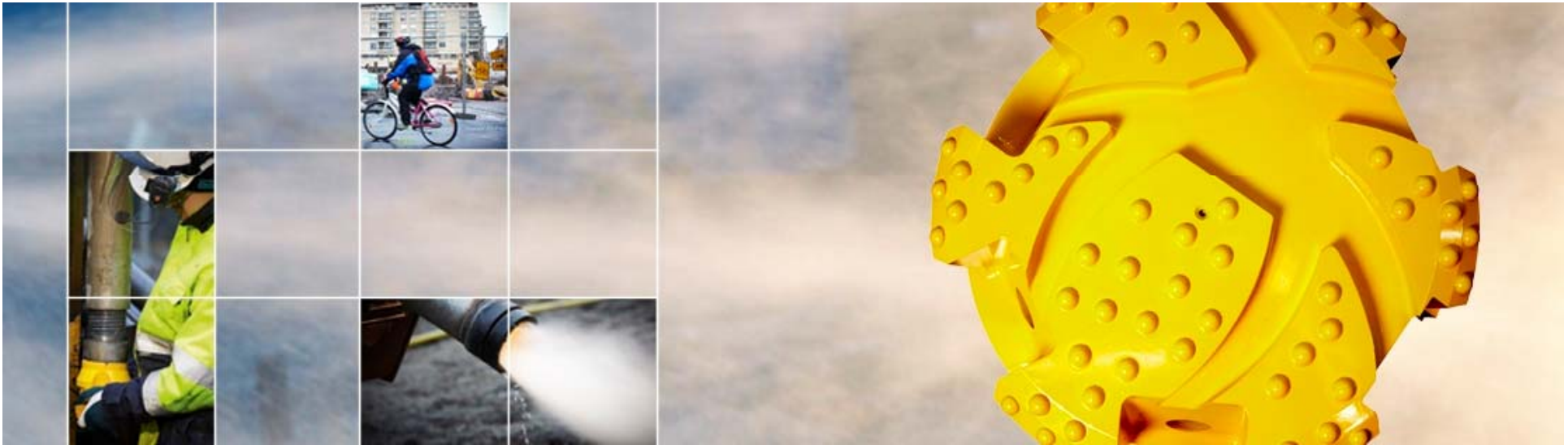


# Atlas Copco Geotechnical Drilling and Exploration



## Safe Drilling in Sensitive Environment

**Ebrahim Nikafroozi**  
**Atlas Copco Craelius AB**

*Sustainable Productivity*



# Background

## Global Urbanization,

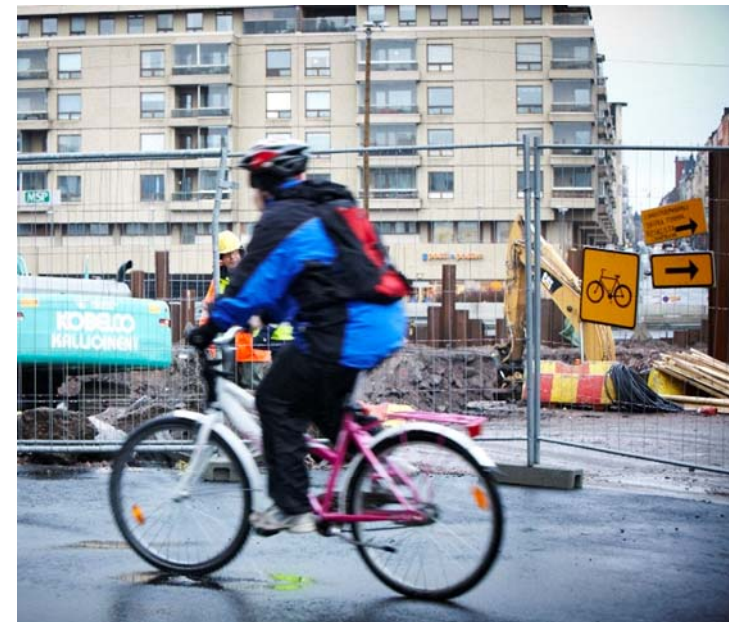
- Brings construction sites closer to residential areas and existing structures
- Increases the need for reinforcing foundations of old buildings

**introduces new challenges to the construction industry. Like:**

- Complex project management
- Effects on surrounding structures, area, ..
- High cost from delays

**And raises the demand for innovative solutions to improve:**

- Risk management
- Better overall operational cost



# Drilled Foundation

**Use of DTH has increasing due to:**

- Higher productivity
- Flexible method for large variety of geological formation
- Straight drilling (better load bearing for the pile)

**But the risk of Air Leakage & Over Drilling**

which can effect surrounding structures specially in sensitive areas

.....**Has been a concern!**

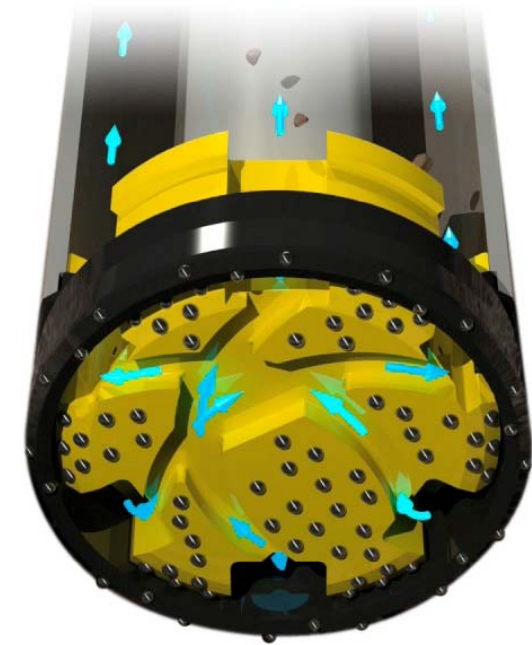


# Elemex system

## - Brings the solution

Elemex system minimize the risk, thanks to:

- Unique bit face design,
- Extended ring bit walls,



Elemex



Conventional

Results:

- Dropped air pressure
- Controlled air flow

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# Elemex system

## - References

Elemex has been used successfully in different markets

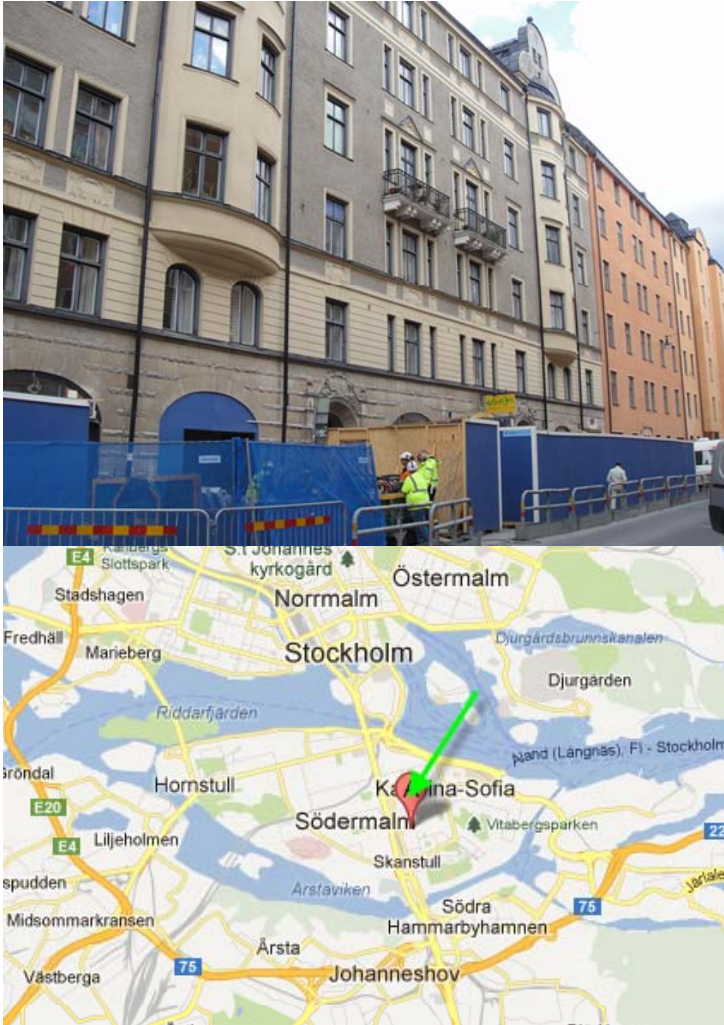
To name a few:

- Sweden, Norway, Finland
- England, France
- Hong Kong, India
- USA, Canada
- ....



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# Sharing a success story



Place: **Södermalm, Stockholm**

Foundation Contractor: **BESAB**

Project: **Underpinning of Residential Buildings to stop settlement**

Existing foundations: **Wooden piles and concrete**

# of MIP: **45 to +260 piles for each building**

Depth: **average 25m and max. 30m.**

Size & Design: **168mm Casings and 140mm steel core with 3-5m into solid bed rock**

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# Sharing a success story

## Risk Management

Use of three methods implemented to monitor the work and manage the risk.

- I. **Monitoring displacement before, during and after the work (in the building and other surrounded ones)**
- II. **Controlling vibration in the area**
- III. **Measuring any change of water ground levels**



Prec

Objekt: GF PYRAMIDEN 10

Datum	2009-05-13	Anm
Mätt av		
Mätn. nr	1	
Utgångsfix		
Nivå	S	TS
Dubb nr	(m)	ΔH (mm) ΔH <sub>0</sub> (mm)
D1	+23,2488	



Precisionsavvägningskontroll  
Projekt: 542041 - Grundförstärkning Kv

Datum	2012-03-29			Anm	2013-02-12				2013-02-18				
Mätt av:	Tyrens				Göran Norström (WSP)				Göran Norström (WSP)				
Mätn. nr:	1												
Utgångsfix													
Nivå		S	TS			S	TS	MAX		S	TS	MAX	
	Nivå	•H	•H•		Nivå	•H	•H•			Nivå	•H	•H•	
Dubb nr:	(m)	(mm)	(mm)		(m)	(mm)	(mm)	-30,0		(m)	(mm)	(mm)	-30,0
D1	23,2396				23,2175	0,1	-22,1			23,2175	0,0	-22,1	-30,0
D2	23,1123				*					23,1042			-30,0
D21	23,3611				23,3471	0,1	-14,0			23,3471	0,0	-14,0	-30,0
D22	23,4437				23,4422	0,0	-1,5			23,4423	0,1	-1,4	-30,0
D3	23,0043				22,9980	0,0	-6,3			22,9983	0,3	-6,0	-30,0

09	Blekingegatan 63A Trapphus Plan -1 VM9 (Ström)	2013-04-18 10:53:22	9,00	12,67	1,14	0,84	0,002	106,00	
09	Blekingegatan 63A Trapphus Plan -1 VM9 (Ström)	2013-04-18 10:52:44	9,00	12,44	1,12	0,91	0,003	121,00	
09	Blekingegatan 63A Trapphus Plan -1 VM9 (Ström)	2013-04-18 10:51:59	9,00	12,22	1,10	0,99	0,003	151,00	
09	Blekingegatan 63A Trapphus Plan -1 VM9 (Ström)	2013-04-18 10:12:13	9,00	13,33	1,20	1,03	0,003	134,00	



Mätningar av grundvattennivåer

ID	RÖK	LTN	2013-05-07
HC25ö		+15,4	-7,96
588u		+15,4	-6,37
HC8ö	+22,43	+15,4	15,58
582ö	+22,28	+15,4	16,28
T11ö	+22,86	+15,4	?
GW1301	+24,19	+15,4	14,68
GW1302	+24,14	+15,4	16,30



# Sharing a success story

## CUSTOMER VOICE

**Rani Isa**

Platschef, Grundläggning

Betongsprutnings AB BESAB

*Atlas Copco*



# Sharing a success story

## Achievements with Elemex:

- ✓ Reduced settlement caused by drilling (stay to the limits)
- ✓ No post settlement
- ✓ Improved drilling performance
- ✓ Higher service life for Pilot Bit



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**Committed to  
sustainable productivity.**





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