

# RUST ATEX 그라인딩 공구

## 공구의 Life Time 및 사용자 Reference

그라인딩 디스크, 스테드, 그리고 로터리버의 소모품 교체 시기

그라인딩 디스크는 긴 사용 수명을 가진다. 그라인딩 디스크는 교체 없이 몇 달 또는 몇 년 동안 사용할 수 있지만, 마모 속도와 교체 주기는 작업하는 표면의 성질과 작업자의 기술에 따라 차이가 날 수 있다.

스테드와 너트의 정확한 사용 수명을 정확한 사용 수치로 제시하기는 어렵다. 사용 모재의 성질과 사용 방법에 따라 다소 차이가 있을 수 있기 때문이다.

단단한 스케일, 두꺼운 경질 부식 또는 용접 Seam 과 같은 표면 작업은 얇은 코팅층을 처리하는 것보다 스테드의 소모가 많다. 수 미터의 용접 Seam 연마 작업에도 하나의 디스크가 사용될 수 있지만, 얇은 녹이나 페인트 작업의 경우에는 하나의 디스크로 수백 평방미터를 작업이 가능하다.

작업 매뉴얼과 비디오 숙지 후 사용하면 제품의 수명은 연장되며 작업 효과는 높아진다.

RUST ATEX Grinder 및 로터리 버의 수명에 관한 예

- KCA Deutag 는 북해 Oseberg Platform 에서 2014 년 7 월부터 2017 년 현재까지 RUST ATEX 공구를 사용하고 있다. 금속 표면 그라인딩 작업과 모서리의 버링작업, 녹 제거 작업에 본 공구를 지속적으로 사용하고 있다. 현재까지 KCA Deutag 는 24 개의 스페어 스테드 1SET 만 구입했으며 그라인더 디스크 자체는 교체하지 않았다.
- SAPEG 은 2016 년 1 월부터 2017 년 7 월 5 일 까지 제품을 판매한 이래, 고객 중 누구도 로터리버를 새로운 것으로 교체하지 않을 정도로 우수한 수명을 가지고 있다.

RUST ATEX 관련 Reference

- Aker Solutions : Norway 내 Offshore 제품 생산 및 시스템 설비 기업
- Kaefer Energy : Norway 의 Oil and Energy 제품 생산 및 설비 기업
- Prezioso : Statoil 의 Offshore 및 Onshore 시설의 Framework 정비 기업
- Teekay : Gas, Tanker, Offshore 를 운영하는 세계 최대 에너지 기업



**Aker Solutions** has tested RUST ATEX grinding Tools. The test was carried out on the Eldfisk Bravo platform and consisted of grinding welding seams after cutting. We performed the test using both grinding machines, angle grinder with grinding disc and the straight grinder with rotating files.

**Angle grinder with grinding disc:**

The machine was tested according to procedures described in the operation guide and it worked well.

It looks to me that it is the best suited to remove paint, chartek and rust etc, but it also works for grinding steel.

**Straight grinder with rotary files:**

This machine was also tested on the same job and performed very well for this purpose. It had good impact and little vibration.

After testing of **RUST ATEX Grinding Tools**, I can recommend others to use this tool for this kind of work, where the use of EX safe tools is required.

Aker Solutions has previously used and tested similar equipment from other suppliers, and the RUST ATEX Grinding Tools are completely up to date, if not better than other similar equipment we have tested.

MVH

Sigmund Karlsen

Field Engineer black trades COPNO M & M

Aker Solutions, August 8<sup>th</sup>, 2017



**KAEFER ENERGY**

Offshore Installation in the North Sea: Troll A

Date: 10 to 24 October 2016

Test of RUST ATEX Grinding Tools

Senior Project Manager (Troll A/B/C, Åsgard AB, Kristin): Rhoar Skjøndal

Performed by: John Christian Stenbro

KAEFER Energy AS have tested the RUST ATEX Grinding Tools from Sapeg as. We used the angle grinder with grinding disc to remove Chartek after chiseling.

RUST ATEX Angle grinder was great to use for removing Chartek, almost like it cut the Chartek away, there were very little dust when we grinded compared to use of 3M disc.


The grinder gave a nice and smooth transition between the steel and the Chartek (paint), it also gave a good roughness in the steel. We tried the grinding tools on rust and paint as well and it worked very well.

At edges and angles we could not use angle grinders with grinding discs, we had to use the straight grinder with rotating files and it went well.

My conclusion is:

- The grinding disc lasted for a long time, there was no need for frequent disk replacement.
- Gives good roughness in the steel.
- Fine transitions from steel to paint.
- Perfect to grind on pipes (Riser pipes) and flat walls.
- The tools are light-weighted.
- Neglectable amount of dust created under operation.
- Withstands a lot of wear and heat (on flat walls and pipes).
- Can connect the tools to water.

John Christian Stenbro  
KAEFER Energy AS

	<b>REPORT</b>		
	<b>Testing of the RUST EX certified grinder at Kollsnes</b>	<b>Date: 15/08/2016</b>	<b>Page 1 of 2</b>

<b>Author:</b>	Thor Inge Olsen, Construction Manager Kollsnes/Sture
<b>Responsible surface</b>	Gaston Andres Saavedra
<b>Commissioned by:</b>	Sapeg as (Supplier of RUST grinder)

On Wednesday July 6<sup>th</sup> we were presented to, and received training in the use of the RUST grinder by Sapeg here at Kollsnes. As agreed, we were asked to test the RUST machine for various jobs with various operators and the commission is now completed. The result is as expected; everyone were sceptical to the new machine, but after having used it for a day, the feedback was very positive. They claim to be able to do certain jobs 50% faster with the RUST grinder compared to the Bristle Blaster and angle grinder with flap disc (3M).

In the end of July, we started a grinding job on the exterior of a tank at Kollsnes. For this job, we originally wanted to use sand blasting with covering, local masking as well as approval of covering/masking from Statoil's operator, a procedure we know from experience consumes a lot of time and that normally results in requirement for extra masking. In addition, there is a requirement for cleaning both before and after the job. For this job, we had estimated a total number of hours in the area 25-30 hours.

This time, the corroded surfaces were subjected to the RUST machine and painted. When using the RUST machine, there was no need to spend time on covering and masking. The cleaning after the grinding job was completed in about an hour. This was admittedly a job that suited the machine well and this shows what is possible if you have this equipment available. The job took us in total 11 hours. We did not need to replace the grinding disk during the work and there was no visible wear on the disk after the job was done.

The tank is 3 meters in diameter and we were commissioned to grind about 1 meter from the bottom and up adding up to about 5 meters. There was also a silicone/rubber coating on the lower part of the tank (about 15 cm wide) that had to be removed before we were able to apply Stopag. This coating was too soft to be sand blasted or to use the Bristle Blaster. The operators used RUST to grind away the coating (see image on page 2). The operators said they were also very pleased with the tool even for this application.



My opinion with reference to RUST is that we can use this machine and that it will help us to carry out small and medium sized jobs in a quicker and better manner, and with better quality than with grinding and use of flap disk and Bristle Blaster.

Thor Inge Olsen  
Construction Manager Kollsnes/Sture  
Prezioso Linjebygg AS



PETRONORDIC

Dato: 20.11.16

Test of RUST Sparkles grinders June/July /August 2016

TEST AREA: Ballast tanks

TESTED by crew.

On Tuesday 31.05.16, people from the company SAPEG visited the vessel for demonstration and instruction of a new type of grinders for removal of rust. A presentation of RUST tools was given before the tools were demonstrated.

The RUST grinders were used in several ballast tanks for removal of rust with good results. The first day, the crew reported some broken studs on the disc. The reason for this was found to be wrong usage of the angel grinder as it was used on edges where the straight grinder should be used. New instructions were given to the crew that the only straight grinders should be used on edges. After this no more studs were broken during the whole period the tools were used.

We compared RUST against use of Jet Chisel (Needle Gun) and angel grinder with 3M pads in areas in the same tank and found that RUST gave better overall results.

The Conclusion from the crew was

Better surface for adding coating

No sharp edges between the steel and coating

Light weight

Less noise

Less dust

Ex approved. No sparks.

No need to change disc frequently. No wear and tear could be measured on the studs.

Can be used with water connected. Tested with good results.

Roar Wedøy

Master, M/T Petronordic

TEEKAY