

INTERNATIONAL MINES RESCUE CONFERENCE 2009

MASK WITH DRINKING DEVICE FOR PSS BG 4

September 2009
Axel Bahr
Dräger



TOO MUCH WATER

Dräger



- I. Sydney 2005 and Nashville 2007
- II. Trials
- III. Technical Concept
- IV. Cleaning, Desinfection and Service
- V. Approvals
- VI. Conclusion

New full face mask

Three different sizes

Drinking device



New PSS (Personal Safety System) new components will be integrated

PSS BG 4 concept will be the mine rescue unit for the foreseeable future



What is dehydration ?

Medically, it is a condition in which the body contains an insufficient volume of water for normal functioning.

Signs of dehydration ?

- Thirst
- Headache
- Loss of performance
- Low endurance
- Rapid heart rate
- Elevated body temperatures
- Extreme sleepiness
- Fainting
- Vision may dim
- Delirium

1) 2)

1) www.wikipedia.org/wiki/dehydration

2) www.quickcare.org

A full face mask with a drinking device was the obvious contribution to support the members of mine rescue teams.

As water is considered to be the best liquid for fluid replacement ¹⁾, we are looking at a hydration system with the following features:

- easy to use
- safe to use
- easy to maintain
- easy to clean



1) Kielblock and Schutte (1993) „Human Heat Stress: Basic Principles, Consequences and ist Management“

TRIALS MINES RESCUE SOUTH AFRICA



Top of the set

Holster position



Camelbak Trials



TOP OF SET

Advantages

- Connecting the camelback to the top of the set was quick and easy.
- This position was comfortable to the wearer and did not hinder him when performing his normal tasks.
- The 1.5 litre was suited for this position.
- Sucking water from the camelback was not a problem.



Disadvantages

- The connection to the face mask had to be made around the breathing tubes which partially expose it to damage or getting hooked when working in the set.
- It also caused a slight restriction to the user when having to turn his head from side to side.
- With the hydro connection permanently fitted the complaint was that the suction pipe in the mask was continuously in the mouth causing an irritation and in the way of the wearer's lips when breathing.
- With the camelback on the top of the set water continuously leaked into the mask when the valve was not closed.

Camelbak Trials



HOLSTER POSITION

Advantages

- Connecting the camelback to the hip was quick and easy.
- The holster position was comfortable to the wearer and did not hinder him when performing his normal tasks.
- The camelback is relatively protected by the set and the wearer.
- The one litre was suited for this position.



Disadvantages

- The connection to the face mask had to be made around the breathing tubes which partially expose it to damage or getting hooked when working in the set.
- It also caused a slight restriction to the user when having to turn his head from side to side.
- With the hydro connection permanently fitted the complaint was that the suction pipe in the mask was continuously in the mouth causing an irritation and in the way of the wearer's lips when breathing.
- With the camelback in the holster position it was found that trying to suck water from the hip into the mouth demanded a lot of effort and during the 40 min Workload the wearer consumed little to no water at all.
- It was found that to strap the bottom end of the camelback to the wearers leg help prevent it from flapping around and getting snagged whilst performing tasks.



Camelbak Vest worn
underneath the BG 4
with a 3 liter flexible
container

TECHNICAL CONCEPT DRÄGER FPS 7000 RP w/ DRINKING DEVICE

Dräger



Drinking device



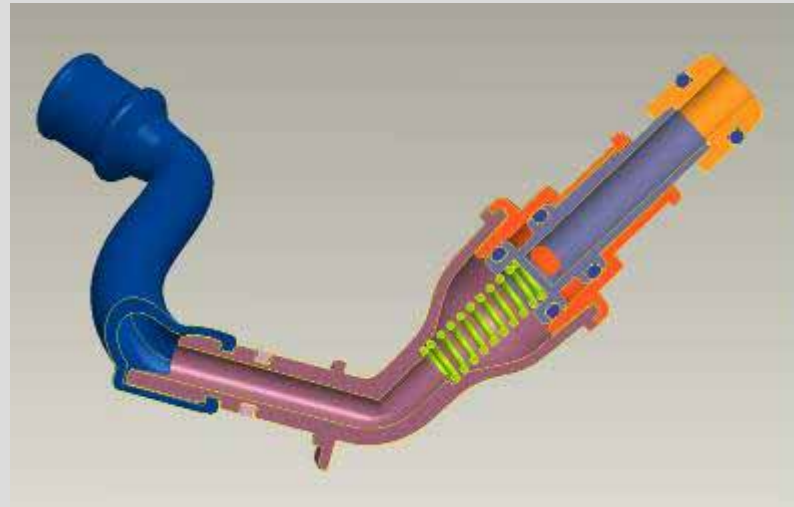
TECHNICAL CONCEPT DRÄGER FPS 7000 RP w/ DRINKING DEVICE

Dräger

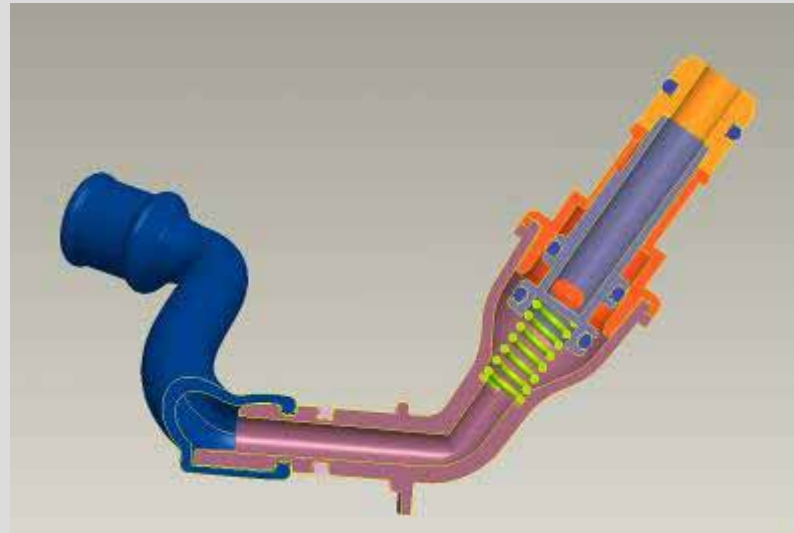
Drinking connection



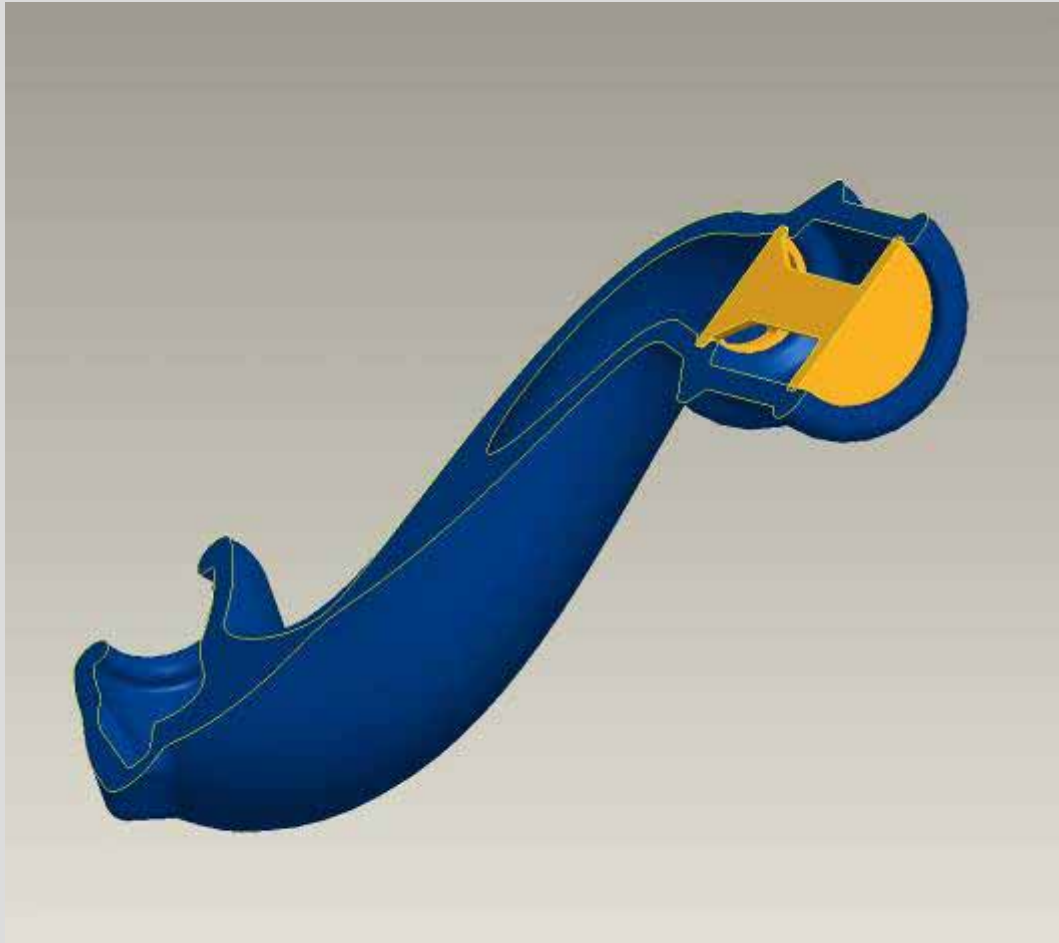
Closed



Open



TECHNICAL CONCEPT DRÄGER FPS 7000 RP w/ DRINKING DEVICE



Drinking straw with
additional bite valve

Closed

CLEANING AND SERVICE DRÄGER FPS 7000 RP w/ DRINKING DEVICE



Service manual
with detailed
description of this
additional process
available

Service Manual FPS 7000 RP 

10.2 Cleaning

Set-up

A: Collection container (plastic box)

B: Connecting hose of CamelBak®

C: CamelBak®

Completely dissolve one cleaning tablet (next Fig.) in 1 Liter of water. A mineral water bottle can be used as a container.



Unscrew CamelBak® closure by turning it to the left.



Abb./FIG.33



Abb./FIG.34

4. Concluding Valuation

In the case of the mask drinking valve made by Draeger Medical AG & Co. KG, in conjunction with parts of a mask drinking system made by CamelBak, both the manual disinfection and the manual cleaning with the same method were validated microbiologically in the above examination.

According to the present findings or the results derived from them, the definite criteria for an effective treatment cited in section 3 as quantitative requirements for the reduction of test bacteria, were fulfilled or surpassed by the tested method with CamelBak Cleaning Tab both in respect to the disinfection effect and in respect to the cleaning effect.

As all applied methods include high safety additions and the validation is carried out as a worst-case testing using the test contamination BAM (bovine albumin mucin), according to the above results the infectiological safety of users is ensured from the hygienic standpoint in case of correct reprocessing of the mask drinking valve.

Hamburg, dated April 17, 2009



Currently available is the FPS 7000 RP with EN approval with the PSS BG 4 plus and all accessories shown in the new brochure and displayed here.

NIOSH approval has been submitted and is expected still within this year.

Camelback Trials

CONCLUSION



Panoramic Mask and Hydro Attachment

Both methods that were tried are easy to apply to the set and mask and have their own advantages and disadvantages and I feel that the application for introducing fluids will benefit the teams operating in hot conditions. Although the two methods tried in this experiment were permanently connected to the mask I think that the real application will be to connect the camelback when it is required by the wearer, so on an extended rescue into hot areas two or three of the camelbacks will accompany a team and will be connected to the mask when required to consume and replenish fluids.

Thank you
for your attention

