9 AXIS ROBOTIC SYSTEM

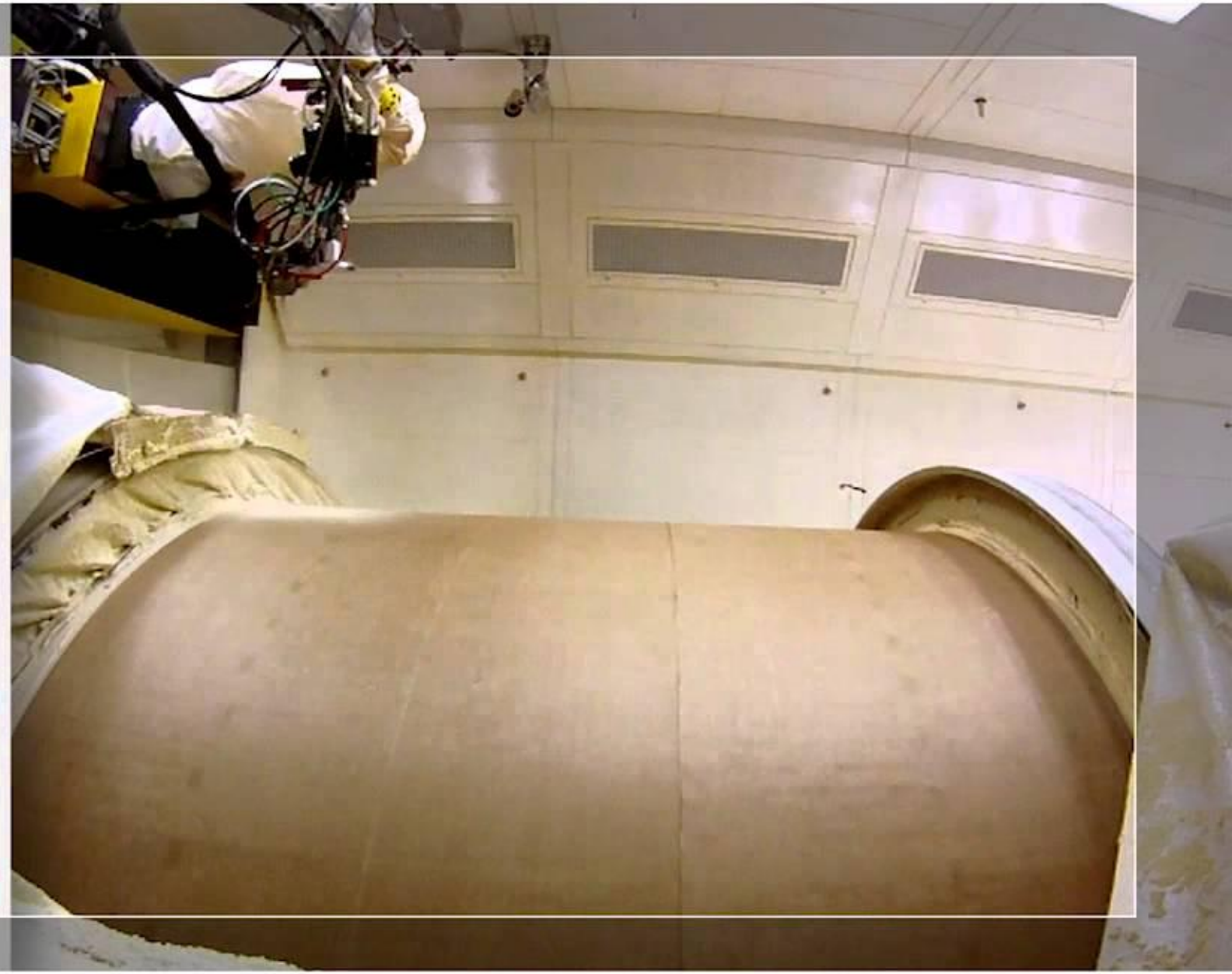
Large scale processing capability

Multiple processes using the same robotic system

Processing of complex shapes

85 feet long, can accommodate full-scale hardware

Processing temperature from 65 to 135 degrees.



1
00:00:18,900 --> 00:00:16,770
the nonmetallic materials branch

2
00:00:21,000 --> 00:00:18,910
supports directs and conducts

3
00:00:23,160 --> 00:00:21,010
nonmetallic material research and

4
00:00:25,920 --> 00:00:23,170
development efforts including laboratory

5
00:00:28,410 --> 00:00:25,930
field and flight experiments these

6
00:00:31,019 --> 00:00:28,420
unique facilities focus on technologies

7
00:00:34,590 --> 00:00:31,029
associated with cryogenic insulation a

8
00:00:36,090 --> 00:00:34,600
bladers thermal vacuum testing thermal

9
00:00:38,400 --> 00:00:36,100
protection system processing

10
00:00:41,220 --> 00:00:38,410
capabilities in space resource

11
00:00:43,979 --> 00:00:41,230
utilization solid rocket nozzles and

12
00:00:46,110 --> 00:00:43,989
subscale settled rocket motor processing

13
00:00:48,000 --> 00:00:46,120

here at Marshall we have been leaders in

14
00:00:50,729 --> 00:00:48,010
propulsion for a very long time and

15
00:00:54,869 --> 00:00:50,739
we've been developing the capabilities

16
00:00:56,939 --> 00:00:54,879
here in our testbed program that we can

17
00:00:59,669 --> 00:00:56,949
then turn around and use for future

18
00:01:02,759 --> 00:00:59,679
programs to be able to draw on that very

19
00:01:04,770 --> 00:01:02,769
rich history the plasma torch testbed is

20
00:01:06,740 --> 00:01:04,780
an internationally unique ablation

21
00:01:09,090 --> 00:01:06,750
testbed which offers reliable

22
00:01:11,490 --> 00:01:09,100
statistically proven data at a fraction

23
00:01:14,280 --> 00:01:11,500
of the cost of subscale motors or other

24
00:01:16,649 --> 00:01:14,290
test beds the plasma torch testbed

25
00:01:18,840 --> 00:01:16,659
successfully simulates solid rocket

26
00:01:21,090 --> 00:01:18,850
flume environments via high temperature

27
00:01:23,399 --> 00:01:21,100
plasma jets that provide thermal and

28
00:01:25,620 --> 00:01:23,409
erosive testing of flight materials and

29
00:01:27,240 --> 00:01:25,630
screening of new materials in terms of

30
00:01:29,219 --> 00:01:27,250
our particular collection of equipment

31
00:01:30,780 --> 00:01:29,229
at most there might be two in the United

32
00:01:32,639 --> 00:01:30,790
States and we believe that we the only

33
00:01:36,330 --> 00:01:32,649
ones that actually use the plasma torch

34
00:01:38,399 --> 00:01:36,340
for the applications the thermal

35
00:01:40,590 --> 00:01:38,409
protection system development facility

36
00:01:43,350 --> 00:01:40,600
was designed to develop environmentally

37
00:01:45,450 --> 00:01:43,360
compliant TPS materials and processes

38
00:01:48,480 --> 00:01:45,460

for current and future space programs

39
00:01:50,609 --> 00:01:48,490
the TPS development facility is used to

40
00:01:52,380 --> 00:01:50,619
characterize materials and provide data

41
00:01:55,440 --> 00:01:52,390
on equipment and processing parameters

42
00:01:57,749 --> 00:01:55,450
to support large-scale TPS applications

43
00:02:00,270 --> 00:01:57,759
the facility provides the ability to

44
00:02:02,849 --> 00:02:00,280
apply both primers and spray-on foam

45
00:02:05,969 --> 00:02:02,859
insulation materials to large-scale test

46
00:02:07,800 --> 00:02:05,979
articles in various orientations current

47
00:02:09,930 --> 00:02:07,810
and future environmental health and

48
00:02:12,180 --> 00:02:09,940
safety issues as well as product

49
00:02:14,310 --> 00:02:12,190
performance issues allow Marshall to

50
00:02:17,010 --> 00:02:14,320
continue to develop core skills in this

51
00:02:19,230 --> 00:02:17,020
area the capability we've developed for

52
00:02:22,530 --> 00:02:19,240
the Space Launch System vehicle allows

53
00:02:25,110 --> 00:02:22,540
us to take the exact expertise materials

54
00:02:27,410 --> 00:02:25,120
and processes and facility and provide

55
00:02:30,020 --> 00:02:27,420
that capability to

56
00:02:32,210 --> 00:02:30,030
the aerospace industry for other space

57
00:02:34,040 --> 00:02:32,220
vehicles and flight hardware the solid

58
00:02:36,710 --> 00:02:34,050
rocket motor manufacturing area

59
00:02:39,320 --> 00:02:36,720
maintains and operates a unique plasma

60
00:02:41,570 --> 00:02:39,330
torch testbed that mimics erosive flow

61
00:02:43,700 --> 00:02:41,580
found in solid rocket motor plumes and

62
00:02:45,500 --> 00:02:43,710
is used to determine a materials ability

63
00:02:48,290 --> 00:02:45,510

to protect against those plume

64
00:02:50,090 --> 00:02:48,300
environments the subscales solid rocket

65
00:02:52,520 --> 00:02:50,100
motors that are manufactured in this

66
00:02:54,950 --> 00:02:52,530
area are used to validate material and

67
00:02:57,400 --> 00:02:54,960
process changes before being implemented

68
00:03:01,160 --> 00:02:57,410
on full-scale hardware we are able to

69
00:03:04,550 --> 00:03:01,170
accommodate different objectives