CAFS
Compressed Air Foam System
Flekkefjord 14/05/2014
What is CAFS …

**CAFS** = **Compressed Air Foam System**

Water + Foam agent + Compressed air
### Foam vs. CAFS

<table>
<thead>
<tr>
<th>foam</th>
<th>CAFS</th>
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<tbody>
<tr>
<td>heterogeneous foam bubbles</td>
<td>homogeneous foam bubbles</td>
</tr>
<tr>
<td>ER = 5 to 20: low expansion foam</td>
<td>ER = 3 to 10: wet foam</td>
</tr>
<tr>
<td>ER = 20 to 200: medium exp. foam</td>
<td>ER = 10 to 20: dry foam</td>
</tr>
<tr>
<td>ER = 200 to 1,000: high exp. foam</td>
<td>The fire fighting agent gets additional energy due to the compressed air → higher throwing range</td>
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<tr>
<td>Energy is withdrawn from the fire fighting agent at the nozzle</td>
<td>„high“ kinetic energy: The CAF-foam penetrates the zone of the flames and loses just a little amount of mass and cools the surface of the burning material.</td>
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<tr>
<td>„low“ kinetic energy: A significant portion evaporates already in the hot fire gases – cools atmosphere around the fire.</td>
<td></td>
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</table>
How is CAFS generated?

Compressed Air Foam System
(Compressed air is mixed with the water foam agent mixture)

The CAFS-System is:
„An equipment for generating fire extinguishing foam!“

active foam expansion
(Compressed air)

passive foam expansion

How is CAFS generated?
How works CAF-foam …

**Cooling**
by evaporation of fire water

**Temperature**

**Oxygen**

**Combustible**

**Reduction**
by penetration of combustible

**Smoothening**
by expulsion of oxygen and separation of reactants
Characteristics of CAF-foam ...

Throwing range  Grip  Stability
Advantages of CAFS ...

- Quick success in extinguishing
- Multiplication of the extinguishing agent
- Using the CAF-foam as indicator
- Large and safe action radius
- Good visibility conditions
- Excellent burn-back-safety
- Low water and fire damage
Rosenbauer CAFS-Overview

**POLY CAFS**
- autarkic system

**POLY Trolley**
- SL35 und SL50 CAFS

**POLY Bike**
- SL50 CAFS

**POLY Quad**
- SL100 CAFS

**POLY Skid Modul**
- SL45/50/75/100 CAFS

**POLY Fire extinguishing system**
- SL100 to SL3000 CAFS

**CONTI CAFS WR**
- air via compressor/compressed air cylinders

**CONTI CAFS WR**
- belt drive
  - CONTI CAFS WR 15/30/60 C
- electrical
  - CONTI CAFS WR 15 E
  - CONTI CAFS WR 30 E
- high conveying
  - SKY CAFS
- compressed air cylinders
  - FLASH CAFS WR 15/30/60
  - CAFS Mobile

**FLASH CAFS AR**
- compressed air cylinders

- FLASH CAFS AR 30
- FLASH CAFS AR 50
- FLASH CAFS AR 100
- FLASH CAFS AR 250
CONTI CAFS WR 15 - 60
CONTI CAFS WR

- **3 different sizes**
  - CONTI CAFS WR 15 →~1500l/min CAF-foam
  - CONTI CAFS WR 30 →~3000l/min CAF-foam
  - CONTI CAFS WR 60 →~6000l/min CAF-foam

- **actuation**
  - hydraulic
  - via Belt from PTO
  - electric

- **user-optimized 90° Wet/Dry adjustment (manuel or electric)**

- **designcover**
CONTI CAFS WR – vehicle mounted
CONTI CAFS WR – Operation

Using of the CAFS-outlets:

- Water
- Water-foam agent
- CAFS

Changing of the expansion ratio:

- 4 - 20
- Manual or electrical
- Individual change per outlet
CONTI CAFS WR
SKY CAFS

- Impressive vertical delivery up to 400 m!
- for special demands (e.g. in combination with aerial fire apparatus)
SKY CAFS

Mountain station
Sea level: 1,115 m
Lifting height: 396 m

Length of Hose:
B-Hose (75mm): 860 m
A-Schläuche (110mm): 870 m

Valley station
Sea level: 719 m
Lifting height: 0 m

Guangzhou TV Tower
Sea level: 400 m
Lifting height: 610 m
FLASH CAFS AR schemata
FLASH CAFS AR

FLASH CAFS AR 250

- **Flow range**: 6,000 Liter per minute
- **Maximum CAFS-foam quantity**: 48,000 Liter per minute
- **Designed for turret**: RM60
- **Throwing range**: 80 Meter
FLASH CAFS AR

- simple, mechanical system for retrofitting
- no extensive electrical implementation necessary
- little weight and small required space
- very easy operation and maintenance
- external supply for refilling of compressed air cylinders
CAFS Mobile

- **extinguish system: CAFS**
- **airsupply**
  - 2x 6,8L/300bar
  - External air supply connector
  - Gauges (compressed air supply and operating pressure)
- **90° wet/dry-adjustment**
- **breadth = 420 mm**
  - Perfect for retrofitting in compartments
POLY Trolley

- extinguish system: CAFS
- capacity: 35 L / 50 L
- airsupply: 5L/200bar, air, accurate pressure indication
- hose: FORMTEX DN19x20 m
- aluminium tank with synthetic coating inside
- central lock system
- integrated function process: Standpipe with integrated mixing chamber
POLY TROLLEY SL35/50 CAFS

- pressure regulator with pressure gauge
- SCBA cylinder with permanent pressure reading
- optional pressure relief
POLY Skid modul

- car and vehicle application
- extinguish system: CAFS
- capacity: 45 L / 100 L
- airsupply: 5L/200bar – 6L/300bar, air, accurate pressure indication
- hose: FORMTEX DN19x20-40 m (with or without hosereel)
- stainless steel tank
- centrallock system
Typical Austrian First Responder (VRF) built on MB Sprinter chassis with POLY Skid Module
POLY Skid Modul

- extinguish system: CAFS
- capacity: 50 L
- airsupply: 5L/200bar, air, accurate pressure indication
- hose: FORMTEX DN19x20
- stainless steel tank
- centrallock system
POLY Bike

- extinguish system: CAFS
- capacity: 50 L
- airsupply: 5L/200bar, air, accurate pressure indication
- hose: FORMTEX DN19x20
- stainless steel tank
- centrallock system
POLY extinguishing system SL100 – 300
POLY SL100-3000 CAFS

operating panel
with pressure regulator, SCBA cylinder pressure gauge, operating pressure gauge, level indicator

tank with riser, CAFS-mixing chamber and safety valve

RBI-hose-reel;
non-collapsible, kink-resistant super light special textile hose

quick tank refilling

CAFS-nozzle

abrasion protection
ULTRA CAF System
ULTRA CAF System

- **Compact unit – single engine driven**
  - Water pump 100 l/min at 8 bar
  - Compressor 700 l/min at 8 bar
  - Foam pump 3 l/min at 8 bar
  - Simple operation with control LCS panel

- **3 different foam qualities**
  - Dry 20:1 (30 l/min)
  - Medium 8:1 (100 l/min)
  - Wet 6:1 (140 l/min)
ULTRA CAF System

- **Compact dimensions** for easy installation in smaller fire fighting vehicles
- **Weight:** 210 kg
ULTRA CAF System
ULTRA CAF System

- DOSIFOR DC motor Progress bar
- Proportioning Rate (%)
- Water Flow Rate (liters/minute)
- Pre-set Pushbutton for Wet Foam Quality
- Type of Foam Concentrate
- Foam Concentrate Flow Rate (liters/minute)
- CAFS Control Valve Progress bar
- Pre-set Pushbutton for Dry Foam Quality
CAFS-Nozzles
CAFS Nozzles

- CAFS Nozzle
  - Solid-jet nozzle for maximum throw range
  - Best foam quality
  - Best performance with outside attack

- RB 100/101 O-Stream Nozzle
  - CAFS operation in position „FLUSH“
  - Optimal for inside attack (Flash over)
  - Spray-jet possibility
Thank you for your attention!

Rosenbauer International AG
4060 Leonding, Paschinger Str. 90, Austria
Tel: +43 732 6794-0, Fax: +43 732 6794-89
office@rosenbauer.com
www.rosenbauer.com