SEVEN FRICTION STIR WELDING SYSTEMS

Enable flexibility

Versatile operations

Accommodate multiple customers

1
00:00:17,580 --> 00:00:15,029
the advanced weld process development

2
00:00:19,740 --> 00:00:17,590
laboratory specializes in advancing

3
00:00:22,200 --> 00:00:19,750
joining processes and transferring the

4
00:00:24,420 --> 00:00:22,210
technologies from laboratory scale to

5
00:00:26,940 --> 00:00:24,430
full-scale manufacturing of very large

6
00:00:29,339 --> 00:00:26,950
complex structures experimental

7
00:00:32,040 --> 00:00:29,349
techniques include design of experiments

8
00:00:34,500 --> 00:00:32,050
parameter optimization and worst-case

9
00:00:36,630 --> 00:00:34,510
weld joint evaluations to fully

10
00:00:39,060 --> 00:00:36,640
understand and verify processing

11
00:00:41,010 --> 00:00:39,070
engineering requirements our weld

12
00:00:43,020 --> 00:00:41,020
engineers are widely known for their

13
00:00:44,669 --> 00:00:43,030

expertise and participate in the

14
00:00:47,130 --> 00:00:44,679
development of national welding

15
00:00:49,290 --> 00:00:47,140
standards the laboratory was developed

16
00:00:51,209 --> 00:00:49,300
originally to support the space shuttles

17
00:00:52,709 --> 00:00:51,219
external tank and later the

18
00:00:55,349 --> 00:00:52,719
International Space Station's

19
00:00:57,630 --> 00:00:55,359
manufacturing programs Marshall also

20
00:00:59,819 --> 00:00:57,640
developed and patented a plasma welding

21
00:01:01,709 --> 00:00:59,829
torch that was used for external tank

22
00:01:04,560 --> 00:01:01,719
production and that is still used in

23
00:01:06,330 --> 00:01:04,570
launch vehicle industry today engineers

24
00:01:08,460 --> 00:01:06,340
at Marshall have since matured the

25
00:01:10,230 --> 00:01:08,470
friction stir welding process I'm

26
00:01:12,450 --> 00:01:10,240
marshal we're in a very exciting time

27
00:01:14,340 --> 00:01:12,460
right now we are supporting SLS on the

28
00:01:16,830 --> 00:01:14,350
heavy launch vehicle with well

29
00:01:19,140 --> 00:01:16,840
development procurement of tooling

30
00:01:23,820 --> 00:01:19,150
fixturing to building some flight

31
00:01:28,950 --> 00:01:26,850
the laboratory has seven operational

32
00:01:30,840 --> 00:01:28,960
friction-stir welding systems that can

33
00:01:33,230 --> 00:01:30,850
accommodate small-scale process

34
00:01:35,820 --> 00:01:33,240
development up to full scale assembly

35
00:01:38,520 --> 00:01:35,830
systems include the vertical weld tool

36
00:01:40,890 --> 00:01:38,530
the mix longitudinal welds to assemble

37
00:01:43,380 --> 00:01:40,900
cylindrical sections of the 25 feet tall

38
00:01:45,420 --> 00:01:43,390

and the robotic welding system for

39
00:01:48,090 --> 00:01:45,430
complex curvature welds requiring

40
00:01:50,520 --> 00:01:48,100
multi-axis manipulation welding

41
00:01:53,160 --> 00:01:50,530
capabilities include to friction plug

42
00:01:55,920 --> 00:01:53,170
welding systems to plasma welding

43
00:01:58,440 --> 00:01:55,930
systems manual fusion welding systems

44
00:02:00,330 --> 00:01:58,450
and a machine shop to support welding

45
00:02:02,880 --> 00:02:00,340
and manufacturing process development

46
00:02:05,250 --> 00:02:02,890
Marshall offers thermal stir welding

47
00:02:07,020 --> 00:02:05,260
capabilities to address new challenges

48
00:02:09,120 --> 00:02:07,030
in the solid-state joining of high

49
00:02:11,220 --> 00:02:09,130
melting temperature alloys such as

50
00:02:13,920 --> 00:02:11,230
titanium and high-temperature super

51
00:02:15,900 --> 00:02:13,930
alloys we're answering the why it's

52
00:02:17,880 --> 00:02:15,910
great to be in our position where we

53
00:02:20,430 --> 00:02:17,890
have the opportunity to partner with

54
00:02:23,130 --> 00:02:20,440
universities and other folks that are

55
00:02:25,920 --> 00:02:23,140
trying to do downstream processing of

56
00:02:28,140 --> 00:02:25,930
the hardware so the Y is real important

57
00:02:29,850 --> 00:02:28,150
to those folks because they need to the

58
00:02:33,030 --> 00:02:29,860
product in a certain form to go to the

59
00:02:35,699 --> 00:02:33,040
next step we utilize modeling tooling