

OPCENTER QUALITY

IMPLEMENTATION AT SANDVIK ROCK
TOOLS PRODUCTION IN STOCKHOLM



SCOPE

The production unit Västberga (Stockholm) at the Rock Tools division of Sandvik Mining and Rock Technology has an old mainframe system for quality data

It has been in place for more than 30 years and will no longer be supported by the IT organization

We have chosen Opcenter quality (previously called QMS) as our new quality system

42,000
EMPLOYEES

100

BILLION SEK IN REVENUES

50

R&D CENTERS
GLOBALLY

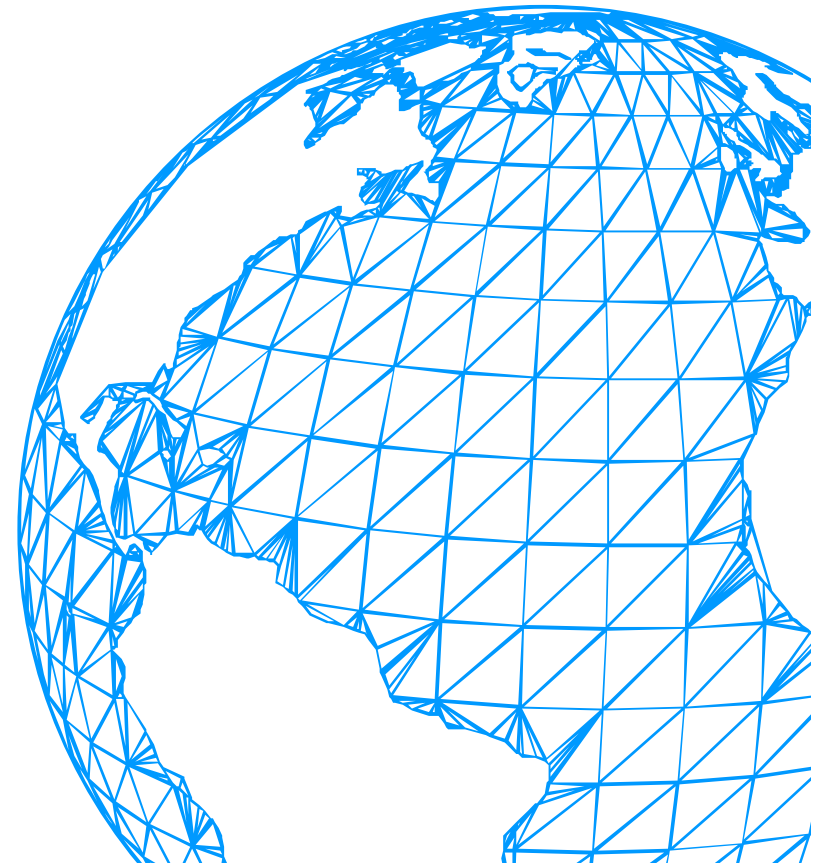
SALES IN OVER

160

COUNTRIES
AROUND THE GLOBE

3.7 BILLION SEK
ANNUAL R&D
INVESTMENT

5,900
ACTIVE PATENTS



Figures refer to Group total 2018

BUSINESS AREAS – OUR PORTFOLIO

SANDVIK MACHINING SOLUTIONS

40%

53%

SANDVIK MATERIALS TECHNOLOGY

15%

7%

SANDVIK MINING AND ROCK TECHNOLOGY

43%

39%



Share of revenues 2018

Share of adjusted operating profit 2018

Other operations (non-strategic assets) contributed by 2% to revenues and by 1% to adjusted operating profit



OFFERING AREAS



EXPLORATION



SURFACE DRILLING



DRILLING AND BOLTING



LOADING AND HAULING



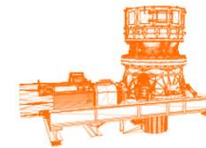
MECHANICAL CUTTING



ROCK TOOLS



MOBILE CRUSHING AND SCREENING



STATIONARY CRUSHING AND SCREENING



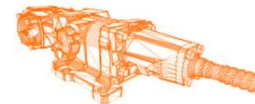
BREAKERS, BOOMS AND DEMOLITION TOOLS



PARTS AND SERVICES



AUTOMATION

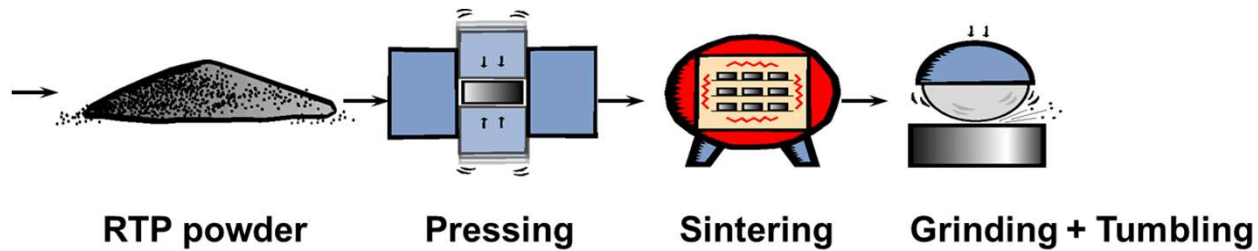


ROCK DRILLS



READY TO PRESS POWDER TO PRODUCT

PROCESS AT PU VÄSTBERGA



Inspection data per process

material properties
(from supplier)

dimensions
weight
defects

dimensions
material prop.
defects

dimensions
defects
rejections

CURRENT MAINFRAME QC SYSTEM

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C8000 01   KVAS                ÄMNESORDER                20-01-23
ORDERNR..... 00024784        BRAND..... NOB
TRANS.KOD.....          ARTIKELKOD. GT8S-180A-969HG5   969
PROD.ENHET..... V          RITNING NR. GT8S180A*A
KOD SPEC..... 0          TILLV.LINJE 544
PV RIKTV..... 113.000      ORDERTYP... 0          ANT. I ORDER. 900
ERPLN1.....          PH RIKTV... 40.10      EXTERN SORT... 969
BLANDNING NR.. 969003      ERFLN2.....          STAT. GRP....
PRESSAT ANTAL. 905        BURKNR..... 26 11
PRESSBRÄCK....          PR. DATUM.. 19504      PR. VERKTYG... T1213
RENGPLN1.....          INVÅGD VIKT
ANT DET/BLOCK. 1        RENGPLN2...
KR-% ÄMNE..          FORMG.VIKT/ST

SINTR VIKT/ST. 110.700      LEV ANTAL.. 905        EK/ST..... 78.21
LEV DATUM..... 20021      UPPL.DATUM. 19505
ÄMNESLEV. DAT. 20022
*** KASSATIONER ***      KOMMENTAR..
ORS LOK ANTAL  ORS LOK ANTAL  ORS LOK ANTAL  ORS LOK ANTAL  ORS LOK ANTAL
11 9 94        24 0 92
13 1 2
    
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ORDERNR.. 00024784        ARTIKELKOD GT8S-180A-969HG5        SORT..... 969
MÅT PRTR 2          RITNING... GT8S180A*A        KONTR.DAT 19514
TRANS.KOD 4          ANT I ORD. 905
VARIABEL. H          D1          D2          D3
TYP / DEC V  A  V  A  V  A  V  A
PLAN/ANT. 015 10 015 10 015 10 015 10
TOL NOM.   32.510 18.370 18.370 18.370
MAX        .160   .120   .120   .120
MIN        -.160  -.120  -.120  -.120

1 MÅTV: 32.52 18.36 18.36 18.35
2       32.55 18.37 18.34 18.36
3       32.57 18.40 18.38 18.37
4       32.52 18.40 18.37 18.34
5       32.50 18.37 18.35 18.35
6       32.53 18.39 18.38 18.37
7       32.51 18.39 18.36 18.34
8       32.54 18.37 18.35 18.35
9       32.51 18.40 18.33 18.34
10      32.52 18.39 18.35 18.36
    
```

Features

- Inspection per work order
- Inspection by sampling after a process step is finished, no SPC during production
- Inspection data and order data saved as tables in a relational database
- The QC system is for production and inspection data. It does not support deviation- or corrective action management



QUALITY MANAGEMENT SYSTEM PRODUCTION UNIT VÄSTBERGA

Besides the mainframe QC system there are:

- Guidelines and procedures at Sandvik, Business Area and Division level
- A local management system for Rock Tools production units in Sweden with an ISO9001 certification

Objectives, procedures, instructions are all in the quality management system.

The QC system is a tool to meet the product specifications and provides data for corrective actions and improvements.



HOW DID WE CHOOSE OPCENTER QUALITY

REQUIREMENTS

- Similar functionality as the current system
- Possibility to go from a local to a global system

CONDITIONS

- Rock Tools uses NX/Teamcenter globally to manage drawings and specifications.
- The current QC system is a local system for production unit Västberga.
No similar systems at the other production units or at the R&D department.
The sales organization has a system for customer complaints.
- A diverse IT environment, different ERP systems at different units



HOW DID WE CHOOSE OPCENTER QUALITY

POSSIBILITIES

- Integration between Opcenter Quality and Teamcenter
- Go from a local to a global system
- Use the same system for production data, customer complaints, action management etc.
- Common system used by R&D, Production and Product line management



IMPLEMENTATION AT PRODUCTION UNIT VÄSTBERGA

A LOCAL PROJECT

- A pilot project with the main objective to replace the current QC system
- An evaluation of Opcenter Quality and how we can utilize its possibilities
- No decisions made how to proceed after this pilot



IMPLEMENTATION AT PRODUCTION UNIT VÄSTBERGA

INSPECTION

- Inspection data from the supplier of is entered manually
- Integrations with the ERP system, production orders creates inspection orders in Opcenter Quality
- Inspection plans with tolerances
- Control orders

Incoming Goods

Order Management

Inspection Plan

Quality Process



IMPLEMENTATION AT PRODUCTION UNIT VÄSTBERGA

EVALUATION

- The next phase of the project is evaluation and reports
- There is a report module QPM Evaluation
- The data is stored in an SQL database and it is also possible to make reports with e.g. Excel or Power BI



IMPLEMENTATION AT PRODUCTION UNIT VÄSTBERGA

ACTION MANAGEMENT

- Customer complaint, action management etc are not included in the project.

However, we have the option to come back to this at a later stage.



IMPLEMENTATION AT PRODUCTION UNIT VÄSTBERGA

MIGRATION

- To replace an existing system presents an extra challenge.

We have not yet a complete migration plan. But the idea is not to migrate data from the old system. Since both systems store data in SQL databases we hope to be able to make reports that combine data from both systems.



CONCLUSIONS AND LESSIONS LEARNED

- Define the overall objectives before the project is started but do not go into details too early.
- Explore the new system and test it well before you go into production.
- This project is just a first step to closed loop manufacture. We now have one more tool.

