



AVIO **DEPARTMENT**



CMD

www.cmdengine.com

WHO WE ARE

For over 30 years CMD (Costruzioni Motori Diesel SPA) has been involved in design, prototyping and development of engines and solutions for automotive, marine and aeronautical fields.

Our AVIO department was born in the 2000s. Thanks to our experience, we are between the most important companies in the world specialized in gasoline and diesel aircraft engines design and production.

During the last 20 years CMD has invested in continuous design and development of aircraft engines.



A LONG ITALIAN HISTORY

*Once upon a time...
our passion for aircraft engines*

1930

Corrado Negri and Italo Balbo's transoceanic flight

CMD/FNM's history and our passion for aeronautical engines begins in 30s when Corrado Negri, an eminent member of Italian Air Force, took part in the transoceanic flight of Italo Balbo, an Italian politician involved in promoting Italian aviation in the world.

**1971**

Launching "Fratelli Negri Motori"

The company was founded in 1971 by Negri family as "FNM".

For many years and still today the central pillar of our activities has always been the "engine" and every part which composed it. CMD is born on the engine culture, starting from its design to the production of its components.

1984

First FNM marine diesel engine on the market

CMD becomes leader company in gasoline and diesel engines manufacturing; in 1984 the first diesel engine for the marine field was launched on the market.

1989

From FNM to CMD (COSTRUZIONI MOTORI DIESEL) S.p.A.

C.M.D. Costruzioni Motori Diesel Spa is formally set up, including also FNM division and its know-how. It has been the turning point for the company expansion and its business evolution.

2000



AVIO business unit introduction

During these years CMD started some new important projects, beginning to invest also in design and development of aircraft engines.

The new Avio business Unit was established.

2003

First aircraft diesel engine development

In 2003 first Avio diesel engine prototype takes shape: Avio 1, Avio 2 and Avio 3 that will become "GF56" in 2008.



2005

First aircraft gasoline engine development

CMD Avio introduces ULM220 gasoline engine prototype that will become "CMD22" in 2012.



2017

SIMPA project

SIMPA project starts: funded by Ministry of Economic Development, in collaboration with Basilicata University, the program provides systems development that contribute to improve the efficiency of propulsion systems based on piston engines in avio field, making them "smarter".

2018

CMD22 certified

At the beginning of 2018 CMD22 gasoline engine receive the Type Certificate.

2020

CMD18, our new gasoline engine

While the activities for improving the GF56 performances continue, a new gasoline engine prototype has been made up: "CMD18".

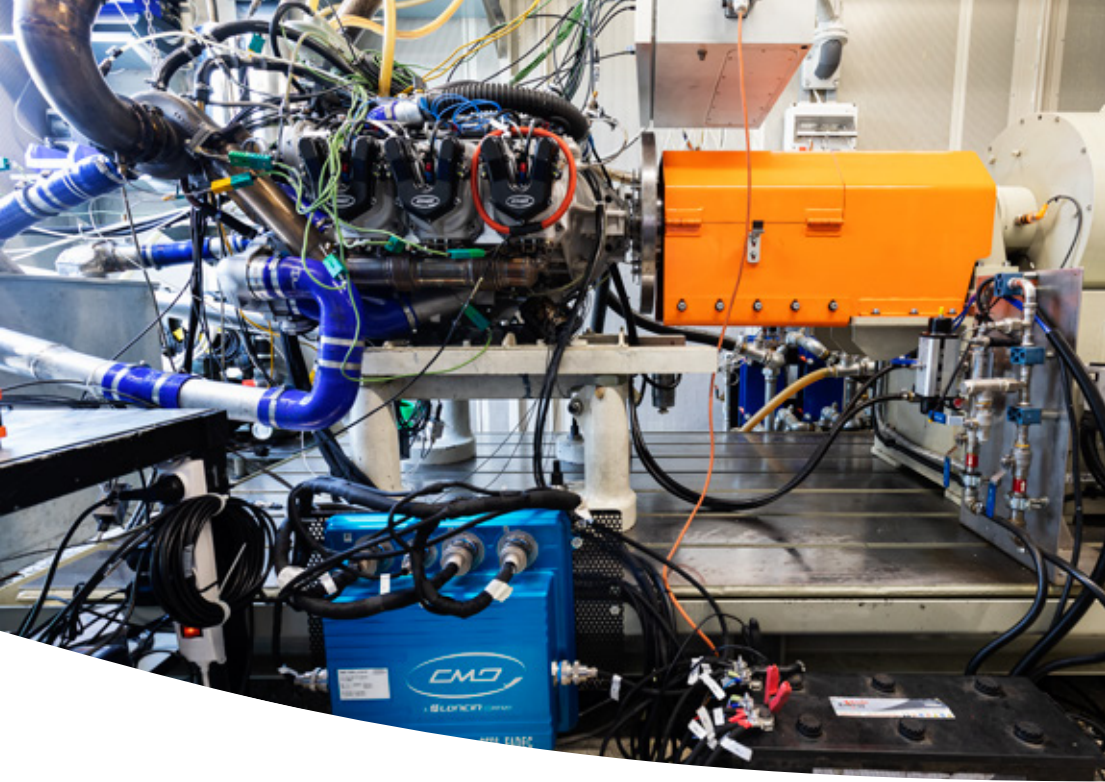
TODAY

CMD AVIO designs and produces 3 aircraft engines: GF56, CMD18 and CMD22.



CMD aircraft engines means excellent performances, reliability and low fuel consumption.

Our R&D team is composed by engineers with multidisciplinary skills. They are specialized in electronics, mechanics and software technology for giving engineering support to our customers in every phase of AVIO engine development process: from a compact and light design to technical data gathering and their validation – verification.



- DESIGN
- DEVELOPMENT
- ENGINE ASSEMBLY
- ENGINE ON TEST BENCH

CMD offers high-performance diesel and gasoline engines according to EASA standards and regulations.



Trust in CMD and fly safe!

OUR CERTIFICATIONS OBTAINED IN AVIO FIELD

CMD holds the Design Organization Approval – EASA DOA 21J.709 and Production Organization Approval – EASA POA IT.21G.0075.

CMD22 engine got the Type Certificate according to EASA CS22 subpart H (EASA E.120).



CMD22

Engine for Ultralight and General Aviation Aircrafts

CMD



CMD22 is suitable for ultralight aircrafts, for VLA, LSA, CS-22 range. This kind of engine is highly innovative, with a low environmental impact and a high operating time.

DESCRIPTION

- Gasoline engine
- Indirect electronic injection system
- 4 cylinders boxer
- 4 strokes liquid cooled
- Cycle Otto
- Engine management system
- Electric starter
- Propeller speed reduction gearbox 1:2
- Air intake system

APPLICATIONS

They are mostly used for ultralight aircrafts, tactical UAV, recreational and commercial purposes.



CMD22

Engine for Ultralight and General Aviation Aircrafts



FACTS

In its market segment, best innovation of CMD22 engine, compared to the competitors, is:

- Lower stress at same power condition; components suffer less strain, reducing engine wear.

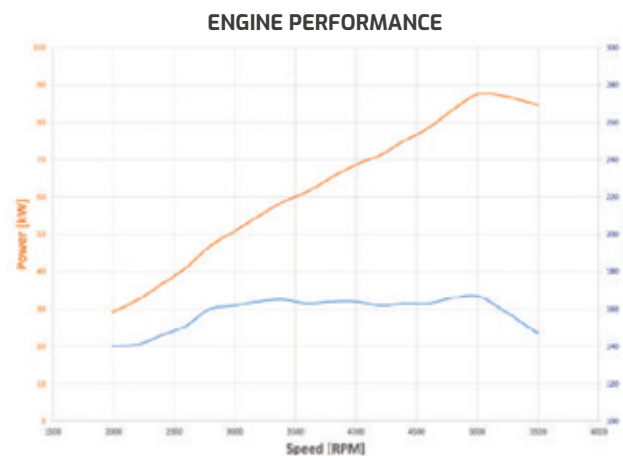
Added values of CMD22:

- High technology at competitive price;
- Lower maintenance costs;
- Higher performances (low weight-to-power ratio, low bore-to-stroke ratio).

All those characteristics can make CMD22 more eligible in terms of efficiency than the other competitors' engines.

PERFORMANCE			
Max Continuous Power	78 kW *	106 hp	4850 1/min
Take off Power **	87 kW *	118 hp	5500 1/min

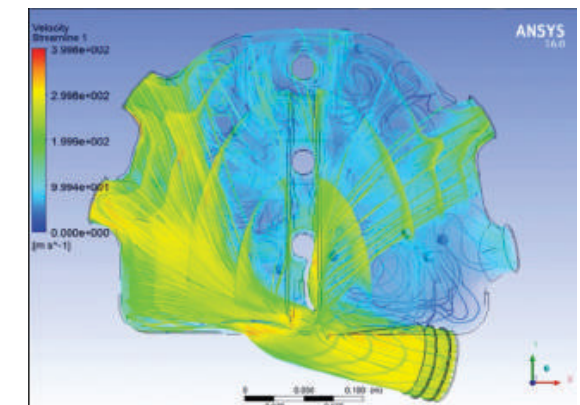
* with gasoline RON 95 ** Limited for max. 5 min



WEIGHT TO FLY	Kg	lb
Engine	85	187

BORE		STROKE	
100 mm	3.93 in	70 mm	2.76 in
DISPLACEMENT		FUEL	
2198 cm ³	134 cu in	min RON 95	

CAE ANALYSS



GF56

Engine for General Aviation

The CMC logo is located in the top right corner of the header. It consists of the letters "CMC" in a stylized, italicized font, enclosed within a white oval shape.

GF56 engine is suitable for general aviation market (C523 and FAR23 aircraft range). Being a retrofitting engine, its main distinguishing feature, GF56 can be installed on aircraft currently using Lycoming and Continental engines. It is fully designed and projected by an internal high qualified engineers team, to ensure accurate manufacturing process control, production cycle and continuity airworthiness.

DESCRIPTION

- Diesel common-rail engine
- Direct injection
- 2-strokes uniflow
- 6 cylinders boxes
- Liquid cooling system
- 5600 cc
- "Direct drive" transmission
- Dual fuel

APPLICATIONS

GA Market;
RE-engine market;
Rotary wing Segment;
Unmanned Aircraft.



GF56

Engine for General Aviation



FACTS

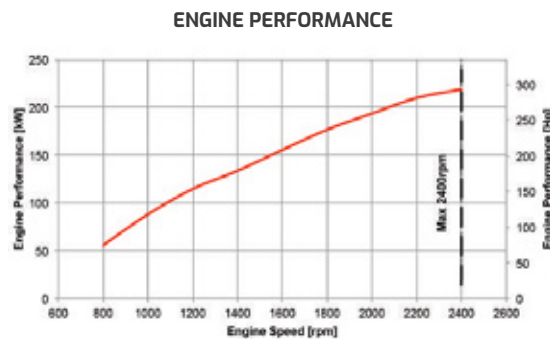
- Reduced fuel consumption;
- Low pollutant emissions;
- Use of JET A1 or diesel, easier to find on the market;
- Robustness, Reliability and Maintenance.

Added values of GF56:

- High Thermal Efficiency;
- Higher volumetric fuel energy content: Avio kerosene and/or Diesel fuel has higher density than Avio - gasoline;
- Lower operating cost: low cost of diesel fuel and aviation kerosene with respect to Avio gasoline;
- Lower fire hazard: Avio kerosene and/or Diesel fuel are lower flammable than gasoline;
- Less electromagnetic noise: no spark plugs;
- More environmentally friendly: lower level of CO₂, NOx, HC, noise emissions.

PERFORMANCE			
Max Continuous Power	180 kW *	241 hp	2200 1/min
Take off Power **	220 kW *	295 hp	2400 1/min

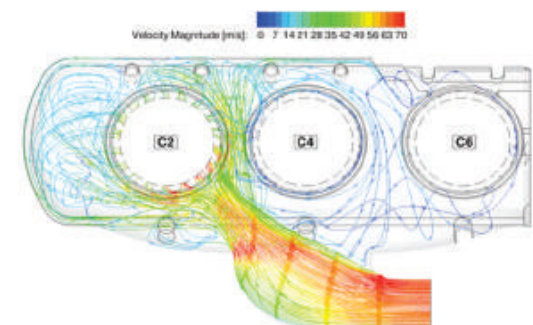
* with diesel/jet A1 ** Limited for max. 5 min



WEIGHT TO FLY	Kg	lb
Engine	220	485

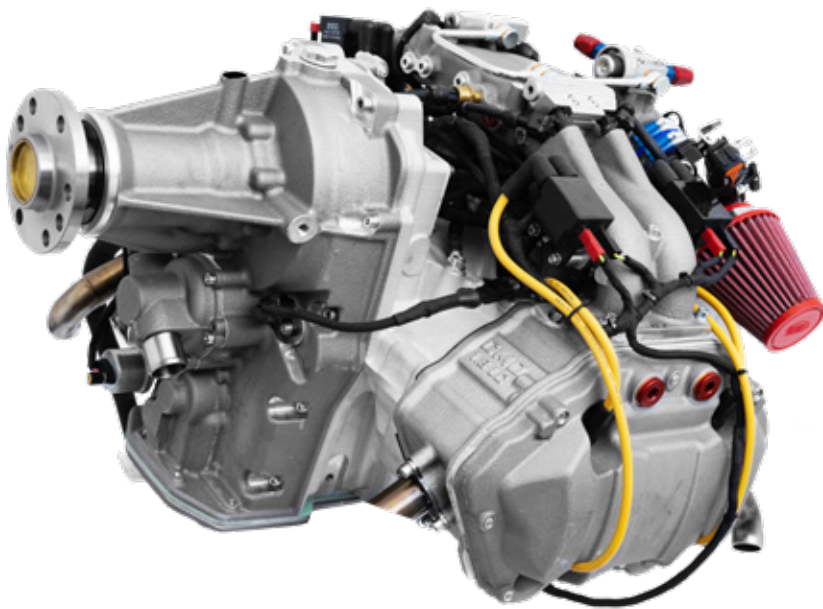
BORE		STROKE	
106 mm	4.17 in	105 mm	4.13 in
DISPLACEMENT		FUEL	
5600 cm ³	342 cu in	Jet A1 or Diesel	

CAE ANALYSIS



CMD18

Engine for Ultralight and General Aviation Aircrafts



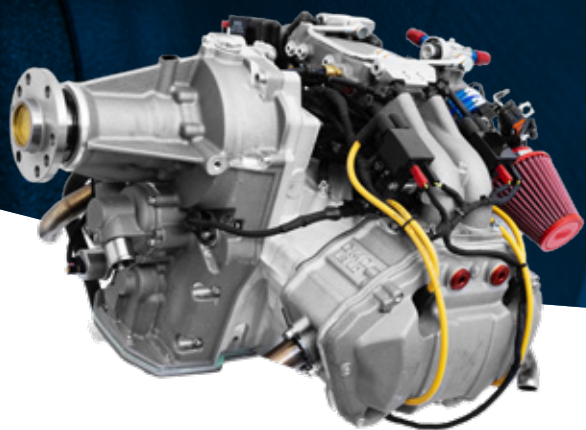
CMD18 LCG is an indirect electronic injection gasoline engine, liquid cooling system, 4 cylinders boxer, 4 strokes, cycle Otto, 1800 cc.

DESCRIPTION

- Gasoline engine
- Indirect electronic injection system
- 4 cylinders boxer
- 4 strokes liquid cooled
- Cycle Otto
- Engine management system - CMD
- Electric starter
- Propeller speed reduction UN IT
- Wet Sump

APPLICATIONS

They are mostly used for ultralight aircrafts, tactical UAV, recreational and commercial purposes.



CMD18

Engine for Ultralight and General Aviation Aircrafts



FACTS

In its market segment, best innovation of CMD18 engine, compared to the competitors, is:

- Lower stress at same power condition;
- Components suffer less strain, reducing engine wear.

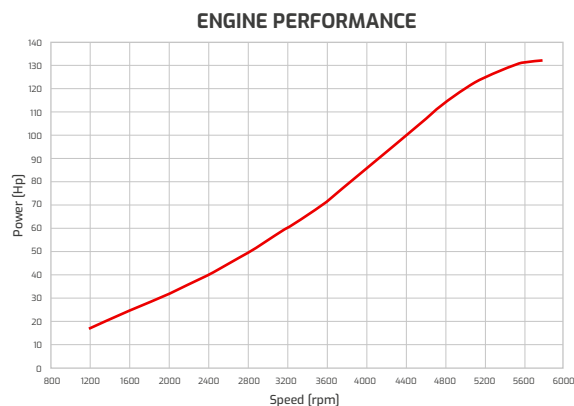
Added values of CMD18:

- High technology at competitive price;
- Lower maintenance costs;
- Higher performances (low weight-to-power ratio, low bore-to-stroke ratio).

All those characteristics can make CMD18 more eligible in terms of efficiency than the other competitors' engines.

PERFORMANCE			
Max Continuous Power	84,5 kW *	115 hp	4800 1/min
Take off Power **	97 kW *	132 hp	5800 1/min

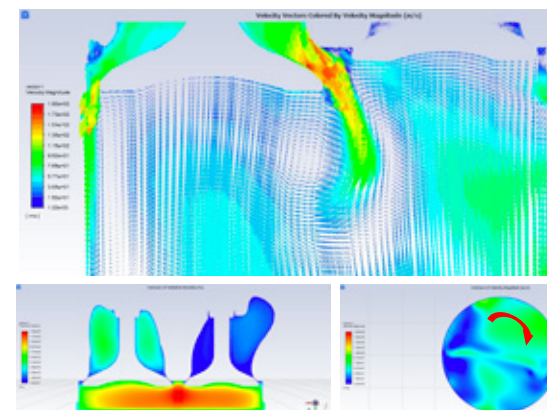
* with gasoline RON 95 ** Limited for max. 5 min



WEIGHT TO FLY	Kg	lb
Engine	90	198

BORE		STROKE	
96 mm	3.78 in	62 mm	2.44 in
DISPLACEMENT		FUEL	
1794.2 cm3	109.48 cu in	min RON 95	

CAE ANALYSSIS





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Thank You

