THE FUTURE OF FLYING ON MARS

Jet Propulsion Laboratory
California Institute of Technology

1
00:00:04,130 --> 00:00:02,750
two years ago Ingenuity proved that we

2
00:00:05,090 --> 00:00:04,140
could do the impossible we can fly on

3
00:00:07,200 --> 00:00:05,100
Mars

4
00:00:11,870 --> 00:00:07,210
let's talk about what's next

5
00:00:13,370 --> 00:00:11,880
[Music]

6
00:00:15,950 --> 00:00:13,380
we're at the surface robotics lab

7
00:00:18,769 --> 00:00:15,960
testing is being done on future Mars

8
00:00:20,630 --> 00:00:18,779
helicopters Teddy sonatos is here with

9
00:00:23,330 --> 00:00:20,640
us today to talk about the helicopter

10
00:00:25,490 --> 00:00:23,340
that started it all Ingenuity Teddy

11
00:00:26,810 --> 00:00:25,500
what's the latest Ingenuity is doing

12
00:00:28,730 --> 00:00:26,820
great are babies still flying on the

13
00:00:31,009 --> 00:00:28,740

surface of Mars after two Earth years

14
00:00:33,410 --> 00:00:31,019
one Mars year of total flight racked up

15
00:00:35,750 --> 00:00:33,420
10 kilometers or 6.2 miles of total

16
00:00:37,370 --> 00:00:35,760
distance flown our rotor system our

17
00:00:39,110 --> 00:00:37,380
little cell phone processor on board our

18
00:00:41,389 --> 00:00:39,120
off-the-shelf Lithium-ion batteries are

19
00:00:42,830 --> 00:00:41,399
all doing fantastic one area that we're

20
00:00:44,510 --> 00:00:42,840
looking very closely at is our solar

21
00:00:45,770 --> 00:00:44,520
panel you can imagine after two years of

22
00:00:47,450 --> 00:00:45,780
flying on the surface of Mars you'll get

23
00:00:49,610 --> 00:00:47,460
some dust on top but we still have an

24
00:00:51,709 --> 00:00:49,620
ample margin and ample energy to keep up

25
00:00:53,810 --> 00:00:51,719
our flight operations and the extended

26
00:00:55,250 --> 00:00:53,820
mission of continue to Scout and push

27
00:00:57,049 --> 00:00:55,260
the flight envelope of what's possible

28
00:00:58,549 --> 00:00:57,059
the testing being done in this room is

29
00:00:59,689 --> 00:00:58,559
part of the next helicopter mission of

30
00:01:02,810 --> 00:00:59,699
Mars called the sample recovery

31
00:01:05,509 --> 00:01:02,820
helicopters the goal is to be a backup

32
00:01:07,250 --> 00:01:05,519
to get these samples back to Earth but

33
00:01:09,350 --> 00:01:07,260
simply perseverance collects the sample

34
00:01:11,149 --> 00:01:09,360
tubes the sample return Lander will

35
00:01:13,250 --> 00:01:11,159
retrieve those samples directly from

36
00:01:14,210 --> 00:01:13,260
perseverance and then there's a rocket

37
00:01:15,469 --> 00:01:14,220
inside of that land that's actually

38
00:01:17,390 --> 00:01:15,479

going to send those samples back to

39
00:01:19,550 --> 00:01:17,400
Earth

40
00:01:22,550 --> 00:01:19,560
as a backup to getting those sample

41
00:01:24,050 --> 00:01:22,560
tubes from Mars back to the Lander we're

42
00:01:26,090 --> 00:01:24,060
designing the next generation of

43
00:01:28,429 --> 00:01:26,100
helicopters to not only be able to pick

44
00:01:30,410 --> 00:01:28,439
up and carry a sample tube but also

45
00:01:32,870 --> 00:01:30,420
drive around on the surface are there

46
00:01:35,510 --> 00:01:32,880
any other ways Ingenuity is influencing

47
00:01:37,130 --> 00:01:35,520
future Mars exploration we're looking at

48
00:01:40,010 --> 00:01:37,140
a research concept called Mars science

49
00:01:41,810 --> 00:01:40,020
helicopter it's a hexacopter so six

50
00:01:43,429 --> 00:01:41,820
rotors in a ring around a central

51
00:01:45,410 --> 00:01:43,439
structure

52
00:01:47,450 --> 00:01:45,420
about the size of the Rover and you can

53
00:01:49,069 --> 00:01:47,460
imagine in the future you'll have fleets

54
00:01:50,810 --> 00:01:49,079
of these water science helicopters

55
00:01:52,670 --> 00:01:50,820
flying around bringing important

56
00:01:54,590 --> 00:01:52,680
payloads to areas of Mars that we've

57
00:01:57,230 --> 00:01:54,600
never been able to access before

58
00:01:58,789 --> 00:01:57,240
what's next for Ingenuity so we're

59
00:02:00,410 --> 00:01:58,799
trying to fly faster

60
00:02:03,710 --> 00:02:00,420
when I fly higher

61
00:02:06,590 --> 00:02:03,720
we've added new offer capability

62
00:02:08,449 --> 00:02:06,600
detect Landing sites airborne those

63
00:02:10,430 --> 00:02:08,459

sorts of winds are coming from the

64
00:02:12,470 --> 00:02:10,440
surface of Mars directly into the design

65
00:02:15,229 --> 00:02:12,480
of the new sample recovery helicopters

66
00:02:16,850 --> 00:02:15,239
and she's done a fantastic job surpassed

67
00:02:18,110 --> 00:02:16,860
any sort of metric of success that

68
00:02:20,449 --> 00:02:18,120
anyone on the team could have ever

69
00:02:22,670 --> 00:02:20,459
imagined for this little tiny four pound

70
00:02:25,010 --> 00:02:22,680
spacecraft

71
00:02:28,670 --> 00:02:25,020
to get the latest updates on Ingenuity

72
00:02:30,949 --> 00:02:28,680
follow at NASA JPL and at NASA Mars on

73
00:02:34,800 --> 00:02:30,959
social media or take a deeper dive off