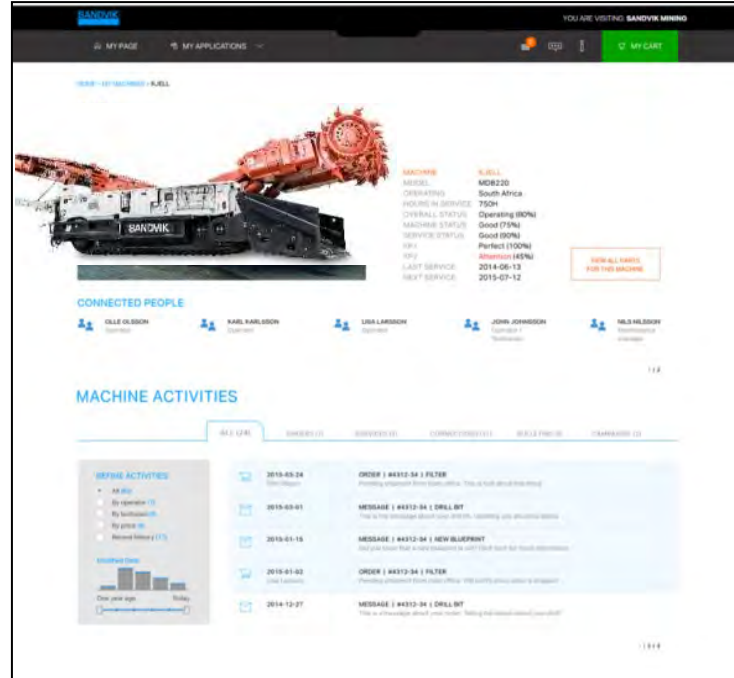
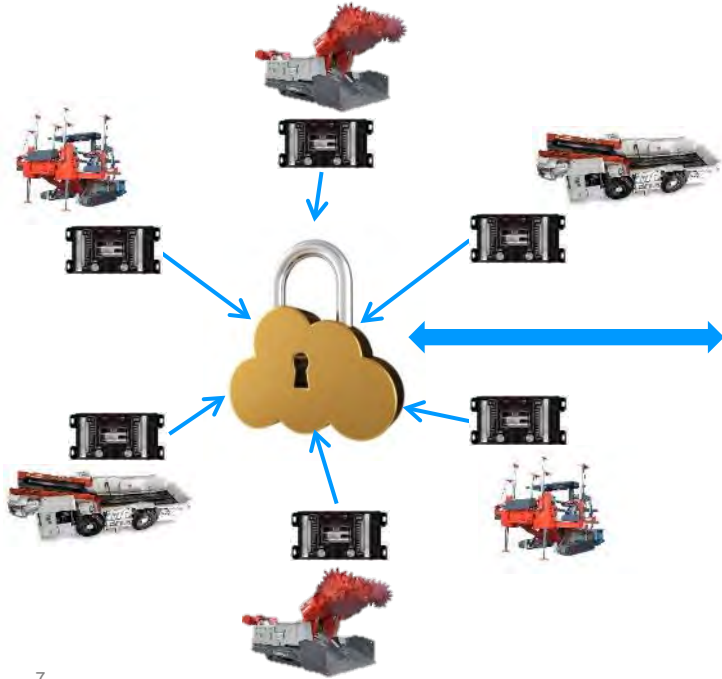
MECU DATA COLLECTION AND DATA ANALYSIS

A SMART TOOL HELPING YOU TO MAKE THE RIGHT DECISIONS!



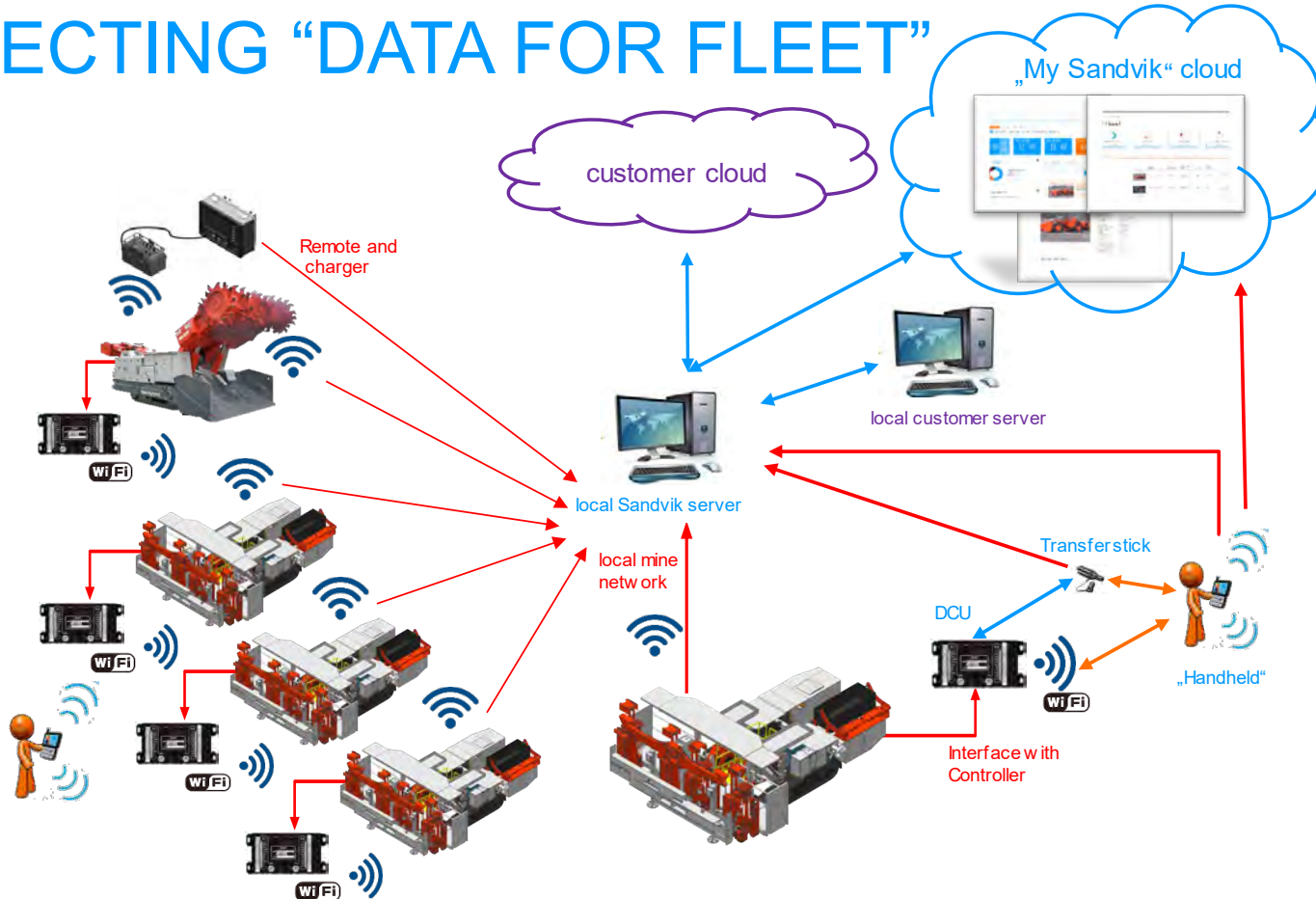
DATA COLLECTION

LEARN TO LISTEN TO YOUR MACHINES, WHICH TRY TO WHISPER TO YOU



- ✓ **Efficient** way of collecting all data.
- ✓ **Improved data accuracy.**
- ✓ **Trusting** data for current and historic events.

COLLECTING "DATA FOR FLEET"



DATA BASED MECU PROCESS OPTIMIZATION

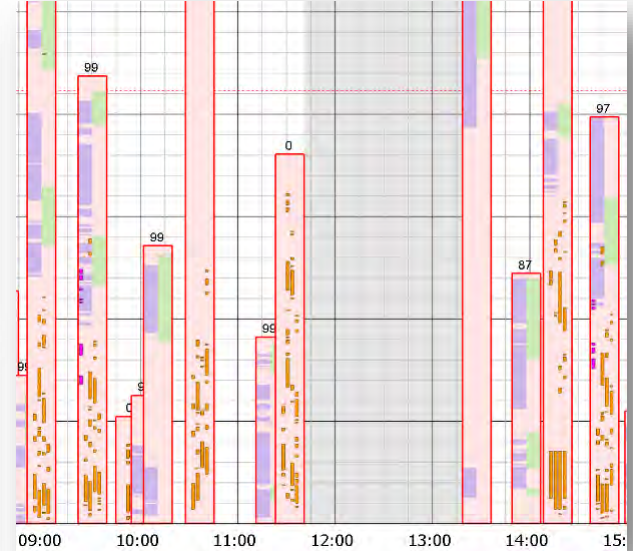
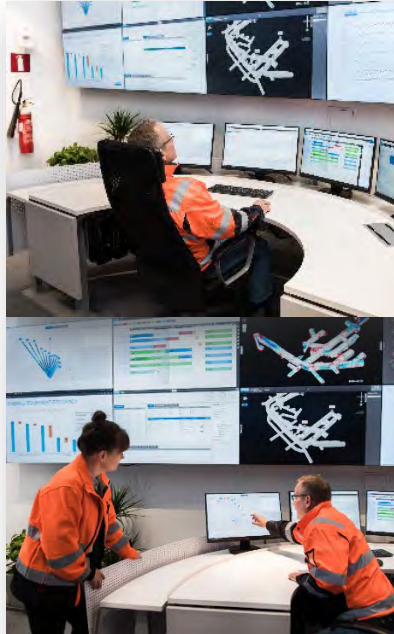
Online live directly
at machine UG

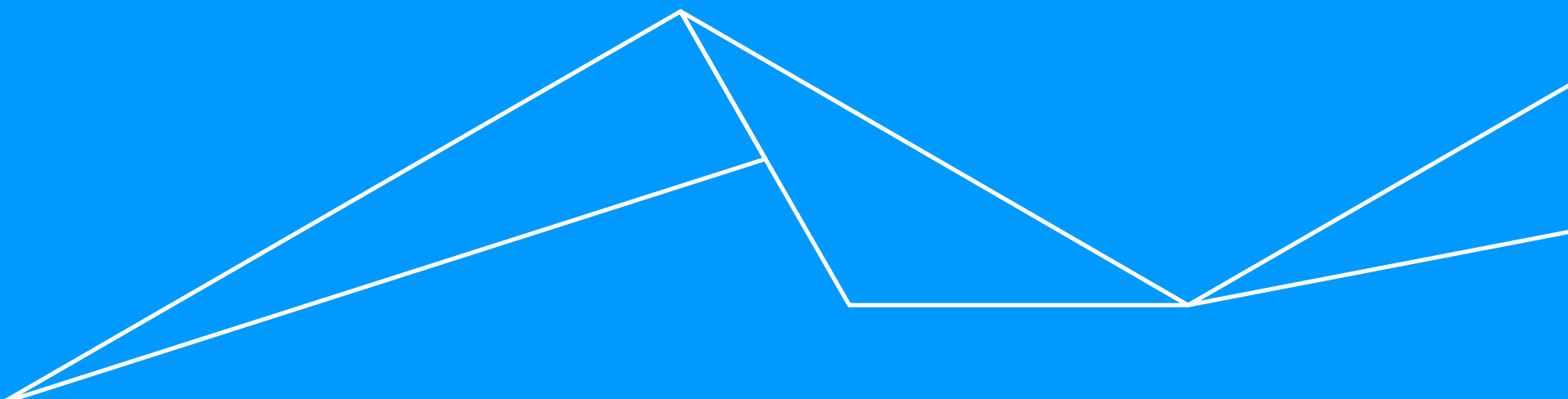


Online live in
surface control room



Detailed data postprocessing
for operation optimization





DATA COLLECTION & TRANSMISSION

DATA COLLECTION HARDWARE

ON MACHINE

1. SCU data logger
2. SCU battery
3. Network cable
4. SCU connection cable for data stick
5. Data stick (32GB)
6. USB cable for data stick
7. 24V power & CAN cable (not shown)



DATA COLLECTION HARDWARE (ANDROID)

MOBILE

**Exemplary
for
non
flame
proof
use**

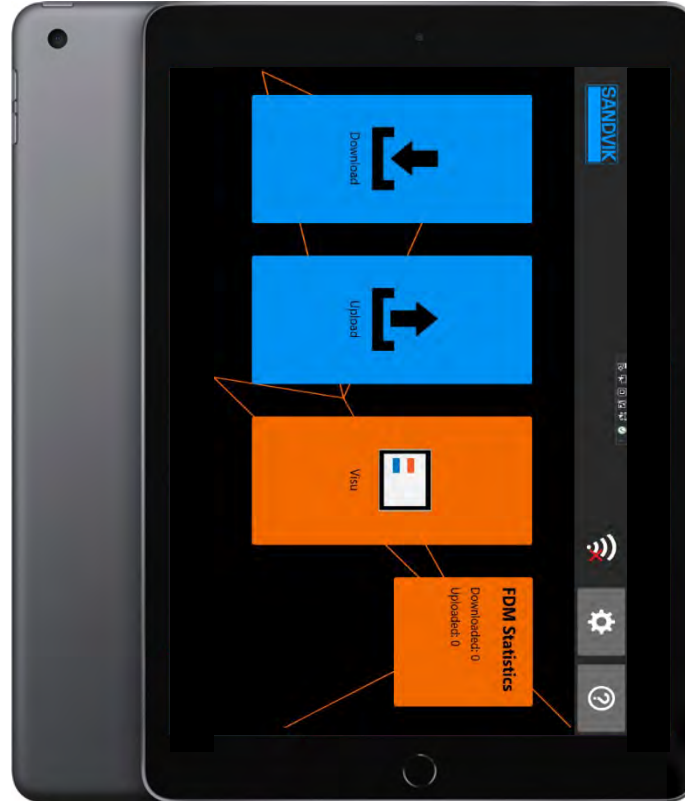


DATA COLLECTION HARDWARE (IOS)



MOBILE

**Exemplary
for
non
flame
proof
use**



DATA COLLECTION HARDWARE (ANDROID)

MOBILE

Exemplary
for
flame
proof
use



– Ex Protection Type

- **ATEX Bergbau**
I M1 Ex ia I Ma IP64
- **IECEx Bergbau**
Ex ia I Ma IP64
- **SANS Bergbau**
(Zugelassen in Südafrika)
Ex ia I Ma IP64
- **ANZEx Bergbau**
(Zugelassen in Australien und Neuseeland)
Ex ia I Ma



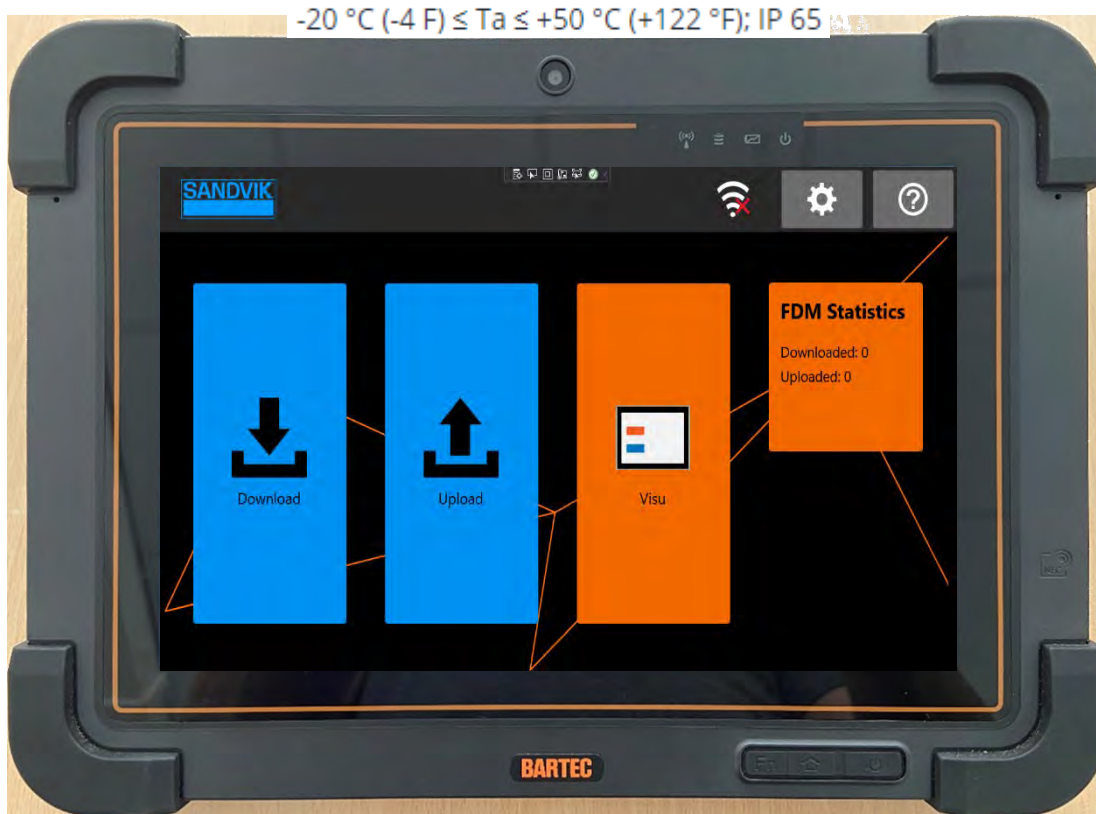
ANZEx

SANDVIK

DATA COLLECTION HARDWARE (WINDOWS)

MOBILE

Exemplary
for
flame
proof
use



– Ex Protection Type



DEMKO 16 ATEX 1803



IECEx UL 16.0160



UL E226123



UL-BR 20.1319



MTEx 0711/19.0232



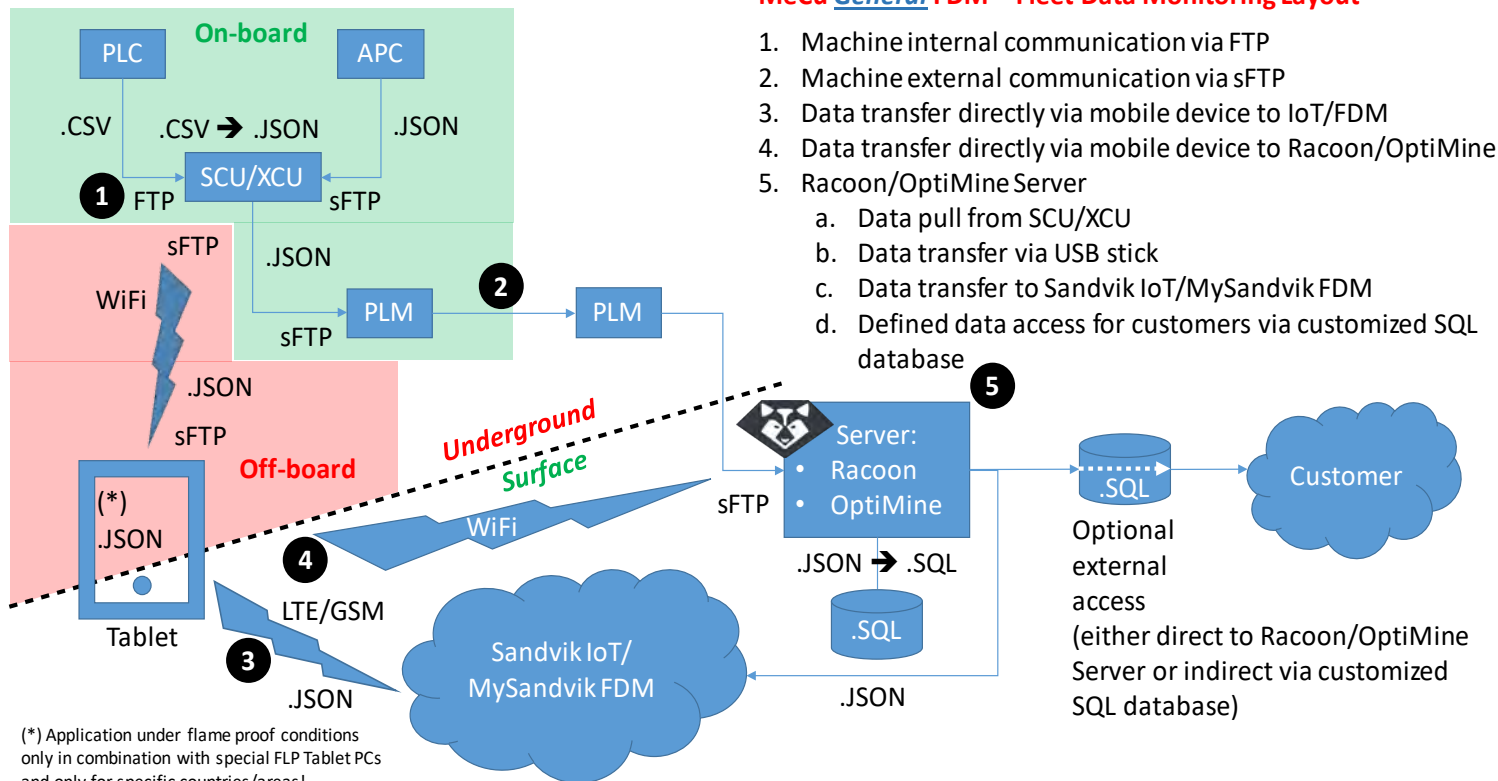
IECEx SIM 18.0009



RU C-DE-BH02.B.00212/19

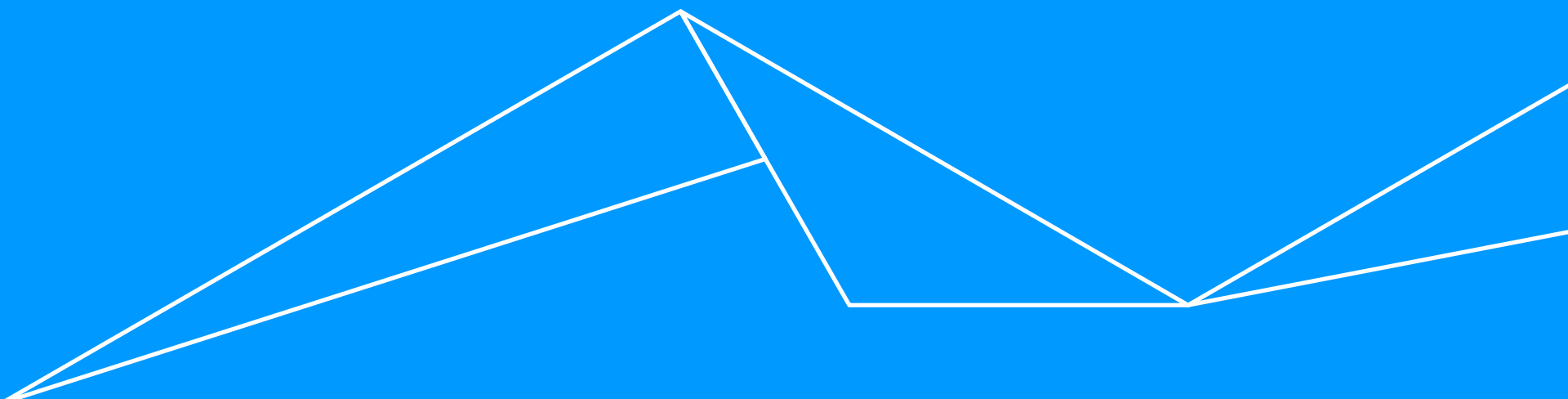


MECU EQUIPMENT CONNECTIVITY



MeCu General FDM – Fleet Data Monitoring Layout

1. Machine internal communication via FTP
2. Machine external communication via sFTP
3. Data transfer directly via mobile device to IoT/FDM
4. Data transfer directly via mobile device to Racoon/OptiMine
5. Racoon/OptiMine Server
 - a. Data pull from SCU/XCU
 - b. Data transfer via USB stick
 - c. Data transfer to Sandvik IoT/MySandvik FDM
 - d. Defined data access for customers via customized SQL database



DATA STORAGE & ANALYSIS

RACCOON SERVER CONCEPT

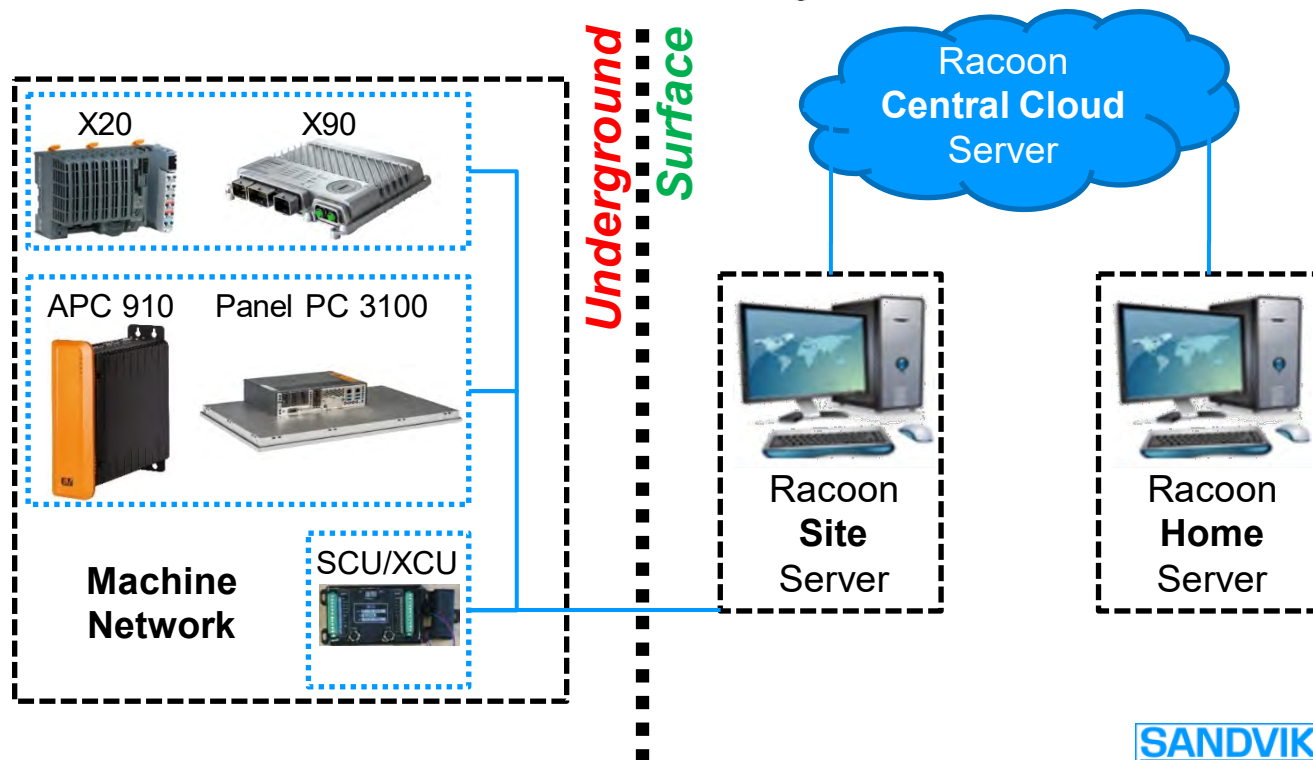


- Raccoon Server

- Data services
 - Live (OPC-UA)
 - Historic (FDM)
- Update services
 - PLC software
 - Visu software
- License services
- Machine online access/support

- SCU/XCU

- Machine interface
 - Universal
 - Configurable

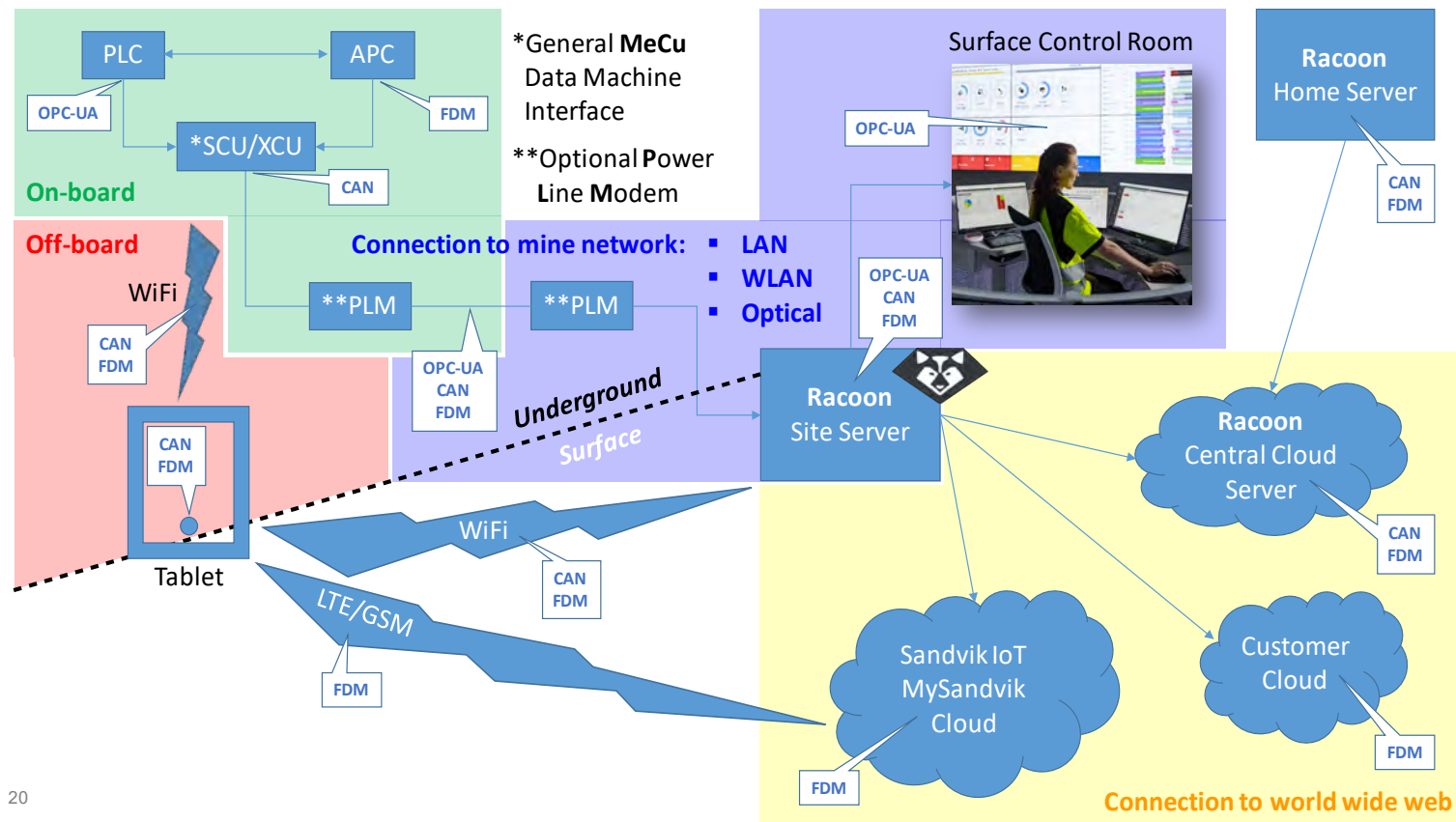


DATA CATEGORIES

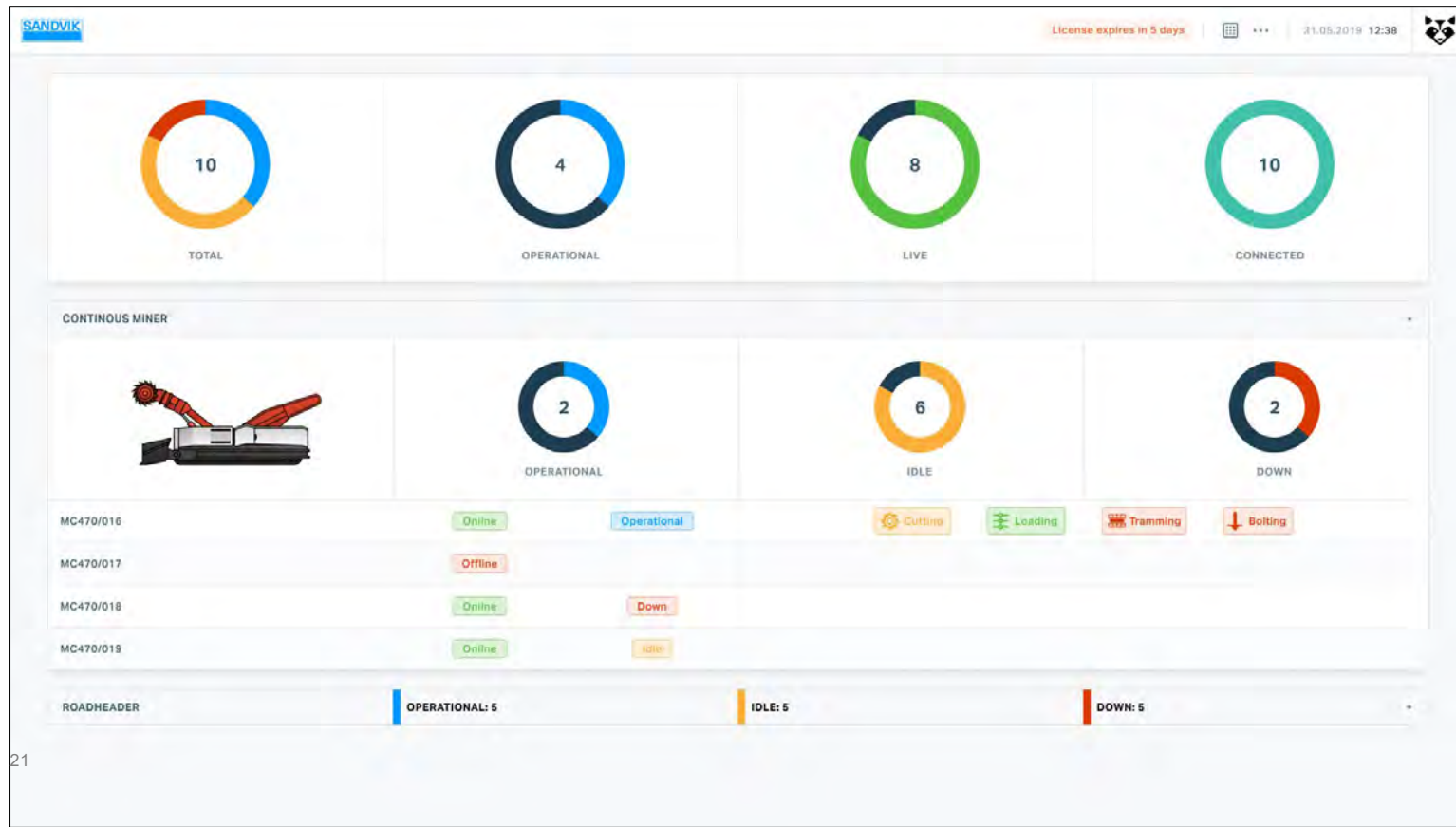
- OPC-UA data
 - Live data
 - Nominal refreshing time 50 ms
 - Coming directly from PLC
 - No intermediate storage
- FDM data
 - Historic data
 - Nominal refreshing time 1 s
 - Written to SCU/XCU
 - Intermediate storage
- CAN data (for Sandvik only)
 - Historic data
 - Nominal refreshing time 10 ms
 - Written to SCU/XCU
 - Intermediate storage



DATA FLOW



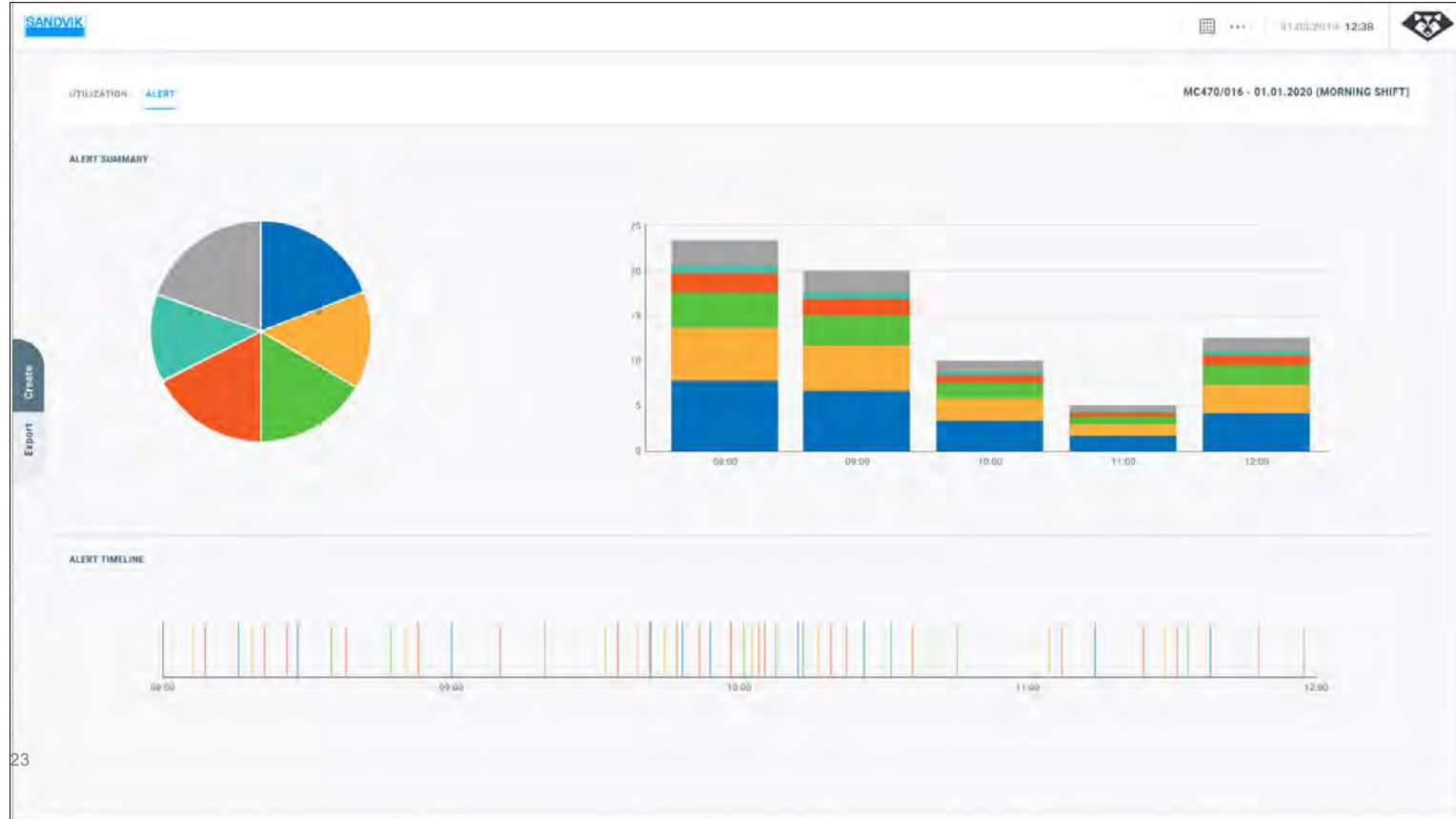
MECU EQUIPMENT LIVE VIEW BY RACCOON



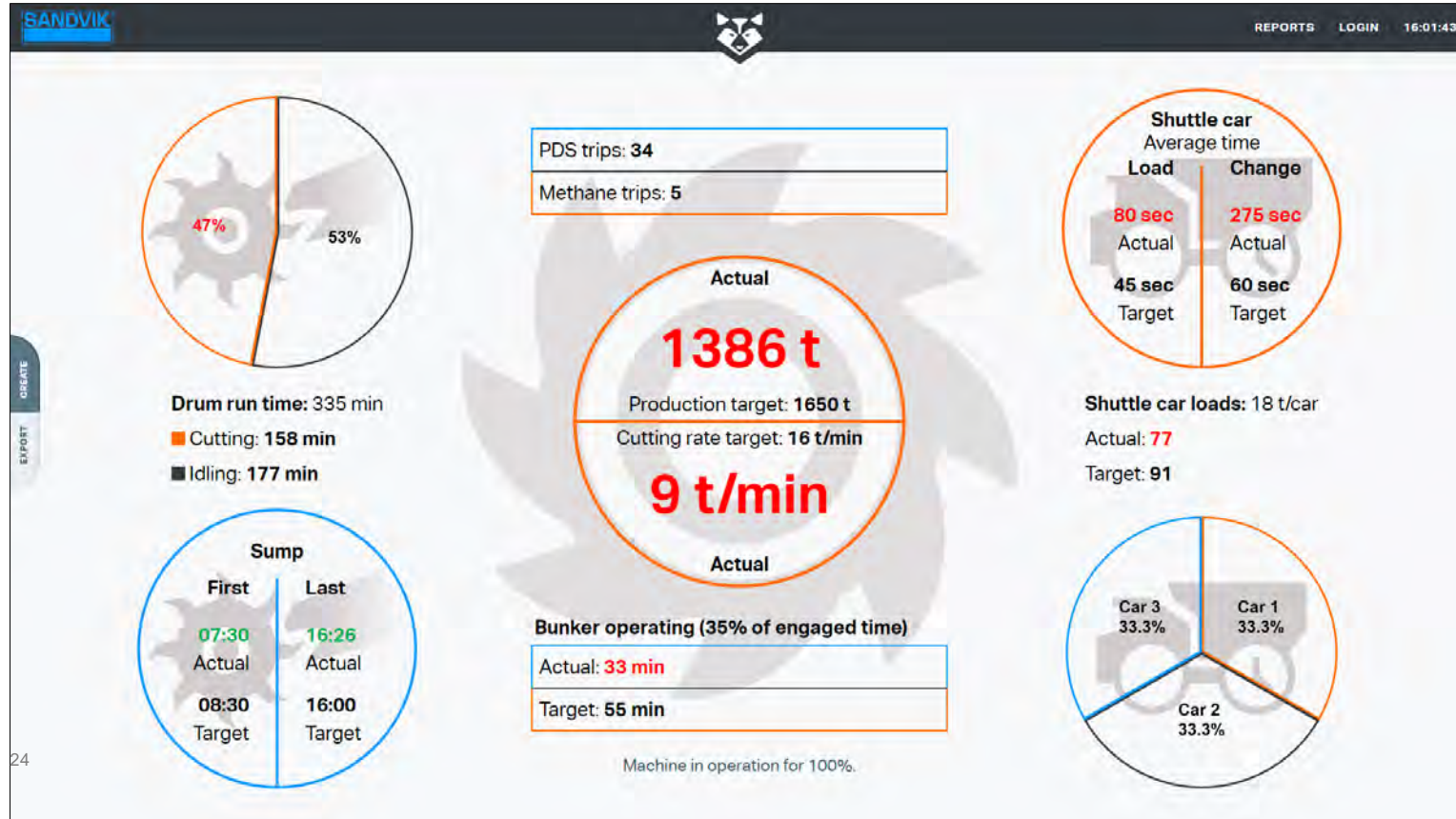
MECU EQUIPMENT PAST VIEW BY RACCOON



MECU EQUIPMENT PAST VIEW BY RACCOON



MECU EQUIPMENT CUSTOMER REPORT

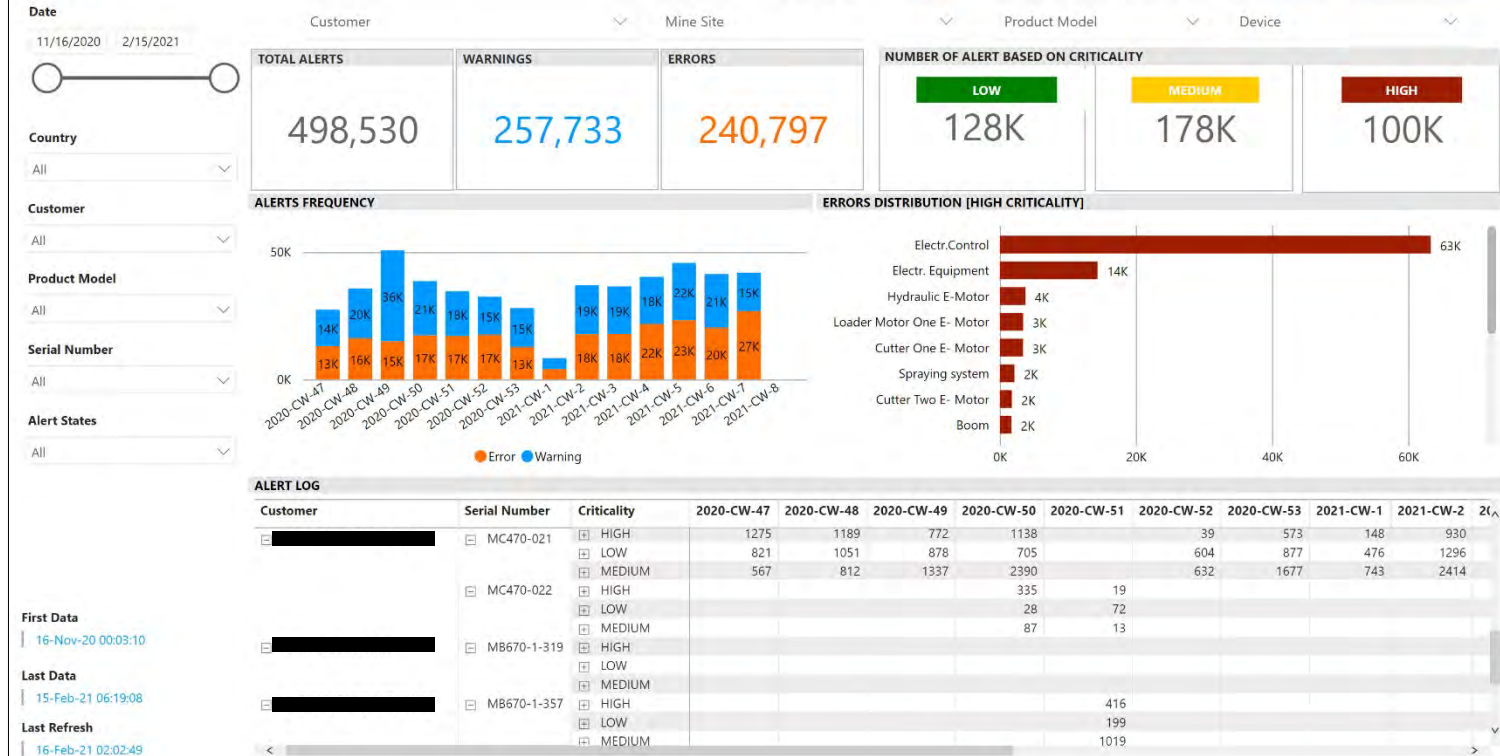


FDM REPORTS BY MECU DIGITAL SERVICES



FDM REPORTS BY MECU DIGITAL SERVICES

ALERTS



FDM REPORTS BY MECU DIGITAL SERVICES

SIGNAL

Customer Mine Site Product Model Serial Number

HOURS SUMMARY

Customer	Serial Number	Module	Component Hours	Signal Name	Value
[REDACTED]	MB670-1-319	Generator	Hours	HydraulicMotorOneHours	2,145.80
		Hydraulic	Motor	LoaderMotorOneHours	285.40
		Loader	Motor	LoaderMotorTwoHours	285.40
		Tram	Motor	TramMotorOneHours	117.90
				TramMotorTwoHours	117.90
[REDACTED]	MB670-1-357	Conveyor	Motor	ConveyorMotorTwoHours	0.50
		Cutter	Motor	CutterMotorOneHours	3.60
		General	Hours	HydraulicHours	14.60
		Hydraulic	Motor	HydraulicMotorOneHours	7.60
		Loader	Motor	LoaderMotorOneHours	0.50
				LoaderMotorTwoHours	0.50
				TramMotorOneHours	0.20
		Tram	Motor	TramMotorTwoHours	0.20
				ConveyorMotorOneHours	67.20
				CutterMotorOneHours	99.70
[REDACTED]	MB670-1-332	General	Hours	HydraulicHours	313.10
		Hydraulic	Motor	HydraulicMotorOneHours	307.90
		Loader	Motor	LoaderMotorOneHours	65.10
				LoaderMotorTwoHours	65.10
		Tram	Motor	TramMotorOneHours	18.80
				TramMotorTwoHours	18.80
				ConveyorMotorOneHours	18.30
		Cutter	Motor	CutterMotorOneHours	21.80
		General	Hours	HydraulicHours	87.20
		Hydraulic	Motor	HydraulicMotorOneHours	86.40
		Loader	Motor	LoaderMotorOneHours	17.50
				LoaderMotorTwoHours	17.50
		Tram	Motor	TramMotorOneHours	7.40
				TramMotorTwoHours	7.40
[REDACTED]	MB670-1-333	Conveyor	Motor	ConveyorMotorOneHours	18.30
		Cutter	Motor	CutterMotorOneHours	21.80
		General	Hours	HydraulicHours	87.20

Country
All

Customer
All

Product Model
All

Serial Number
All

Module
All

Component Hours
All

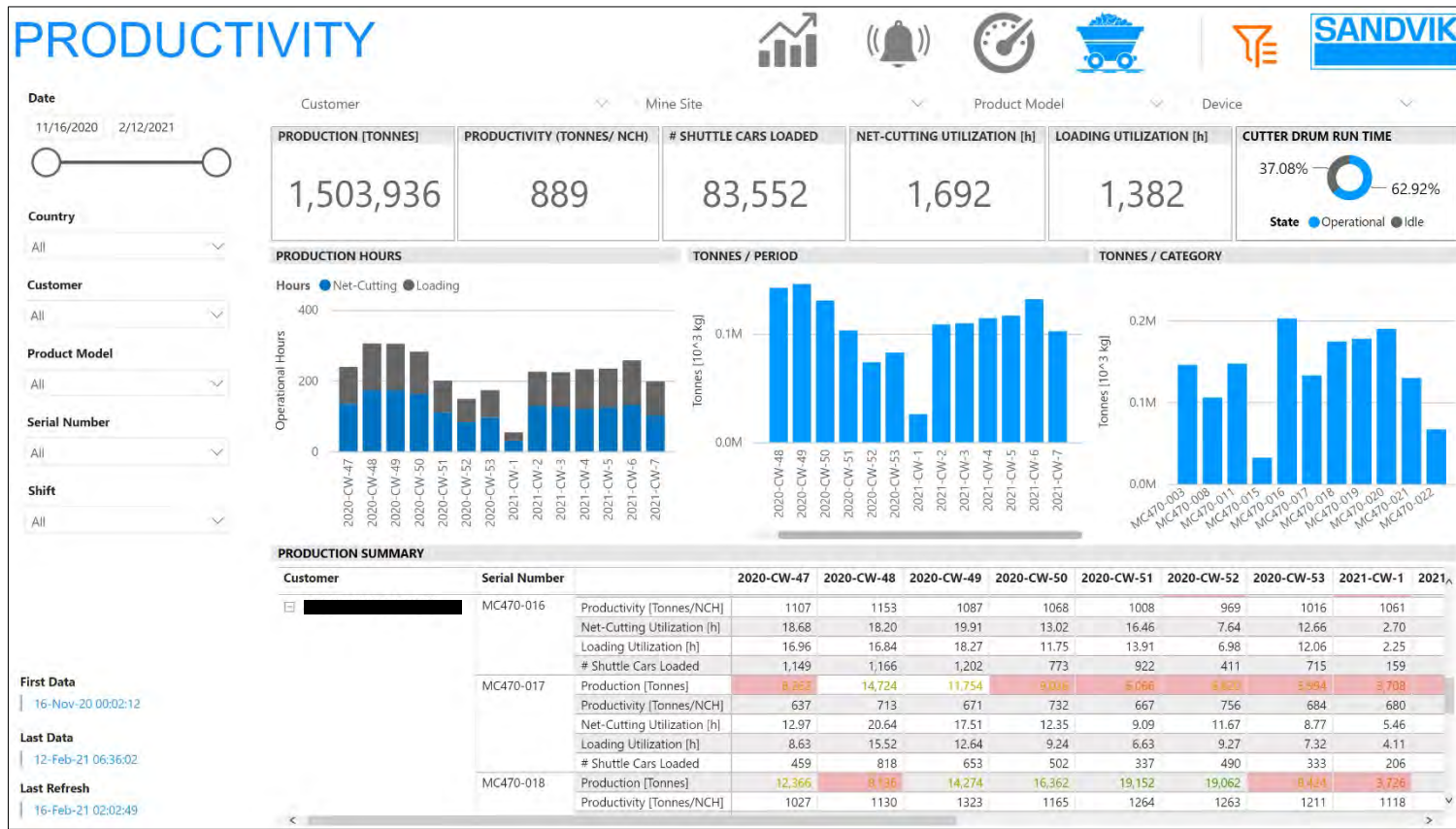
First Data
16-Nov-20 00:02:12

Last Data
12-Feb-21 06:12:06

Last Refresh
16-Feb-21 02:02:49



FDM REPORTS BY MECU DIGITAL SERVICES

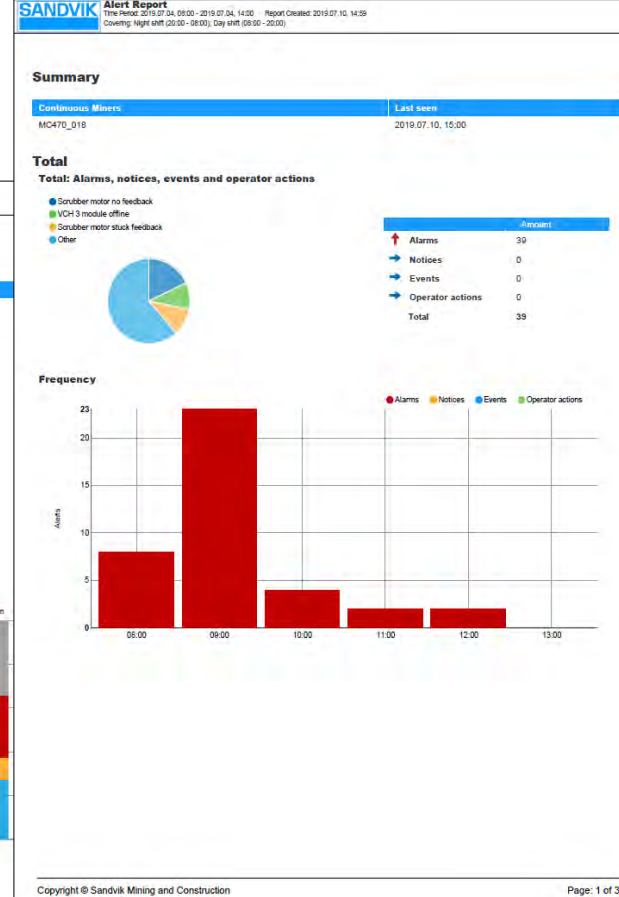
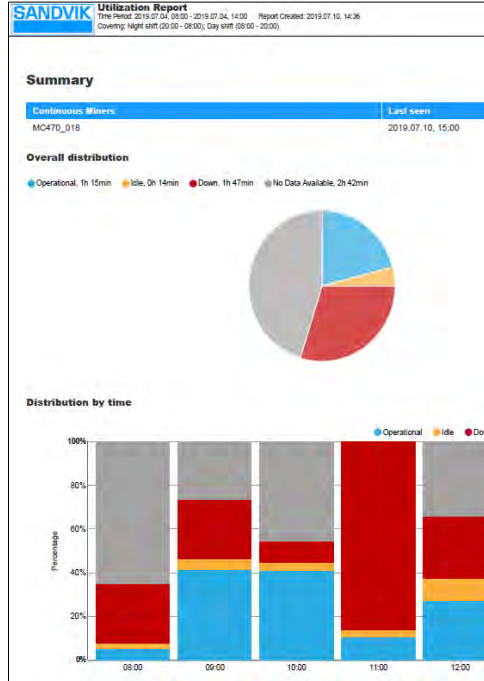


FDM REPORTS

GET INTO DETAILS AND UNDERSTAND THE ACTIONS

- **Powerful** report generator for **utilization** and **alerts** on any operating period
- **Comprehensive comparison** between machine/s in operation
- **Data export** capabilities

featured by OptiMine®



SANDVIK MINING AND ROCK TECHNOLOGY

The information contained in this presentation/specification is confidential and prepared on behalf of Sandvik AB and its affiliates. Sandvik does not consent to public disclosure, publication, presentation or reproduction of any information contained in these presentations. Recipients of the information contained in this presentation/specification may be required to execute a Sandvik Confidentiality Undertaking at Sandvik's request.

Copyright Sandvik AB 2011

ROCKTECHNOLOGY.SANDVIK

