

Manufacturing Insights

Rapid Castings:

Rapid Prototypes for Metal Casting Processes

SCENE 1.

RC08A, RC02, 02:17:51:00-02:18:17:00
zoom out, stereolithography operation
RC08B, RC02, 03:00:44:00-03:00:55:00
complex rapid prototyped skull coming out
of resin
RC08C, SME3624, 11:19:33:00-11:19:41:00
wide, thermojet modeler unit

NARRATION (VO) :

RAPID PROTOTYPING, WHICH IS ALSO CALLED
ADDITIVE FABRICATION AND ADDITIVE
MANUFACTURING, GROWS PHYSICAL OBJECTS –
DIRECT FROM 3D CAD DATA – BY BONDING
LAYERS OF MATERIAL. THE ADDITIVE NATURE
OF THE PROCESS ALLOWS INTRICATE DETAILS
AND COMPLEX SHAPES TO BE MANUFACTURED
WITH NO IMPACT ON TIME OR COST. ALSO,
MUCH OF THE PROCESS IS COMPLETED WITHOUT
DIRECT LABOR OR A MACHINE OPERATOR IN
ATTENDANCE.

SCENE 2.

RC09A, RC03, 04:42:55:00-04:43:12:00
rapid prototyped gear casing
RC09B, RC03, 04:43:20:00-04:43:32:00
as cast gear casing
RC09C, RC03, 04:46:03:00-04:46:18:00
rapid prototyped pattern with same as cast
part
RC09D, RC03, 04:45:28:00-04:45:41:00
rapid prototyped arm assembly
RC09E, RC03, 04:45:03:00-04:45:15:00
as cast arm assembly
RC09F, SME3041, 04:22:02:00-04:22:08:00
stereolithography pattern
RC09G, SME3041, 04:22:16:00-04:22:22:00
part produced from stereolithography
pattern

NARRATION (VO) :

THIS DISTINCTION FROM TRADITIONAL
MACHINING AND MANUFACTURING PROCESSES
PROMOTES THE USE OF RAPID PROTOTYPING-
BASED TOOLING WHEN CASTING METAL PARTS
THAT ARE INTRICATE AND HIGHLY DETAILED.

SCENE 3.

RC10A, RC14, 19:56:27:00-19:56:33:00
eos machine
RC10B, RC14, 19:56:06:00-19:56:17:00
pan, 2 rapid prototyping systems
RC10C, SME4285, 02:23:18:00-02:23:58:00

NARRATION (VO) :

THERE ARE NUMEROUS RAPID PROTOTYPING
MACHINES, TECHNOLOGIES AND VENDORS. AND

zoom in, stereolithography operation
RC10D, SME3617, 02:10:25:00-02:10:32:00
zoom in, laser sintering operation
RC10E, SME3624, 11:04:13:00-11:04:29:00
zoom out, fused deposition modeling
operation
RC10F, RC13, 18:18:36:00-18:18:45:00
wide, prometal system running
RC10G, SME3624, 11:09:54:00-11:10:14:00
zoom out, thermojet modeler producing
model
RC10H, SME3621, 08:23:00:00-08:23:39:00
zoom out, objet model being produced
RC10I, SME3627, 13:36:27:00-13:37:42:00
Z810 modeler building-up part layers
RC10J, RC05, 06:04:54:00-06:05:12:00
projet modeler

SCENE 4.

RC11A, RC02, 03:14:14:00-03:14:25:00
zoom out, rapid prototyping operation
RC11B, RC06, 07:41:39:00-07:41:51:00
pouring metal into investment casting
RC11C, RC13, 18:02:44:00-18:03:07:00
zoom in, prototyped sand casting core
being cleaned
RC11D, RC05, 06:48:13:00-06:48:28:00
investment casting tree being assembled
RC11E, RC15, 20:14:52:00-20:15:06:00
zoom out, rapid prototyped sand casting
tooling
RC11F, RC11, 16:41:27:00-16:41:44:00
zoom out, master patterns for plaster mold
casting

EACH HAS BEEN USED IN METAL CASTING
APPLICATIONS. THE MORE FREQUENTLY USED
INCLUDE:
STEREOLITHOGRAPHY, FROM 3D SYSTEMS...,
LASER-SINTERING, FROM EOS AND 3D
SYSTEMS...,
FUSED DEPOSITION MODELING, FROM
STRATASYS...,
PROMETAL FROM EX ONE...,
PROJET AND THERMOJET FROM 3D SYSTEMS...,
POLYJET FROM OBJET...,
AND 3D PRINTING FROM COMPANIES LIKE
SOLIDSCAPE, Z-CORPORATION AND VOXELJET.

NARRATION (VO) :

MULTIPLYING THE NUMBER OF RAPID
PROTOTYPING METHODS,
METAL CASTING PROCESSES,
AND TOOLING OPTIONS YIELDS AN AMAZING
NUMBER OF ALTERNATIVES TO PRODUCE CAST
METAL PARTS. IN THIS PROGRAM, WE WILL
LOOK AT THREE COMBINATIONS:
SACRIFICIAL PATTERNS FOR INVESTMENT
CASTING...,
DIRECT TOOLING FOR SAND CASTING...,
AND MASTER PATTERNS FOR PLASTER MOLD
CASTING.

--- TOUCH BLACK ---