
2 TON

1
00:00:14,299 --> 00:00:10,850
in terms of robots that go into space

2
00:00:16,970 --> 00:00:14,309
the sampling and caching system on the

3
00:00:19,609 --> 00:00:16,980
Mars 2020 mission is the most

4
00:00:22,490 --> 00:00:19,619
complicated most sophisticated thing

5
00:00:24,800 --> 00:00:22,500
that we know how to build this is the

6
00:00:26,750 --> 00:00:24,810
system that allows us to take core

7
00:00:30,679 --> 00:00:26,760
samples of rocky material on the surface

8
00:00:34,430 --> 00:00:30,689
of Mars carefully seal them in very

9
00:00:37,970 --> 00:00:34,440
sterile clean vessels for eventual

10
00:00:39,709 --> 00:00:37,980
return to earth we've been working on

11
00:00:41,540 --> 00:00:39,719
the sampling and caching system for

12
00:00:44,810 --> 00:00:41,550
seven years and that's because it's a

13
00:00:46,369 --> 00:00:44,820

tough job we're testing the equipment's

14
00:00:48,350 --> 00:00:46,379
and make sure that it's going to work we

15
00:00:50,959 --> 00:00:48,360
get to Mars it has to function on its

16
00:00:52,939 --> 00:00:50,969
own we have to think of all eventual

17
00:00:55,130 --> 00:00:52,949
possibilities and try them here first

18
00:00:57,470 --> 00:00:55,140
and then if they don't work change it

19
00:01:00,260 --> 00:00:57,480
now because we can't make any changes

20
00:01:03,170 --> 00:01:00,270
later to drill into the rock on Mars

21
00:01:06,380 --> 00:01:03,180
pull out intact core samples

22
00:01:09,140 --> 00:01:06,390
seal them hermetically and to be all

23
00:01:11,330 --> 00:01:09,150
done autonomously by a robot hanging off

24
00:01:14,660 --> 00:01:11,340
the end of a rover on the surface of

25
00:01:17,420 --> 00:01:14,670
Mars has been a challenge we've got

26
00:01:19,789 --> 00:01:17,430
actually three robots necessary to do

27
00:01:22,130 --> 00:01:19,799
the sample and caching systems our big

28
00:01:24,950 --> 00:01:22,140
robotic arm out on the front of the

29
00:01:26,359 --> 00:01:24,960
rover that takes our drill pushes it

30
00:01:30,260 --> 00:01:26,369
against the surface and allows us to

31
00:01:33,200 --> 00:01:30,270
take core samples then we put that core

32
00:01:35,810 --> 00:01:33,210
sample in the bit carousel the second

33
00:01:38,990 --> 00:01:35,820
robot that takes that from the robot arm

34
00:01:41,899 --> 00:01:39,000
and puts it down inside our adaptive

35
00:01:43,940 --> 00:01:41,909
caching system this is the part of the

36
00:01:46,730 --> 00:01:43,950
sampling caching system inside the rover

37
00:01:48,920 --> 00:01:46,740
we've got a little tiny robot a special

38
00:01:51,260 --> 00:01:48,930

robot arm called the Shaw sample

39
00:01:53,719 --> 00:01:51,270
handling line it takes the samples out

40
00:01:56,240 --> 00:01:53,729
of the carousel and moves them through

41
00:01:58,609 --> 00:01:56,250
volume assessment image taking and

42
00:02:01,280 --> 00:01:58,619
eventually to ceiling and then replaces

43
00:02:03,380 --> 00:02:01,290
the cylinder containing the sample in a

44
00:02:06,560 --> 00:02:03,390
storage all on its own and the

45
00:02:10,370 --> 00:02:06,570
matter of a few hours we have designs on

46
00:02:13,820 --> 00:02:10,380
bringing them back in a decade Mars has

47
00:02:16,160 --> 00:02:13,830
been at the fore of our consciousness

48
00:02:17,780 --> 00:02:16,170
about the questions of life could life

49
00:02:20,150 --> 00:02:17,790
exist in one of our nearest neighbors I

50
00:02:22,640 --> 00:02:20,160
think we have a lot to learn life or no

51
00:02:25,310 --> 00:02:22,650
life about the evolution of our solar

52
00:02:29,750 --> 00:02:25,320
system about our planet by looking in