GPS Systems

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Overview

* History of GPS Systems
* GPS Satellites
* GPS Constellation
* Actual cockpit w/ g1000
* GPS-100 AVD
* GPS-155 Panel Mount
* Garmin G1000 Glass cockpit
* G-600 Retrofit
* Various GPS Devices
History

* 1960 1\textsuperscript{st} satellite system used the U.S. Navy

* 1970’s the 1\textsuperscript{st} worldwide radio navigation system

* GPS based on similar ground-based systems like LORAN and the Decca Navigator of the 1940’s

* Additional inspiration came from the Soviet Sputnik
GPS Satellite
GPS Satellite

* 1st GPS satellite launched 1978
* Full constellation of 24 achieved 1994
* Each satellite built to last 10 years
* GPS Satellites weigh approximately 2,000 lbs and are 17 ft. across w/ solar panels extended
* Transmitter power only 50 watts or less
GPS Satellite

* Orbiting 12,000 miles above Earth

* Constantly moving 2 complete orbits in 24 hours

* Travels roughly 7,000 miles per hour

* Powered by solar energy
  * equipped with back-up batteries

* Small rocket boosters on each satellite
  * keeps them flying on right path
GPS Constellation

visible sat = 12
Bad Navigating
Cockpit Navigation
GPS-100 AVD

* 1st developed June 1991

* 1st panel mount GPS that interfaces with autopilot
GPS-155 Panel Mount

* 1st developed February 1994

* 1st IFR A-1 non precision approach certified GPS

* Freedom to fly IFR – takeoff to touchdown
Garmin G1000

* Integrated flight instrument system

* 2 display units
  * primary flight display (PFD)
  * multi-function display (MFD)

* Communication panel fits between the 2

* PFD & MFD have 2 SD memory cards
  * one updates Jeppesen aviation databases every 28 days
  * bottom one for World Terrain
Garmin G1000

Primary Flight Display (PFD)

Multi-Function Display (MFD)
G-600 Retrofit

* Introduced July 2006

* Lets you upgrade your old steam gauges to a modern glass cockpit

* Built on virtues of G1000

* Easy installation

* Cost around $30,000
Various GPS Devices

Garmin GPS96

Garmin GPS196

Garmin GPS496

Garmin GPS696 w/ XM Weather
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References

http://www.gpscentral.com

http://documents.wolfram.com

http://www.n2yo.com/satellites

http://www.checksix.com

http://www.enwikipedia.org/wiki/Garmin_G1000

http://www.enwikipedia.org/wiki/GPS