

# Reference projects

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Below I have listed some projects, which I have worked on during the years 2003-2013, either as a project manager or as a member of the core team.

The entire period I was employed by SBG, Svensk Byggnadsgeodesi AB. In 2007 Hexagon AB acquired SBG, which gave me the possibility to work with other companies within the Hexagon Group, such as Mikrofyn A/S (Odense, Denmark) and Leica Geosystems AG (Heerbrugg, Switzerland). In 2011 I lived in Odense for six months during an intense phase where I was project manager for five different projects at the same time (not to recommend, but a good experience).

## My philosophy

My main focus is quality; therefore I prefer assignments where quality is in focus. I care for projects and products I am running, therefore I have strong focus on the follow up/hand over. If possible, I prefer to follow the product during the first year, just to make sure deviances in design and production procedures are taken care of fast, before affecting the market. Some keywords to describe myself are:

- Analytic
- Structured
- Social
- Responsible

## Projects

My project experience can be categorized in two types, hardware development and quality improvements

### **Hardware development projects:**

- [Design a new Machine Control Computer, GeoROGv8](#)
- [New Computer concept for Leica Paving Solution](#)
- [Computer\(MPC1350\) improvement project](#)
- [Computer \(GeoROGv6\) improvement project](#)

### **Quality and organization improvement projects:**

- [Introducing ISO 9001](#)
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- [External service centers](#)
- [Delivery and shipment control](#)

## Hardware development projects

### Design a new Machine Control Computer, GeoROGv8

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*When: 2006-2008, 1,5 years project*

*Client: Svensk Byggnadsgeodesi AB*

#### The product

GeoROGv8 is an X86 rugged machine control computer developed to tolerate extreme shock and vibrations, such as from a Bulldozer. The software is LINUX based and the hardware platform is a semi custom (full custom carrier board and standard ETX board), with the following interfaces required:



- 9-36VDC input
- 12vODC output
- 5 com ports
- 2CAN ports
- USB device
- USB host
- Long range Bluetooth
- WLAN
- LAN
- TFT-screen and touch screen

#### Technical Challenges

- A new platform built from scratch: electronics, mechanics, all designed during the project.
- High quality expectations.
- Production which could scale up 50-100% growth per year.
- A superb cooling capability for the system, as it is used in warm conditions.
- Withstand dust and rain, IP65.
- Tolerate shock and vibration from earth moving machines such as bulldozers.
- The system was loaded with interfaces and all should therefore be rugged and fit into a system as small as possible.
- In the end the entire responsibility was to be handed over to a system supplier, which would take over the responsibility for the product when it was finished.

#### Organizational challenges

- Geographically distributed project environment.
- Large project team with more than 20 team members from 10 different companies.
- Pressed time schedule.
- Developers and suppliers with no experience of the product.

#### My contribution

I was the spider in the web which had the total overview and responsibility with the official roles as Product owner and Project manager where my major contribution was:

- Perform pre study and market analyze
- Create design specification
- Approve all major component decision
- Create production concept
- Handle risks trough risk analyze
- Create service concept, and set up service organization
- Quality assurance, legal demands and market demands.

Coordinated the following sub-responsibilities:

- Mechanical drawing
- Graphic design
- Mechanical production
- Painting and screen print
- Electronic design
- Electronic and environmental testing
- Field testing
- Risk analyze

Personal Qualities that led to the success:

- Good coordination skills
- High energy, self motivated and felt a great responsibility for the project and product
- Analytical and structural approach
- Social and communicative, created a good project spirit
- Excellent experience from previous generation GeoROGv6
- Perfect knowledge in the HW/SW integration problems that occurred.

### **The result**

The new GeoROGv8 was a great success as the quality improved to a whole new level (from 40% to 1% failure rate), which the market had never experienced before, neither from us nor from any of our competitors (Topcon, Trimble, Novatron). This gave us a huge advantage in the market.

To-date systems sales have reached 2500 units and each system is out there running daily with only a handful returned for service per year, in 2013 the failure rate has dropped even more and are now at 0,5%.

As a result of this project I got the job as Quality coordinator, to help our owner Hexagon AB to improve the quality in a sister company, Mikrofyn A/S, which is a large producer of hardware within the Hexagon Machine control division.

## New Computer concept for Leica Paving Solution

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*When: 2009, 6 months project*

*Client: Leica Geosystems AG*

### The product

The product MPC1310 is a customized version of GeoROGv8 to fit the needs of the Paving software and extra tough environmental conditions.

### Challenge

Leica Geosystems Paving team needed a complete new computer, as their existing one was extremely expensive and had poor quality. The challenge was to improve GeoROGv8 so that it would fit the demands from their software which was based on XP-Embedded. More memory and disk space were required. A complete set of external cables needed to be designed to fit the connectors in GeoROGv8. There were also high demands on quality as the paving systems are sold worldwide and the support organization is located in Europe and can't help customers easily if a system failure occurs.

### My contribution

Coordinated hardware, software and testing during the development phase.

- Part of the team to create the new concept.
- Designed the new external cables and other accessories, such as suitcase, brackets etc.
- Performed the EMC-tests.
- Performed extended environmental tests.
- Performed the system test to see that interfaces and cables worked as expected.
- Created all needed documentation.
- Quality assured, assured legal and market demands were met.

### The result

Leica Geosystems AG now has a paving computer of good quality and price. They sell about 50-100 units/year.

## Computer (MPC1350) improvement project

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When: 2011, 1 year project

Employer: Mikrofyn A/S

### The product

MPC1350 is an X86 machine control computer. The software is LINUX based and the hardware platform is a semi custom (full custom carrier board and standard ETX board).



### Challenge

The two conditions listed below have made this system a real challenge from a quality perspective:

- Chassis is mainly of plastic, except the heat spreader in the back of the panel. This makes robustness, EMC and cooling a real challenge.
- No cables are connected to the system, all data is transferred through IR-link and all power is transferred through induction.

### My contribution

Quality assurance of this project:

- Monitor that the component choices are good from a quality perspective.
- Create a test plan that will secure the quality goals.
- Make sure mandatory documentation and tests are done to get the system approved for the market it was to be sold in.

### The result

The computer met the quality demands and together with the new features (3Gmodem, LED-display, capacitive touch screen) we got excellent response from the market.

Sales of this product are at 2000 units/year.

## Computer (GeoROGv6) improvement project

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*When: 2004, 4 months project*

*Client: Svensk Byggnadsgeodesi AB*

### The product

GeoROGv6 was an X86 rugged machine control computer with TFT-screen and touch-screen, which the CEO of SBG had put together himself, using standard PC104 boards from Hectronic AB. The GeoROGv6 was the most sold machine control system for the excavator market during its lifetime. A “GeoROG” is now a well known system and if you talk to any excavator operator in Sweden they will know what a “GeoROG” is.



### Challenge

The GeoROGv6 was a “homemade” system, created without full consideration of EMC implications. Customers in southern Sweden complained about the GeoROG disturbing the FM-radio on their favorite local channel and because of that, they threatened to take legal action against SBG.

The GeoROG looked like a rats-nest inside, with cables going everywhere, without any filters on the outgoing ports.

### My contribution

Product owner and Project manager for an improvement project to reduce the EMC disturbance and also make the system pass the tests needed for CE-marking.

### The result

The GeoROGv6 passed the tests for CE-marking and the customers could start listening to their favorite FM-radio station during work. All previously produced computers (about 150 pcs) were, over time, upgraded with the improvements. The new design sold another 900 pcs before the next generation took over.

## Quality and organization improvement projects:

### Introducing ISO 9001

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*When: 2011-2013, 2 years project*

*Employer: Mikrofyn A/S and Scanlaser A/S*

#### Challenge

Introduced ISO 9001 for the entire organization (about 150 employees). The three listed expressions below were common when we started up the project:

- "We don't need to improve; it has worked out fine so far".
- "We don't need any processes or procedures".
- "Documentation only takes time".

The real challenge was not the implementation; it was changing the mindset of the employees especially those high up in the hierarchy.

#### My contribution

Part of the implementation team, responsible for creating and implementing all procedures, both mandatory and non-mandatory procedures.

- Creating procedures and processes from scratch, just by interviewing the personal.
- Winning the employees hearts and minds by educating them in why ISO 9001 would help them to do a better job.

#### The result

In October 2013 Leica Geosystems Technology A/S (previously named Mikrofyn A/S) was certified. The awareness of why continuous improvements, processes and documentation are necessary has improved dramatically.

The certification company (SQS) was truly impressed by the ISO 9001 system we had created for Leica Geosystems Technology A/S and no deviations was found, only a few recommendations were given.

### Organization improvement, Technical Service

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*When: 2011, 4 months project*

*Client: Mikrofyn A/S*

#### Challenge

Mikrofyn A/S has a technical service organization taking care of all machine control hardware within Hexagon machine control division. About 5 persons work in this department.

Technical Service constantly complained about lack of resources and being behind schedule, but they never convinced the higher management to give them more resources.

The customers complained about long lead time, 1-4 months, and our target lead-time was 7 days.

## My contribution

Project manager, where I:

- Created a plan for how to approach the problem.
- Executed the measurements.
- Created a report and presentation for upper management.
- Followed up to ensure the goal for the lead-time target was met.

## The result

After breaking down what each employee spent time on, we could see that more technicians were needed. I educated the team leader of Technical Service how to break down an organization and find the real issue. I also educated them how to present such research to upper management in order to get the resources needed.

In the project report the real issue was clearly revealed and it was crystal clear that the department was doing a great job, but needed more resources. I also showed a few minor changes in the process that would cut the lead time with 2 days/repair. With this report the resource discussion simply died and all requested resources was given to the department and 5 months later the lead-time goal of 7 days was met.

## Control over Test equipment

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*When: 2011, 8 months project*

*Client: Mikrofyn A/S*

### Challenge

- No real structure for most test equipments: no documentation about how to produce or how to use the equipments, what it is supposed to test etc.
- No improvement plan for test equipments.
- The ownership was unclear and the cooperation between the different departments didn't work to well.

### My contribution

Project manager where I:

- Performed a research to see what needed to be done.
- Implemented the findings.
- Handed over to the new structure, the appointed owner and test group.

### The result

- A procedure for which documents to create for test equipment.
- A cross functional test group and clear ownership.
- Implementation of a plan over which test equipment to improve.

## External service centers

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*When: 2011, 8 months project*

*Employer: Mikrofyn A/S*

### Challenge

To shorten down the shipping time for repairs of electrical mast and machine control computer MPC1350. To manage this we needed structure around:

- Repair manual: how to repair the products.
- Price lists for spare parts.
- Agreement of what the repair centers get as compensation for a "warranty repair".
- Training in how to repair.

### My contribution

Project manger.

### The result

- Electrical mast repair centers were set up in Australia and USA.
- A MPC1350 repair concept was created and repairs of the product could start up in Odense. From this concept new repair centers could easily be set up.



## Delivery and shipment control

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*When: 2011, 2 months project*

*Employer: Mikrofyn A/S*

### Challenge

Complaints regarding broken cartons, poor packing and faulty products were received from the customers.

### My contribution

I was project manger where I in an analytical and structured way made sure we analyzed and corrected the processes used in warehouse.

### The result

- A market survey was performed, to understand the complete picture.
- The control procedure before shipment was improved, to solve the issue with faulty shipped products.
- The cartons for products that had been reported as damaged during shipment were improved.
- A control procedure was implemented, to catch all shipment complaints.
- A customer survey was done one year after where no complaints about shipments were highlighted.