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Compact Compressed Air Foam Systems



Compact Compressed Air Foam Systems

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**USDA Forest Service
San Dimas Technology and Development Center
San Dimas, California**

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INTRODUCTION

A number of companies in recent years have produced compact compressed air foam systems (CAFS) that are available on the General Services Administration (GSA) Federal Supply Schedules. This report presents information that the Fire Management Program at San Dimas Technology and Development Center has collected on compact CAFS units.

COMPACT COMPRESSED AIR FOAM SYSTEMS

Compact CAFS units are produced in many configurations with a wide range of performance. Auxiliary engines or power take-off's (PTO) on fire trucks power some units; cylinders of compressed gas power others. Some units proportion foam concentrate by premixing while others have discharge side automatic regulating proportioners. Some units have an integral water supply and in other units the water must be supplied from an outside source. The cost of these units varies widely. Some units are listed on GSA Federal Supply Schedules. Two units on FSA Federal Supply Schedules include the truck to carry the unit.

Another way of providing CAFS on a fire truck is to add an air compressor and then use the fire truck's existing water tank, pump, and foam proportioner to complete the CAFS unit. This added air compressor could be auxiliary engine powered or PTO powered. The auxiliary engine powered air compressor is generally quicker and requires less engineering to install. Also, with an auxiliary engine powered air compressor, a CAFS running attack is more likely to be possible than with a PTO powered added air compressor. When an air compressor is added, powered by a PTO, generally more engineering is required and the unit is more likely to be unable to make a running attack with CAFS than when an auxiliary engine powered air compressor is added. However, the PTO powered air compressor may be less costly and take up less space. Manufacturers of compact CAFS have provided both auxiliary engines and PTO driven air compressors to transform a fire truck into a CAFS unit.

APPENDIX MATERIAL

Auxiliary engine and PTO driven air compressors to transform a fire truck into a CAFS unit are available from compact CAFS manufacturers listed in Appendix A. This appendix also provides listings of manufacturers and models along with certain salient characteristics and list or GSA prices of compact CAFS units.

The compact CAFS listed in Appendix A are classified as auxiliary engine powered or compressed gas powered. Compressed gas powered compact CAFS are further classified as vehicle carried or backpack carried. Also listed are auxiliary engine and PTO powered air compressors for transforming a fire truck into a CAFS unit. The information in the appendix has been furnished by the manufacturers and no independent verification or testing has been done. List prices are as furnished by the manufacturer. The manufacturer may offer discounts from the list price to the U.S. Government or for the purchase of multiple units. The listing of equipment in this appendix does not constitute an endorsement or approval or disapproval by the USDA Forest Service of any equipment, product or service to the exclusion of others that may be suitable.

Appendix B contains a listing of compact CAFS manufacturers and suppliers.

APPENDIX A

Auxiliary Engine Powered Compact CAFS

Compressed Air Powered Compact CAFS
(Truck carried)

Compressed Air Powered Compact CAFS
(Backpack)

Auxiliary Engine Powered Air Compressors to Transform Fire Truck to CAFS

PTO Powered Air Compressors to Transform Fire Truck to CAFS

APPENDIX B

Listing of CAFS Manufacturers and Suppliers

Auxiliary Engine Powered Compact CAFS			
Make and Model	Innovative foam Systems Skid CAFS	W.S. Darley & Company Snuffer 15/45	W.S. Darley & Company Snuffer 45/200
Characteristics			
Engine Horse power	16 Hp	16 Hp B&S	25 Hp Koher
Pump Type	positive displacement diaphragm	Use Existing Pump	Centrifugal
Max Pressure	125 psi	120 psi	125 psi
Water Flow	35 gpm	45 gpm @ 100 psi	40 gpm with aspirated foam or CAFS
Air Flow	35 cfm	42 cfm @ 50 psi	42 cfm @ 60 psi
Air Compressor	two stage piston	4 cylinder max pressure 120 psi	max pressure 125 psi
Proportioner	automatic regulating discharge side, Dosatron	water driven, automatic discharge side, Dosatron	water driven, automatic discharge side, Dosatron
Size			
Width	30 inches	38 inches	48 inches
Length	48 inches	21 inches	30 inches
Height	29 inches	38 inches	30 inches
Weight	700 pounds	320 pounds	425 pounds
Integral water supply	no (drafts to 15 ft)	no	optional 250 to 360 gallons
GSA Contract	no	no	no
List Price	\$14,995	\$15,995	\$19,250

Auxiliary Engine Powered Compact CAFS			
Make and Model	W.S. Darley & Company Snuffer 25/40	Odin Foam Division E-CAFS	Odin Foam Division The Derringer
Characteristics			
Engine Horse power	25 Hp Koher	24 hp Gasoline Honda	26 Hp, Daihatsu DM950D
Pump Type	Centrifugal	Centrifugal	Centrifugal
Max Pressure	125 psi	150 psi	160 psi
Water Flow	90 gpm @ 114 psi	100 gpm @ 125 psi	100 gpm @ 125 psi
Air Flow	35 cfm @ 100 psi	50 cfm @ 125 psi	55 cfm @ 125 psi
Air Compressor	42 cfm @ 40 psi	Rotary, Tamrotor	Rotary, Tamrotor
Proportioner	water driven, automatic discharge side, Dosatron	Automatic discharge side Robwen Hydro-Flo 100	Automatic, discharge side 1601 Foam Pro
Size			
Width	30 inches	48 inches	48 inches
Length	40 inches	48 inches	50 inches
Height	30 inches	36 inches	36 inches
Weight	385 pounds	Approx 490 pounds	1100 pounds
Integral water supply	no	Optional	Optional
GSA Contract	no		Applied For
List Price	\$16,750	\$14,000	\$31,500

Auxiliary Engine Powered Compact CAFS			
Make and Model	Odin Foam Division Weapon 250/100	Odin Foam Division Model 250/125	Odin Foam Division Model 500/225
Characteristics	ISO	Lethal Weapon	
Engine Horse power	41Hp@ 3600 rpm Lombardini 120T	72 @ 2800 rpm,Deutz 1011F	105 hp diesel Deutz
Pump Type	Centrifugal	Centrifugal	Centrifugal
Max Pressure	175 psi	195 psi	
Water Flow	250 gpm@ 150 psi	275 gpm@ 150 psi	500 gpm@ 250 psi
Air Flow	95 cfm @ 175 psi	125 cfm @ 125 psi	225 cfm @ 125 psi
Air Compressor	Rotary, Tamrotor	Rotary, Tamrotor	Rotary
Proportioner	Automatic discharge side 2001 Foam Pro (2002 optional)	Automatic discharge side 2001 Foam Pro (2002 optional)	Automatic discharge side 2001 Foam Pro (2002 optional)
Size			
Width	48 inches	40 inches	40 inches
Length	50 inches	84 inches	96 inches
Height	36 inches	48 inches	48 inches
Weight	1350 pounds	2500 pounds	3500 pounds
Integral water supply	no, optional	no, optional	
GSA Contract	yes	Applied For	
List Price	\$46,000	\$49,500	\$59,000

Auxiliary Engine Powered Compact CAFS			
Make and Model	Boise Mobile Equipment Quick Attack CAFS	Becker Fire Equipment Becker 120 GPM CAFS	Pneumax Inc Model 120-60 DS
Characteristics			
Engine Horse power	Gasoline 25 Hp@3600 rpm Kohler	25 Hp@3600 rpm Kohler Gasoline	30 Hp Deutz Diesel
Pump Type	180 Centrifugal, Robwen	Centrifugal, Robwen 180	Centrifugal Waterous CPK-1
Max Pressure			200 psi
Water Flow	110 gpm @ 150psi	120 gpm @ 100psi	120 gpm @ 150 psi
Air Flow	35 cfm @ 100 psi	35 cfm @ 100 psi (Stellar)	60 cfm
Air Compressor	Stellar	Stellar	rotary screw
Proportioner	Automatic discharge side	Automatic discharge side	automatic discharge side
			Foam pro 1601
Size			
Width	Mounted on truck Chev 3500 4X4	Mounted on GMC 4X4	40 inches
Length	12,000 pounds GVWR	12,000 pounds GVWR	50 inches
Height	83 inches		50 inches
Weight	10400 pounds		1250 pounds
Integral water supply	200 gallons	200 gallons	none optional
GSA Contract	yes	yes	no
List price	\$66,477 (including truck) (GSA price)	\$66,990 (Including truck) (GSA price)	\$35,149

Auxiliary Engine Powered Compact CAFS			
Make and Model	Pneumax Inc Model 250-120 DS	Pneumax Inc Model 250-120 GS	Pneumax Inc Model 70-35-GP
Characteristics			
Engine Horse power	75 Hp, VW Diesel	67 Hp VW gasoline	24 Hp, gasoline engine
Pump Type	Centrifugal, Waterous CPK-2	Centrifugal, Waterous CPK-2	Centrifugal Hypro
Max Pressure	250 psi	250 psi	180 psi
Water Flow	250 gpm @ 150 psi	250 gpm @ 150 psi	100 gpm @ 120 psi
Air Flow	120 cfm	120 cfm	35 cfm
Air Compressor	rotary screw	rotary screw	4 cylinder piston
Proportioner	automatic discharge side Foam pro 1601	automatic discharge side Foam pro 1601	automatic discharge side Flow mix 500
Size			
Width	40 inches	40 inches	40 inches
Length	66 inches	66 inches	33 inches
Height	40 inches	40 inches	33 inches
Weight	1350 pounds	1350 pounds	500 pounds dry
Integral water supply	none (optional)	none (optional)	none (optional)
GSA Contract	no	no	no
List price	\$48,931	\$46,580	\$13,750

Auxiliary Engine Powered Compact CAFS				
Make and Model	Pneumax Inc Model 90-45-GS	Pneumax Inc Model 100-50-DS	The Mallory Co. 44 Magnum CAFS	The Mallory Co. Model 70 RS CAFS
Characteristics				
Engine Horse power	24 Hp, Onan gasoline engine	27 Hp, Deutz Diesel	25 Hp, Gasoline	35 Hp Wisconsin gasoline
Pump Type	Centrifugal, Hypro	Centrifugal, Hypro	Centrifugal	Centrifugal
Max Pressure	180 psi	180 psi	235 psi	250 psi
Water Flow	100 gpm @ 120 psi	100 gpm @ 120 psi	60 gpm @ 100 psi	100 gpm @ 100 psi
Air Flow	45 cfm	50 cfm	40 cfm @ 100 psi	70 cfm @ 100 psi
Air Compressor	rotary screw	rotary screw	40 cfm 4 cylinder 2-stage	Rotary Screw Bauer
Proportioner	automatic	automatic discharge side	automatic discharge side	automatic discharge side
	Flow Pro 1601	Flow Pro 1601	Flow mix 500	KK Proportioner
Size				
Width	48 inches	48 inches	48 inches	48 inches
Length	96 inches	96 inches	30 inches	36 inches
Height	30 inches	32 inches	28 inches	36 inches
Weight	1100 pounds dry	1250 pounds dry	800 pounds	1150 pounds
Integral water supply	200 gallons	200 gallons	optional	optional
GSA Contract	no	no	no	no
List price	\$24,589	\$28,703	\$17,580	\$28,236

Auxiliary Engine Powered Compact CAFS				
Make and Model	Enviro Foam Model 25 Easy CAFS	Enviro Foam Model 25 low profile	Enviro Foam Model 25 Short	Enviro Foam Model 25 Hardened
Characteristics		Slip in system	Slip in	Low profile
Engine Horse power	20 Hp Gasoline, B&S	20 Hp Gasoline, B&S	20 Hp Gasoline, B&S	19 hp diesel, Deutz
Pump Type				
Max Pressure	80 psi	90 psi	90 psi	90 psi
Water Flow	50 gpm	50 gpm	50 gpm	50 gpm
Air Flow	50 cfm	50 cfm	50 cfm	50 cfm
Air Compressor				
Proportioner				
Size				
Width		48 inches	48 inches	48 inches
Length		96 inches	75 inches	84 inches
Height		39 inches	57 inches	39 inches
Weight	285 pounds	1080 pounds		
Integral water supply	no	250 gallons	250 gallons	215 gallons
GSA Contract	yes	yes	yes	yes
List price	\$19,056 (GSA price)	\$21,272 (GSA price)	\$21,272 (GSA price)	\$32,027(GSA price)

Auxiliary Engine Powered Compact CAFS				
Make and Model	Intelagard, Inc. Slip on	American Fire CAFS Eq CAFS Ranger	American Fire CAFS Eq 18V-22-30	American Fire CAFS Eq 25-60-40
Characteristics				
Engine Horse power	25 Hp gasoline, Koher	9 hp	18 hp	25 hp
Pump Type	Air Acuated	Positive Displacement	Positive Displacement	Positive Displacement
Max Pressure	125 psi	120 psi	120 psi	120 psi
Water Flow	135 gpm @ 100 psi	10 gpm	22 gpm	60 gpm
Air Flow	70 cfm	10 cfm	30 cfm	40 cfm
Air Compressor	rotary screw	piston	piston	piston
Proportioner	premix (optional automatic)	suction side	suction side	suction side
Size				
Width		39 inches	48 inches	48 inches
Length		70 inches	92 inches	96 inches
Height		40 inches	59 inches with hose reel	62 inches with hose reel
Weight		1400 pounds with water	3400 pounds with water	3700 pounds with water
Integral water supply	200 gallons (other option)	100 gallons, 5 gallons foam	250 gallons, 10 gallons foam	250 gallons, 10 gallons foam
GSA Contract	no	no	no	no
List price	Call for Quote	\$9,400	\$13,900	\$18,900

Compressed Air Powered Compact CAFS (Truck carried)			
Make and Model	Intelagard, Inc.	Innovative Foam Systems Truck CAFS	Stanley Mfg Tri-max 3-GHR
Characteristics			
Engine Horse power	None, Compressed Air Powered	none (compressed air powered)	none (compressed air powered)
Pump Type	Air actuated	positive displacement diaphragm pump	Compressed air
Max Pressure	125 psi	125 psi	
Water Flow	135 gpm @ 100 psi	35 gpm	
Air Flow		40 cfm	
Air Compressor	none (air cylinders)	none (from cylinder)	6 cuft 3,000 PSI Scuba Air tank
Proportioner	premix (automatic - optional)	none, premix	
Size			
Width	48 inches	24 inches	9 1/2 inches
Length	86 inches	60 inches	
Height	24 inches	24 inches	26 inches
Weight	480 lb empty, 2600 lb charged	575 lb (with water)	36 lb
Integral water supply	200 gallons	75 gallons	3 gallons
GSA Contract	no	no	yes
List price	\$12,885	Variable (approx \$3,495)	\$1095 (\$854.10 GSA price)
1. 30 gallons of foam solution and 200 lb of dry chemical.			

Compressed Air Powered Compact CAFS (Truck carried)		
Make and Model	Stanley Mfg Tri-max 30	Stanley Mfg Tri-max 230 (1)
Characteristics		
Engine Horse power	none (compressed air powered)	none (compressed air powered)
Pump Type	Compressed air	Compressed air
Max Pressure		
Water Flow		
Air Flow		
Air Compressor	2- 30 cft 4000 psi Scuba Air cylinder	2-100 cu ft 4000 psi Scuba Air cylinder
Proportioner	premix	
Size		
Width	33 inches	33 inches
Length	44 inches	44 inches
Height	36 inches	36 inches
Weight	602 lb	1132 lb
Integral water supply	30 gallons	30 gallons H2o 200 lb Dry chemical
GSA Contract	yes	yes
List price	\$6042.50 (\$4713.15 GSA price)	\$17,262.80 (\$13,465.98 GSA price)
1. 30 gallons of foam solution and 200 lb		

Compressed Air Powered Compact CAFS (Truck carried)			
Make and Model	Fire Solutions RRU-500	Fire Solutions RRU-500	American Fire CAFS Eq.
Characteristics			
Engine Horse power	none (compressed air powered)	none (compressed air powered)	none (compressed air powered)
Pump Type			
Max Pressure	100 psi	100 psi	135 psi
Water Flow	Up to 30 or 40 gpm	Up to 30 or 40 gpm	11 gpm
Air Flow			17.4 cfm
Air Compressor	Air cylinder	Air cylinder	Air cylinder
Proportioner	discharge side automatic, Dosmatic	discharge side automatic, Dosmatic	premix
Size			
Width			24 inches
Length			60 inches
Height			36 inches
Weight			500 lb
Integral water supply	80 gallons	124 gallons	26 gallons
GSA Contract	no	no	no
List price	\$2,700	\$3,100	\$3,900
1. 30 gallons of foam solution and 200 lb			

Compressed Air Powered CAFS (Backpack)		
Make and Model	Intelgard, Inc. MACAW Backpack	Innovative Foam system Pack CAFS
Characteristics		
Engine Horse power	none (compressed air powered)	none (compressed air powered)
Pump Type	Air powered	Positive displacement diaphragm
Max Pressure	100 psi	125 psi
Water Flow	5 gpm	4 gpm
Air Flow	60 Cubic foot cylinder	5 cfm
Air Compressor	Standard SCBA cylinders	none (from cylinder)
Proportioner	none, premix	none, premix
Size		
Width	15.9 inches	17 inches
Length	11.3 inches	8.5 inches
Height	21.3 inches	30 inches
Weight	60 lb fully charged	67 lb fully loaded
Integral water supply	5 gallons	5 gallons (uses current USFS bladder bag)
GSA Contract	no (pending)	no
List price	\$2,995	\$2,395

Auxiliary Engine Powered Air Compressor to Transform Fire Truck to CAFS		
	Odin Foam Division	Odin Foam Division
Make and Model	WS Darley & Co.	WS Darley & Co.
	26.5 Hp	31 Hp
Characteristics		
Engine Horse power	26.5 Hp diesel	31 Hp gasoline
Pump Type	None (use existing pump)	None (use existing pump)
Max Pressure		
Water Flow		
Air Flow	65 cfm @ 125 psi	65 cfm @ 125 psi
Air Compressor	Rotary Screw	
Proportioner	none (use existing proportional)	none (use existing proportional)
Size		
Width	41.5 inches	
Length	27.5 inches	
Height	27.5 inches	
Weight		
Integral water supply	Use existing supply	Use existing supply
GSA Contract		no
List price	\$12,450	\$12,450

Auxiliary Engine Powered Air Compressor to Transform Fire Truck to CAFS		
	Odin Foam Division	Odin Foam Division
Make and Model	WS Darley & Co.	WS Darley & Co.
	31 Hp	41 Hp
Characteristics		
Engine Horse power	31 Hp gasoline	41 Hp diesel
Pump Type	None (use existing pump)	None (use existing pump)
Max Pressure		
Water Flow		
Air Flow	100 cfm @ 125 psi	120 cfm @ 125 psi
Air Compressor		
Proportioner	none (use existing proportional)	none (use existing proportional)
Size		
Width		
Length		
Height		
Weight		
Integral water supply	Use existing supply	Use existing supply
GSA Contract	no	no
List price	\$12,450	\$15,450

Auxiliary Engine Powered Air Compressor to Transform Fire Truck to CAFS			
Make and Model	Odin Foam Division WS Darley & Co. 71 Hp	Pneumax Inc Model 60-GM	Pneumax Inc Model 60-DM
Characteristics			
Engine Horse power	71 Hp diesel	25 Hp Kohler Gasoline	27 Hp Deutz Diesel
Pump Type	None (use existing pump)	None (use existing pump)	None (use existing pump)
Max Pressure			
Water Flow			
Air Flow	225 cfm @ 125 psi	60 Cfm	60 Cfm
Air Compressor		Rotary Screw	Rotary Screw
Proportioner	none (use existing proportional)	None	
Size			
Width			
Length			
Height			
Weight			
Integral water supply	Use existing supply	Use existing supply	none (use existing supply)
GSA Contract	no		
List price	\$17,450	\$9,790	\$13,040

Auxiliary Engine Powered Air Compressor to Transform Fire Truck to CAFS		
Make and Model	Pneumax Inc Model 120-DM	Pneumax Inc Model 200-DM
Characteristics		
Engine Horse power	30 Hp Deutz Diesel	75 Hp
Pump Type	None (use existing pump)	None (use existing pump)
Max Pressure		
Water Flow		
Air Flow	120 cfm	200 cfm
Air Compressor	Rotary Screw	Rotary Screw
Proportioner		
Size		
Width		
Length		
Height		
Weight		
Integral water supply	none (use existing supply)	none (use existing supply)
GSA Contract		
List price	\$16,713	\$19,500

PTO Powered Air					
		Odin Foam Division	Odin Foam Division	Pneumax Inc	Pneumax Inc
		WS Darley & Co.	WS Darley & Co.	Model 140-P	Model 200-P
		PTO-120-R	PTO-200-R		
Characteristics					
Engine Horse power		PTO driven	PTO driven	PTO driven	PTO Driven
Pump Type		none	none		
Max Pressure					
Water Flow					
Air Flow		120 cfm@125 psi	200 cfm@125 psi	140 cfm	200 cfm
Air Compressor		rotary screw	rotary screw		
Proportioner		none (use existing proportional)	none (use existing proportional)		
Size					
	Width				
	Length				
	Height				
	Weight				
Integral water supply		Use existing supply	Use existing supply	use existing supply	use existing supply
GSA Contract		no	no	no	no
List price		\$12,500	\$15,900		

PTO Powered Air Compressor to Transform Fire Truck to CAFS			
		Odin Foam Division	Odin Foam Division
		WS Darley & Co.	WS Darley & Co.
		PTO-60-R	PTO-60-RP
Characteristics			
Engine Horse power		PTO driven	PTO driven
Pump Type		none (uses existing pump)	Centrifugal, Darly 2 1/2 AG
Max Pressure			
Water Flow			250 gpm @ 250 psi
Air Flow		80 cfm@125 psi	80 cfm @125 psi
Air Compressor		rotary screw	rotary screw
Proportioner		none (use existing proportional)	none (optional)
Size			
Width			
Length			
Height			
Weight			
Integral water supply		Use existing supply	optional
GSA Contract		no	no
List price		\$5,900	\$10,500

APPENDIX B

CAFS Manufacturers and Suppliers

American Fire CAFS Equipment

P.O. Box 397987
Dallas, TX 75339
3720 Kolloch Drive
Dallas, TX 75216
(214)372-2402
(800)372-2404
FAX (214)371-3070

Becker Fire Equipment Co.

1275 North Six Mile Road
Casper, WY 82604
(307)265-1083
(800)726-1581
FAX (307)266-4416

Boise Mobile Equipment

900 Boeing Street
Boise, ID 83705
(208)338-1444
FAX (208)344-0395

EnviroFoam Technologies, Inc.

424 E. Southern Avenue, Suite 101
Tempe, AZ 85283
(480)557-6566
(888)507-7770
FAX (480)557-6448

Fire Solution, LLC

P.O. Box 112680
Eugene, OR 97440
(541)984-0343
(888)805-8155
FAX (541)334-6590

Innovative Foam Systems, LLC

5025 South Eastern Avenue, #16
Suite 438
Las Vegas, NV 89119
(702)736-3216 (Voice & FAX)

Intelgard, Inc.

26 Garden Center, Suite 4-E
Broomfield, CO 80020
(303)410-1565
(800)468-6090
FAX (303)410-1562

Odin Foam Division

W.S. Darley & Co.

P.O. Box 327
Toledo, OR 97391
(541)336-5067
(877)634-6223
FAX (541)336-2545

Pneumax

8557 N. 78th Avenue
Peoria, AZ 85345
(623)979-3398
(800)468-2237
FAX (623)979-6949

Stanley Manufacturing

4401 Indian Avenue
Redding, CA 96003
(530)275-3621
FAX (530)275-2501

The Mallory Company

1040 Industrial Way
P.O. Box 2068
Longview, WA 98632
(360)636-5750
(800)426-6830
FAX (360)577-4244

W.S. Darley & Co.

2000 Anson Drive
Melrose, IL 60160
(708)345-8050
FAX (708)345-8993
FAX ((800)932-9514