



# Case Study: Grunnarbeid AS

Effective logistics and utilization of equipment

## Grunnarbeid

Grunnarbeid AS is a versatile construction company specializing in large-scale construction and civil engineering projects. Established in 1986, Grunnarbeid serves the mid-Norway region. Employing over 300 tradesmen, Grunnarbeid offers a wide breadth of expertise encompassing everything from engineers, economists, construction managers, machine operators, demolition specialists to landscape specialists and more.

### Challenges

Grunnarbeid has its share of large-scale challenges related to asset management across projects. For this equipment intensive business it is critical for the proper tools to be available at the moment they are needed.

Often times a large project involving many different tradesmen can suddenly come to a complete halt while the proper tools are being tracked down. This often leads to unnecessary hiring or purchasing of additional equipment on short notice in order to avoid costly work stoppage, for many times the equipment is simply misplaced or even available on another project.

“Going through the invoices I sometimes find some of our rented equipment has been leased so often and for such long stretches of time that it would have made better sense to simply have purchased the tool instead. It’s hardly economically justifiable to pay 500€ a month for equipment that costs 1000€ to buy”, says Per Kristian Alstad, former CEO and now chairman of Grunnarbeid AS.

The construction industry has small profit margins. Cyclic fluctuations make it difficult to achieve full capacity utilization of all equipment at all times, especially during the busiest construction periods throughout the year. A significant margin of profitability exists in this ratio between owned and leased equipment. “A vibrating plate, for stamping down gravel, can cost 2500-6000€. A typical situation might be that we have one of our own machines in use on a project and rented machine on another. If the tool we own is

available and can be sent to cover the other project, then there is no sense in doubling up on rental costs. We simply need a dependable system that can help us manage these moments effectively.” adds general manager John Peter Alstad.

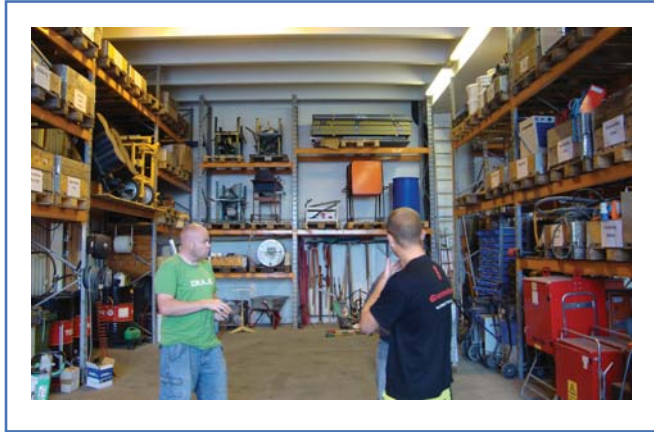
A small seemingly insignificant tool or attachment can hold up a project just as much as a large piece of equipment or large vehicle. Beyond stolen or misplaced pieces are all of the tools that are loaned out, with good intention. However, when the person who has loaned out the item forgets to log this transaction, critical delays can occur while the tool has to be tracked down. This often results in emergency purchases being made.

An overview and deliberate control of movements and conditions of equipment is an absolute necessity. The amount of manual paperwork today and internal invoicing in this regard can quickly become overwhelmingly ineffective and unmanageable.

This need to implement effective procedures, planning and extra resources across many projects has led to Grunnarbeid to seek out a dependable hardware and software solution that could ensure the right equipment gets to the right place at the right time.

*“The right equipment in the right place at the right time will prove to be a good investment of time and forethought for Grunnarbeid”.*

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### The search for a new solution

Grunnarbeid has followed the development of tracking technology. A few years ago John Peter Alstad read a book by Thomas Friedman called "The World is Flat". The book introduced him to RFID technology. It struck him that this could be useful for Grunnarbeid, but that the technology was still too immature and expensive.

Alstad continued to seek out a solution. As a business customer of the telecom operator Telenor he approached them about the opportunities associated with RFID technology. The timing proved to be right for Telenor had recently established a new business unit called, Telenor Objects, with a focus on utilization of RFID data together with GPS data and the use of other types of sensors and gauges.

"Telenor Objects" launched in 2010 "Shepherd"; a new cutting-edge data collection platform that has the ability to communicate with all types of sensors and gauges such as various types of RFID readers, GPS transmitters, wireless networks, telephony networks, and more. From the summer of 2010 TraceTracker developed in collaboration with Telenor Objects the new solution "TraceTracker Asset" which "Shepherd" delivers data to. Grunnarbeid contributed critical input to the development process and "TraceTracker Asset" was launched in the market and installed at Grunnarbeid in March of 2011.

### The solution

TraceTracker Asset is a web-based system for efficient utilization of company resources. The primary focus is equipment-intensive businesses. This solution tracks the equipment movements in near real time, provides information about which devices are available for use and ensures that the right equipment is in the right place at the right time.

TraceTracker Asset supports all types of equipment from hand tools to large machines both within a project location and across projects. Each unit is marked with a small inexpensive tag number that can be followed automatically by radio-based reading devices (RFID) equipment mounted on containers and vehicles. The identification readers receive a signal from each device and then relays that signal via the GSM network to "Shepherd".

In principle, RFID chips are used to mark everything from a pack of nails to a 40-ton excavator. They can be attached to any equipment with simple screws, glue, welds, or tape, depending on the equipment that requires tagging.

With Google mapping technology the user is able to easily define an "electronic fence" boundary of a given project, and can transmit feedback when an item is moved outside of those defined coordinates.

*"At Grunnarbeid, we are excited and inspired by the results, and by all that this project will lead to in regards to the future of the construction industry."*

Equipment that can contain other tools, such as containers and cars are equipped with GPS and RFID devices. These record everything that is moved into the

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container or taken outside of it. This record along with received GPS positions, paint a near complete picture that can easily be deciphered by a dispatcher or foreman.

The user can quickly and easily see a perfect overview of all ongoing projects, all equipment on each project and warehouse locations, as well as quickly being able to drill down to the specific details and history logs related to a small individual item.

Equipment that has been lying unused in a car or container a certain number of days will be automatically identified and marked as "Idle." This equipment is available to be transferred to another project with manager's approval.

A project manager can also manually re-assign a different status for any piece of equipment on his project, for instance in such cases where a tool should be made available for other projects or has been recently damaged. Any user can then refresh the application view and see the new changes in status. A project manager can actively manage his entire equipment inventory and reduce his or her internal invoicing numbers dramatically.

The search panel within the application can be used for all type of tools, equipment and vehicles across all projects, and can be searched on by name, identification number, category, project and / or status. The result can show where units are located and whether they are in use or not, whether they are vacant, in need of repair, currently under

repair or have been recently destroyed or put permanently out of commission. The results are shown in a sortable list as well as a robust iconic map view.

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### The introduction and use

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First phase for Grunnarbeid during spring of 2011 includes some of their ongoing projects. Grunnarbeid has selected some particularly interesting types of equipment that will be tracked. Among these are containers, vehicles, vibration plates, power generators and laser sensors. Each device is marked with an inexpensive passive radio chip (RFID) containing a unique identifier. Containers and vehicles are equipped with "a local infrastructure package" consisting of an RFID reader, GPS and GSM transmitter devices. This package communicates with TraceTracker Asset via Shepherd. Both of these are delivered as finished hosted services online.

### The following scenario illustrates the range of applications:

Peter Andresen works in a ditch in the pouring rain. The pump in use struggles to remove large enough volumes of water and so increased capacity is needed quickly. He calls the dispatcher, Jon Stegali. Using TraceTracker Asset, Stegali searches for a replacement pump with the specified capacity. A map appears on the screen with a series of icons marking the locations of relevant results. The icons have different colors depending on status of the pump in question; green indicates availability, red indicates pumps that are currently in use. The information is reflects statuses in near real-time. The nearest facility with the best matching pump is 20 kilometers away - the pump is located in container No. 10 at the facility. A. But before the dispatcher calls ahead to reserve the replacement pump, he spots a vehicle on route closer to where Andresen is working containing a pump that has an "Idle" status that has not been in use for

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several hours. The dispatcher then calls ahead to Oscar Sæther, the driver of the vehicle and arranges for his pump to be dropped off to where Andresen is working.

*“We believe strongly that our cooperation with Telenor Objects and TraceTracker will fulfill the promise of getting the right equipment to the right place at the right time. The technology is available and the solution is very promising.”*

Visit [www.tracetracker.com](http://www.tracetracker.com) for more information.

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## **Cost saving**

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“Cost efficiency is a key part of our strategy. We chase every opportunity to achieve ever-lower costs and believe that cooperation with Telenor Objects and TraceTracker will help us to achieve this goal” said John Peter Alstad. “Our ambition is clear: With this new technology Grunnarbeid shall be at the pinnacle!”

**Preliminary assessments indicate annual savings of 1-2% of the annual turnover.**

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## **Next steps**

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“If the first phase for the spring of 2011 works as we hope and believe, a wide range of equipment will be marked and all containers and company cars within Grunnarbeid will be equipped with RFID readers. We also plan to include the leased equipment in cooperation with rental companies.”

“The result is improved profitability for Grunnarbeid and our customers.”, concludes John Peter Alstad.