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**BESAB**



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# Digital projektkonferens med InfraSweden2030



## Projekttitel: Utveckling av tätningsskomponent/teknik för korrosionsskydd av bergbultar



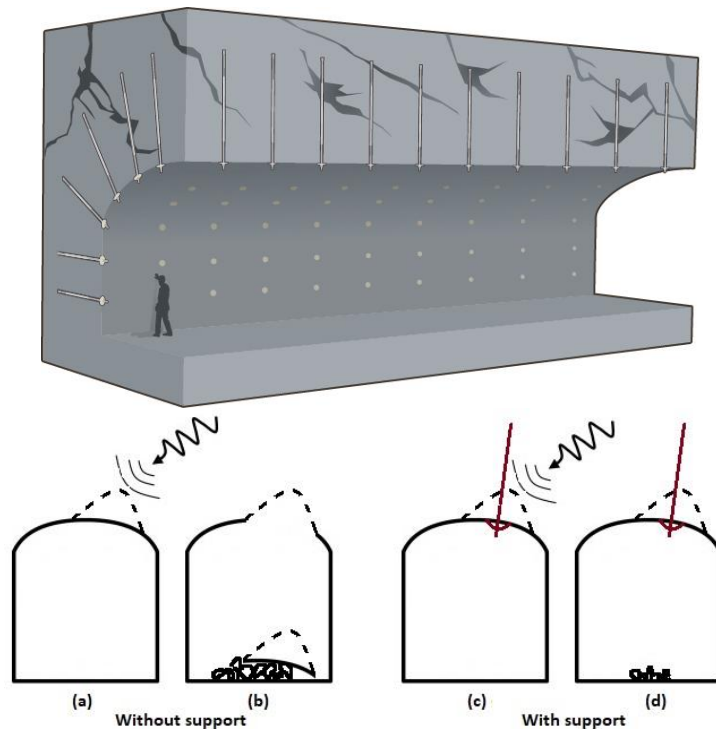
**WELCOME**  
THANK YOU FOR JOINING US



## Project overview:

### Introduction

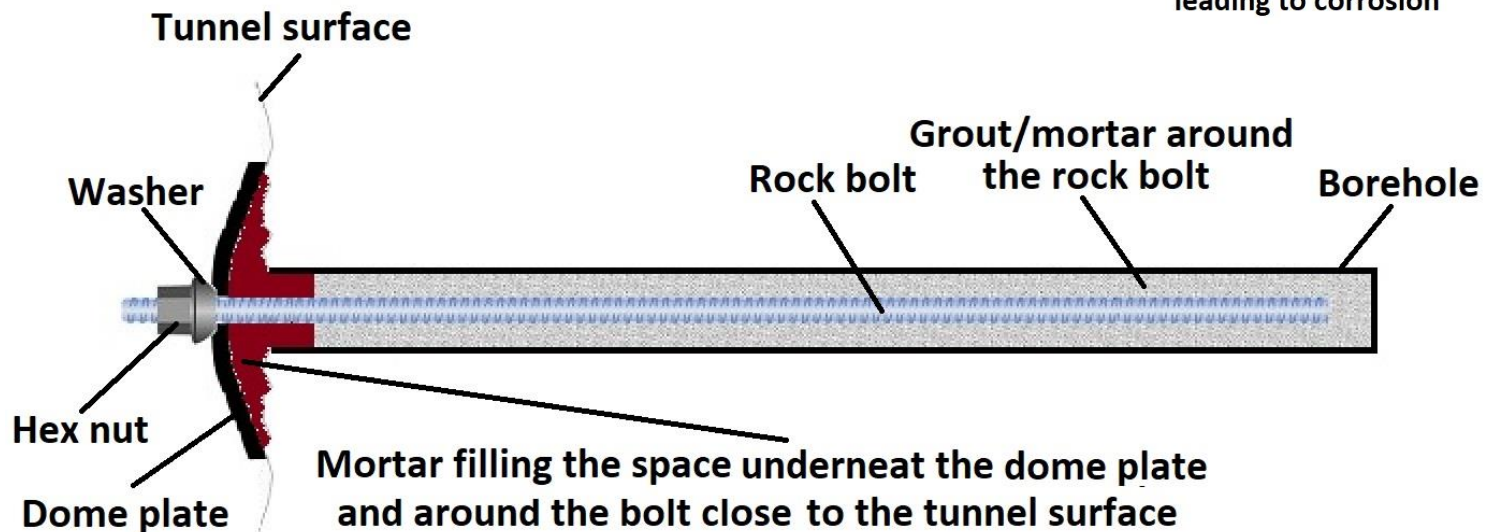
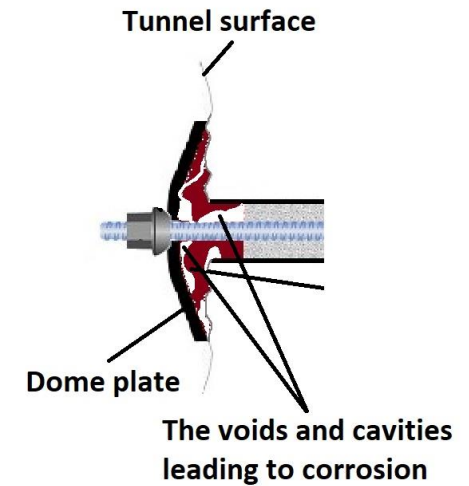
- Rock bolts are one of the most commonly used **rock support system**
- To **strengthen** the rock fragments on the tunnel walls and prevent failure
- So, considering 120 years of service life of the tunnels in Sweden
- The rock bolts should be sufficiently protected against corrosion



## Project overview:

### Problem statement

- Today, the space under the dome plate is filled with mortar **manually**.
- This process is **time consuming, exhausting** with lots of **material waste** especially **under the tunnel roof**.
- As a result, there are lots of **voids and cavities** remaining under the dome plate that lead to water ingress and corrosion of rock bolts .



## Project overview:

### Problem Statement

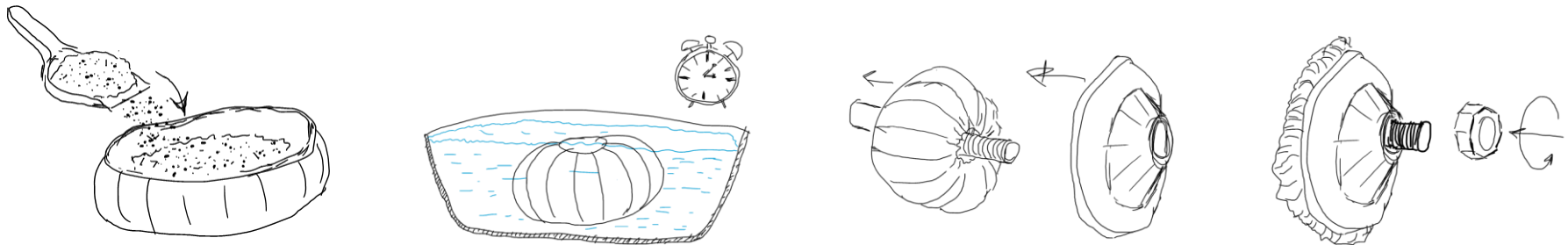
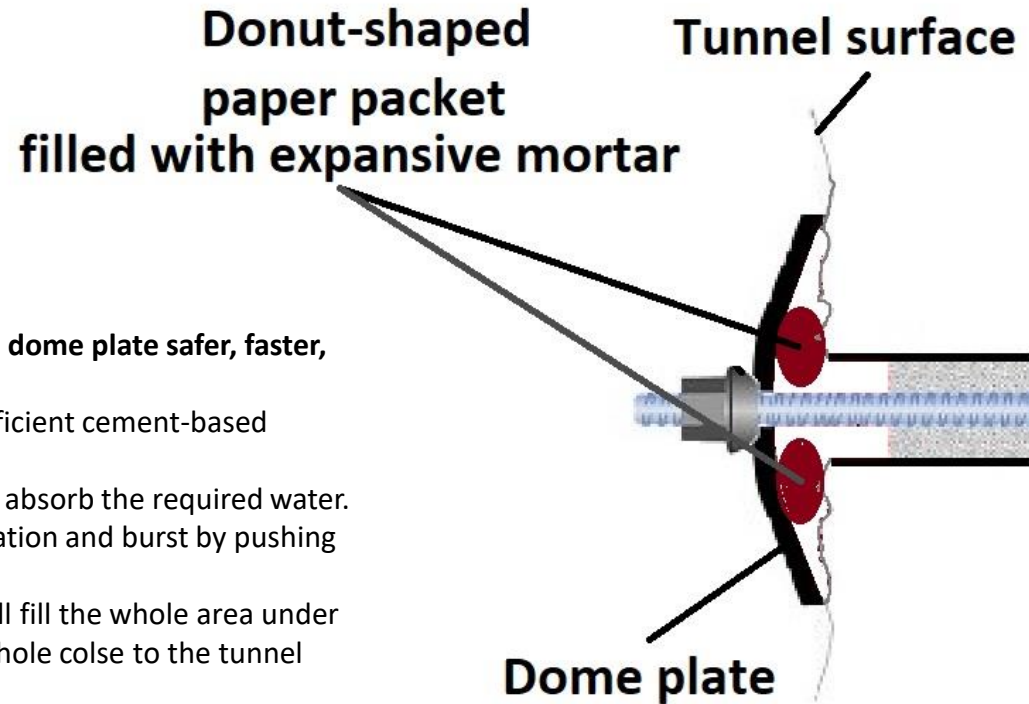
- Corrosion
- Dome plates left empty
- High waste of materials
- Exhausting labor work under the tunnel roof



## Project overview:

### Goals, objectives & scope of work

- To develop a new technique/component to **fill under the dome plate safer, faster, and with enhanced working conditions.**
- To develop a **donut-shaped** paper packet filled with sufficient cement-based expansive mortar in dry condition.
- The donut will be submerged in water for certain time to absorb the required water.
- It will be located under the dome plate during the installation and burst by pushing the the dome plate to the tunnel surface.
- The mortar will be then released and while expanding will fill the whole area under the dome plate and and around the rock bolt in the borehole close to the tunnel surface.



## Project overview:

### Work packages

<i>WPs</i>	<i>Activities</i>	<i>Responsible partner</i>
WP1	Mortar development	RISE Samhällsbyggnad
WP2	Development of paper packet	RISE Bioeconomy
WP3	Laboratory prototype tests	RISE Samhällsbyggnad
WP4	In-situ prototype testing	Besab
WP5	Environmental impact and cost analyses	RISE Samhällsbyggnad
WP6	Project management	RISE Samhällsbyggnad - Besab

## Project overview:

### Distribution of budget

RISE AB

	2019	2020	Sum
<b>Total costs</b>	<b>512 000</b>	<b>900 000</b>	<b>1 412 000</b>
<b>Financing</b>			
	<b>2019</b>	<b>2020</b>	<b>Sum</b>
Vinnova	340 000	520 000	860 000
SBUF	122 000	250 000	372 000
RISE	50 000	130 000	180 000
<b>Total financing</b>	<b>512 000</b>	<b>900 000</b>	<b>1 412 000</b>

Besab

	2019	2020	Sum
<b>Total costs</b>	<b>30 000</b>	<b>286 000</b>	<b>316 000</b>
<b>Financing</b>			
	<b>2019</b>	<b>2020</b>	<b>Sum</b>
Vinnova	0	0	0
SBUF	0	116 000	116 000
Besab	30 000	170 000	200 000
<b>Total financing</b>	<b>30 000</b>	<b>286 000</b>	<b>316 000</b>

Total

	2019	2020	Sum
<b>Total project costs</b>	<b>542 000</b>	<b>1 186 000</b>	<b>1 728 000</b>
<b>Project's financing</b>			
	<b>2019</b>	<b>2020</b>	<b>Sum</b>
VINNOVA	340 000	520 000	860 000
SBUF	122 000	366 000	488 000
RISE	50 000	130 000	180 000
BESAB	30 000	170 000	200 000
<b>Total financing</b>	<b>542 000</b>	<b>1 186 000</b>	<b>1 728 000</b>



## Project overview:

### Timeline

WPs	Activities	Year	2019							2020											
		Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WP1	Mortar development																				
WP2	Development of paper packet																				
WP3	Laboratory prototype tests																				
WP4	In-situ prototype testing																				
WP5	Environmental impact and cost analyses																				
WP6	Project management																				

## Project progress:

WP1. Mortar development	Finished
WP2. Development of paper packet	Finished
WP3. Laboratory prototype tests	Finished
WP4. In-situ prototype testing	In progress
WP5. Environmental impact and cost analyses	In progress

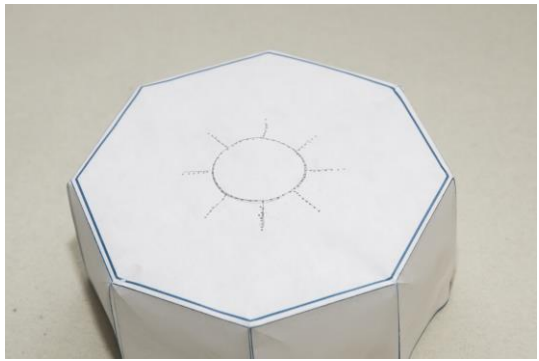
## Results:

Test rig



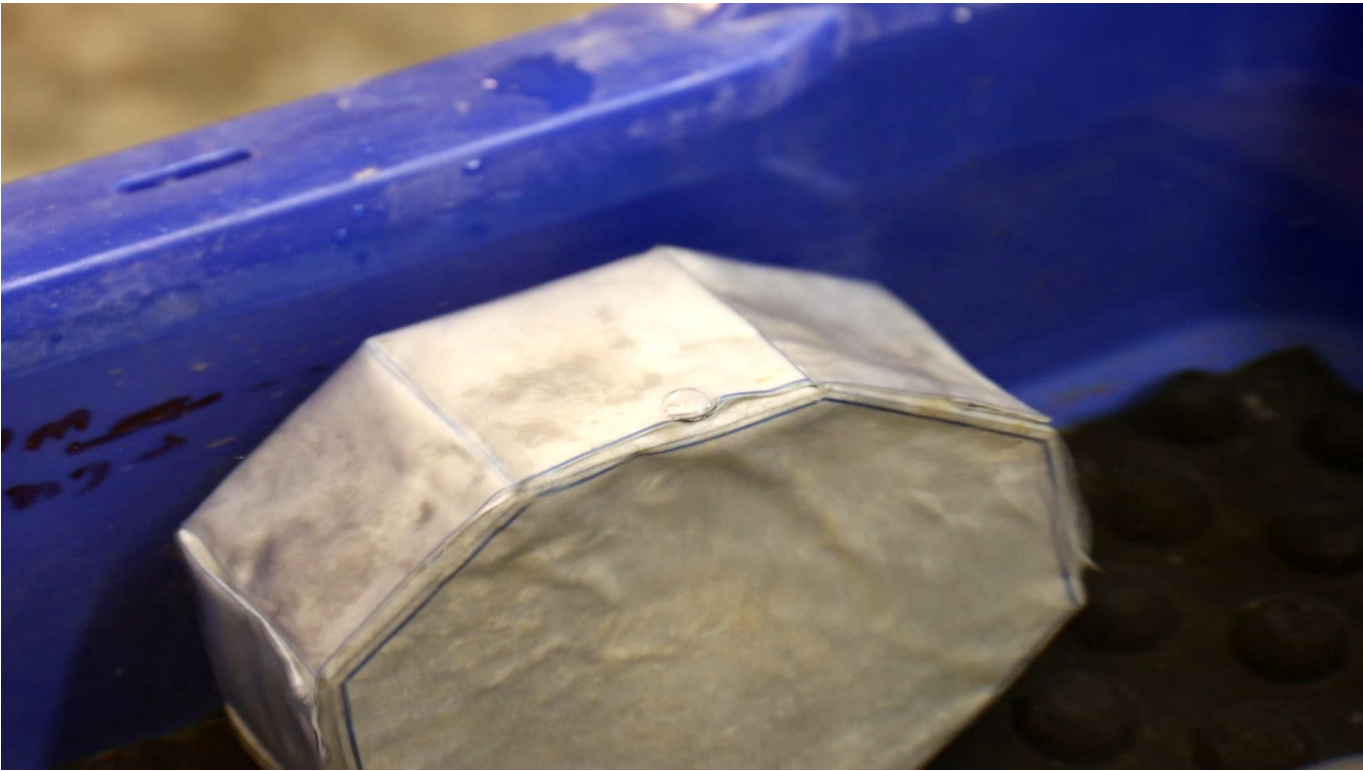
## Results:

Preparation of paper packets and testing



**Results:**

Preparation of paper packets and testing



## Results:

Preparation of paper packets and testing



## Results:



## Results:

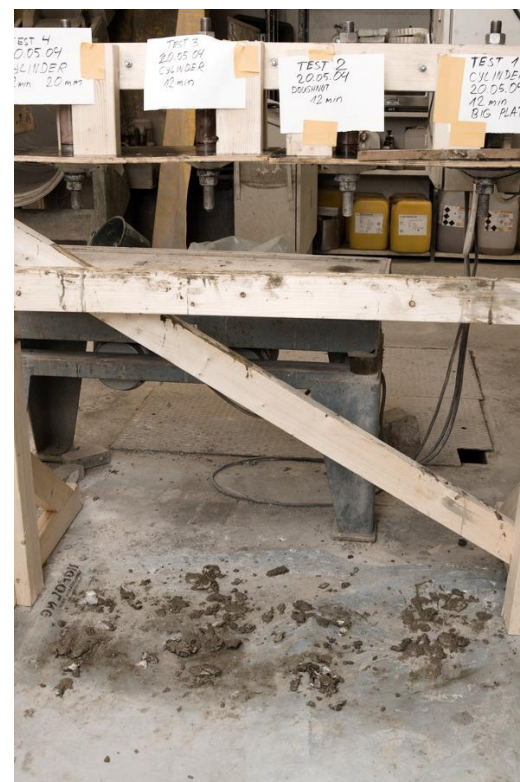
Test performance after 12 min soaking time





## Results:

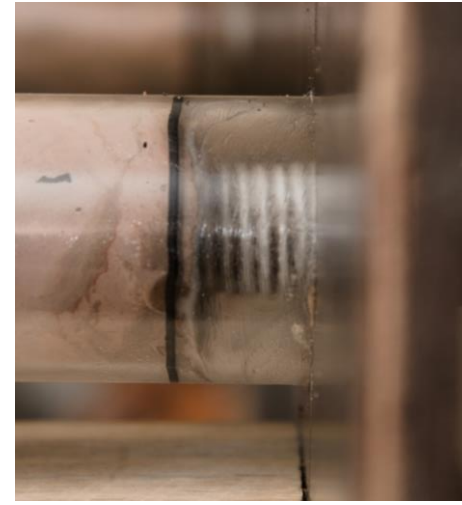
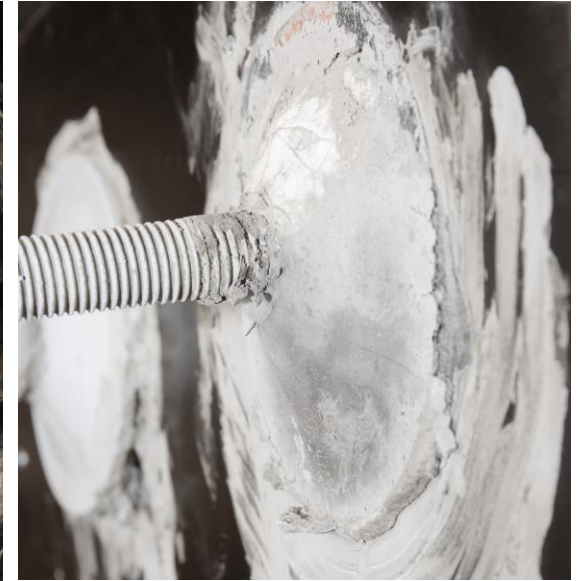
Performance in different angles of 0, 45, 90 degree



## Results:



## Results:



**THANK YOU FOR LISTENING**

