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Source of **QUALITY**
Source of **POWER**
Source of **the FUTURE**
HYBRID METAL 3D PRINTER

Challenge Conventional Thinking

Freedom of Design

Make the impossible, possible



LUMEX | C o n c e p t

Create the Future

From Vision to Reality

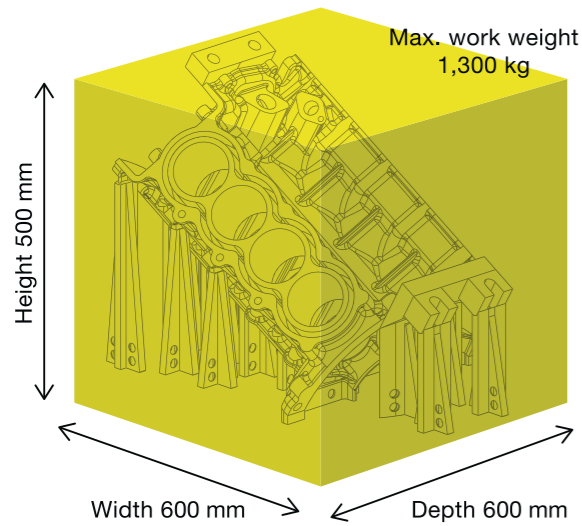
A revolution in metal processing

Feature

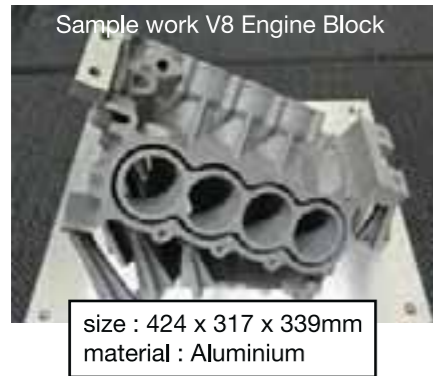
LUMEX Avance-60

Large Capacity

The largest powder bed metal 3D printer in the world
(according to our research)



- Max. part size:
W600mm x D600mm x H500mm
(W23.62in. x D23.62in. x H19.68in.)
- Max. work weight:
1,300kg
(2,866lb)



High Speed

- Large-capacity **1kW** fiber laser installed as standard
- Increased powder distribution speed
- Increased sintering capacity per unit time to **35cc/h**
- Milling Time Reduction by Cutting Path Optimization

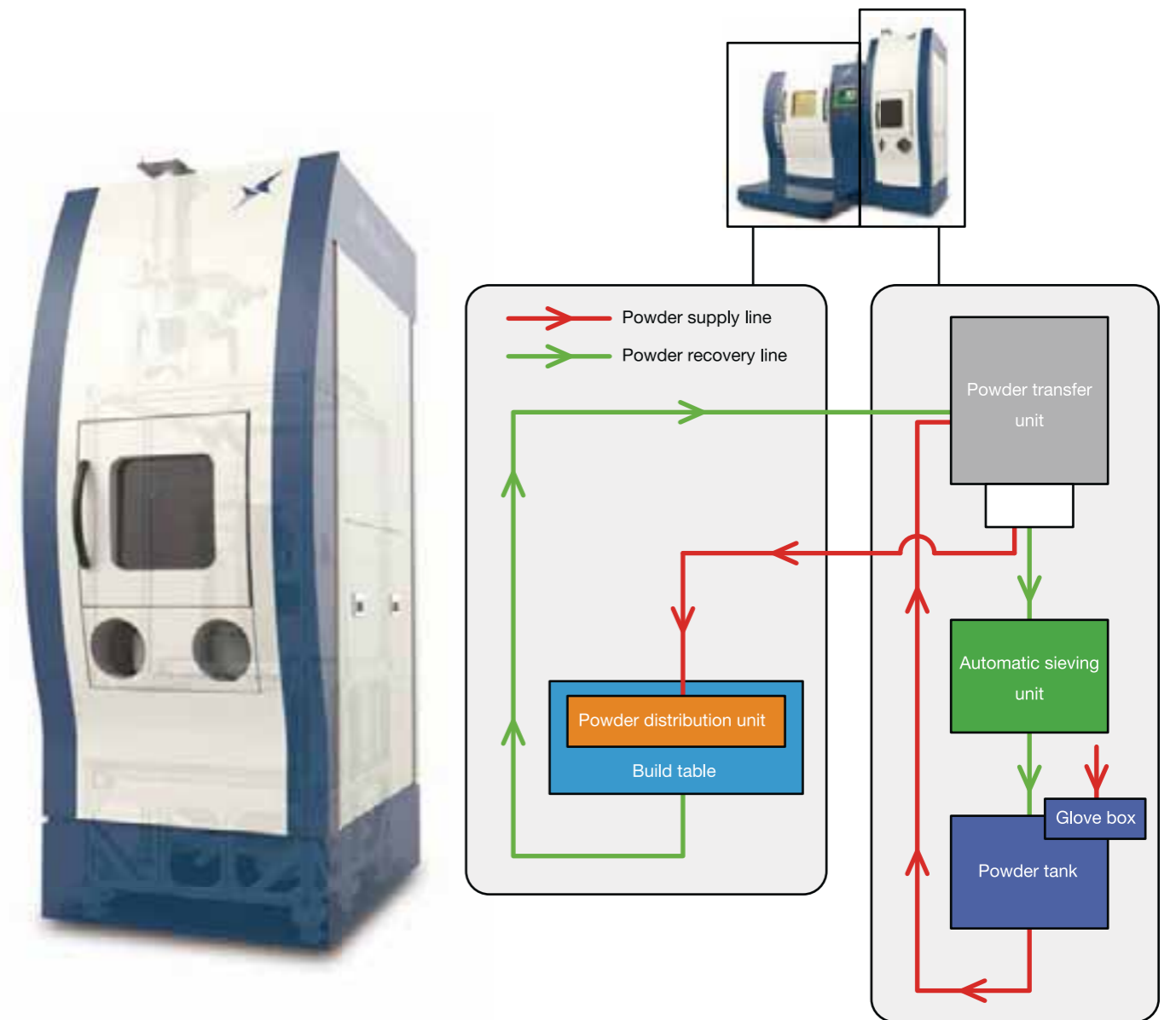
Conventional machine (simulation)		LUMEX Avance-60	
Total	: 402h 50m	Total	: 95h
sintering & milling	: 333h 23m	sintering & milling	: 90h
squeezing	: 69h 27m	squeezing	: 5h

1: The above is the calculation value, not the guaranteed value.
2: The effect of Sintering speed & Cutting time reduction differ depending on Work shape & size.

Clean Operation for Health & Safety

Fully Automatic Powder Supply, Collection and Reuse System
(standard)

- Easy and safe material handling without direct powder contact.
- Un-melted powder that remains after processing is automatically sieved and reused.



Equipment List

LUMEX Avance-60



Sintering - Milling Related Equipment

LUMEX Avance-60

High speed spindle (45,000min⁻¹)

Maintenance free grease lubrication
Use #20 tool with original 1/10 taper.

CCD camera

Used for calibration of the laser coordinate system. The CCD camera checks the alignment of a laser test pattern and adjusts the laser coordinate system to the machine coordinate system during builds.



Tool changer

20 tool automatic tool changer.

Auto tool length measurement detection

Before each machining operation the tool length is automatically set. After each machining operation each tool is checked for tool breakage.



Supply of powder material

Powder material is supplied automatically into the powder distribution unit.

Powder distribution unit

[Japanese patent number : 4351218]

The powder distribution unit is used to supply the powder to the build chamber in both directions. Depending on the part size being built the powder distribution range can be adjusted.



Build Table

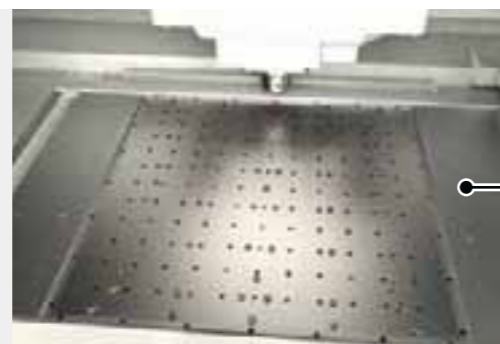
Large work envelop can be processed.

< Max. part size >

W600mm x D600mm x H500mm

< Max. work weight >

1,300kg



Fully Automatic Powder Supply, Collection and Reuse System (standard)

Full automation from the powder material supply to reuse with ease and safe material handling without direct powder contact. Maintain a safe working environment to prevent fine powder dispersal.

< Powder Supply >

Supply the powder material to the sintering chamber via the suction system.

< Powder Recovery >

Collect the unused powder material after completion of sintering.

< Powder Reuse >

Collected powder material is automatically filtered by the sieving unit to allow reuse.

Machine Specification

LUMEX Avance-60

Standard Machine Specification

Traverses

X-axis travel (Table left / right)	[mm]	610
Y-axis travel (Table back / forth)	[mm]	610
Z-axis travel (Head up / down)	[mm]	100
U-axis travel (Build table)	[mm]	500
W-axis travel (Material laser sintering blade)	[mm]	1075
Distance from table to spindle end	[mm]	-10 ~ 90

Table

Build tank size	[mm]	630 x 630
Max. Work weight	[kg]	1300
Build table size	[mm]	600 x 600
Build table surface configuration	Tap M8 x Pitch 50mm x 120pcs	
Max. work capacity	[mm]	W600 x D600 x H500
Distance from floor to table surface	[mm]	1250

Spindle

Spindle speed	[min ⁻¹]	450 ~ 45000
Spindle bearing inner diameter	[φmm]	25
Spindle end		1/10 taper #20
Spindle max. torque	[N · m]	1.31
Spindle airflow		Std.
Spindle orientation		Std.

Feedrate

Rapid traverse rate	X / Y / Z [mm/min]	60000 / 60000 / 30000
Rapid feed acc./dec.	X / Y / Z [G]	0.5 / 0.5 / 0.5
Feedrate	X / Y [mm/min]	1 ~ 60000
	Z [mm/min]	1 ~ 30000

Automatic Tool Changer

Tool shank		Matsuura original #20
Pullstud		Matsuura original #20
Tool storage capacity	[pcs]	20
Max. tool diameter	[φmm]	10
Max. tool length (with condition)	Specified Tool holder : Matsuura special	
Tool support length of tool holder : α	[mm]	α ≥ 3 × φ (φ = 3, 4, 6, 8, 10)
Max. tool protrusion length from tool holder : β	[mm]	β ≤ 5 × φ (φ = 3, 4, 6, 8)
	[mm]	β ≤ 30 (φ = 10)
Max. tool weight	[kg]	0.25 (Incl. holder)
	[kg]	0.05 (Tool only)
Tool selection method		Fixed address

Motors

Spindle motor Model βil 40S/70000	[kw]	AC 2.6 / 4.5 (Continuous/50%)
Feed motor		
X-axis: Model Lis6000H2/2-B	[kw]	AC 4.8 / 6.4
Y-axis: Model Lis4500M2/2-B	[kw]	AC 3.6 / 4.8
Z-axis: Model Lis600S1/4-B	[kw]	AC 0.96 / 1.6
U-axis: Model ais22/4000BX2	[kw]	AC 4.5 × 2
W-axis: Model bis2/4000	[kw]	AC 0.5
Tool magazine motor: Model bis1/6000	[kw]	AC 0.5
Material supply motor	[kw]	AC 0.05
Oil cooler motor (Spindle, Linear motor)	[kw]	AC 0.7
Chiller motor (Laser, Optical system cooling)	[kw]	AC 1.18 / 1.54

Tank Capacity

Oil cooler tank capacity (Spindle, Linear motor) [L]		7
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Laser

Laser type		Yb Fiber laser
Oscillator output range	[W]	100 ~ 1000
Beam mode quality value (M2)		< 1.1
Beam spread angle (Full width)	[mrad]	< 2.0
Wavelength	[nm]	1070 ± 5

Laser Scanning Module

Scanning module	X / Y	Galvano scanner system
	Z	Linear translator
laser wavelength	[nm]	1070±5
Max. laser power	[W]	1000
Drive power supply	[V]	DC 24

Power Supply

Electrical power supply	[KVA]	43 (Varies with option configuration)
Power supply voltage	Transformer is required in case voltage is other than above	AC 200/220V ± 10%
Power supply frequency	[Hz]	50/60 ± 1
Compressed air supply	[MPa]	0.6 ~ 0.93

Machine Size

Machine height (From floor)	[mm]	3000
Floor space (Incl. maintenance area)	[mm]	4700W×5500D (Varies with option configuration)
Machine weight	[kg]	11000

Standard Accessories

Total safety guard with ceiling cover	Door interlock
Oil temperature controller	Air dryer
Linear motor cooler	Z-axis balance cylinder
Nitrogen gas generator	Interior temperature sensor
Oxygen concentration sensor	Fume collector
Chiller unit	CCD camera & Image processing apparatus
Galvano scanner & Laser controller	Leveling bolts & Plates
Work light	Spindle integrated run meter
Laser integrated run meter	Guide light function
IPC function	19 inch LCD with touch panel
Qwerty key-arrangement keyboard	USB interface 2ports
High table temperature alarm	Machine color paint
Tools & Tool box	
Auto tool length measurement detection sensor (Touch type)	
Scale feedback X / Y / Z Heidenhain (Absolute)	
Feed axis auto grease supply unit	
Preheating heater & Controller for build table & tank	
3 color signal light (red, yellow, green from top)	
Position from top, red / alarm, yellow / work completion, green / auto run	
All light are lighted while laser is oscillating	
Fully automatic powder supply, collection and reuse system	

Machine Optional Specifications

Input command	inch
Frequency	50Hz
Nameplate	English overseas standard German
Safety standard	CE mark specification
Special machine color	Special machine color (NC box : Std) Special machine color (NC box : Same) Special machine color (NC box : Specified separately)
Spare spindle	
Power supply voltage	380V Machine & NC are 200V. Exterior transformer is required 415V Machine & NC are 200V. Exterior transformer is required
Laser Oscillation Device (Option)	500W Fiber Laser Oscillator Chiller is required Power meter head Power meter display
Powder vacuum unit	Powder vacuum unit (External vacuum)
Technical support	1st year maintenance A: laser inspection Laser inspection & adjustment (twice/year) 1st year maintenance B: Machine software version upgrades Machine software version upgrades 1st year maintenance C: Laser inspection + Machine software version upgrades Laser inspection & adjustment (twice/year) + Machine software version upgrades
CAM (Option)	Laser & machining program CAM software / LUMEX CAM 2016 Laser & machining program Operation instruction
Tool	Matsuura original #20 tool holder Matsuura Original endmill for finishing
Start up parts	Tools for work preparation, Safety mask, Gloves, etc. De-magnetiser

※Machine specification is subject to change without notice.
 ※Only specified materials can be used. Order the materials from Matsuura Machinery Corporation.
 ※Specified materials are subject to change and update without notice. Ask Matsuura Machinery Corporation about updates.

Related Diagram

LUMEX Avance-60

Standard Machine Specification

