exafuse

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Status	For technical review

Component Project Brief

LMD / DED-LB/M, repair, laser cladding and SLM / LPBF

Purpose	This worksheet structures the information required for an initial component review and quotation preparation. It is not a quotation, material approval, certification, inspection plan or confirmation of feasibility.
Use	Complete the sections that are relevant to the component. Unknown items may be left open and identified in Section 07. Attach drawings, CAD data, photographs or inspection records only through the agreed transfer method.
Required fields	Fields marked with * are normally needed for a useful first review. Other fields help define process, finishing, inspection, commercial and logistical constraints.

Completion sequence

1. State the component objective and the decision required.
2. Describe geometry, base material, condition and service environment.
3. Define the required final condition, finishing route and acceptance evidence.
4. List available files, confidentiality requirements, timing and delivery constraints.

Technical references

Contact / feasibility request	exafuse.de/en/contact
RFQ preparation guide	exafuse.de/en/knowledge/lmd-rfq-guide
Repair cost comparison	exafuse.de/en/knowledge/lmd-cost-roi
Cladding failure / inspection	exafuse.de/en/article/A24

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01 Project and contact

Identify the requester, the internal reference and the result that should be assessed.

Project title / reference *

Date

Company *

Contact person *

Email *

Telephone

Company location / site

Purchasing / internal reference

Project type - select all that apply

- [ ] New LMD / DED-LB/M build
- [ ] Repair or dimensional restoration
- [ ] Modification or feature addition
- [ ] Laser cladding / functional layer
- [ ] SLM / LPBF part
- [ ] Process-selection review

Current project stage

- [ ] Concept / early screening
- [ ] Technical feasibility review
- [ ] Prototype / first article
- [ ] Quotation preparation
- [ ] Production / repeat requirement
- [ ] Production or repair support

What should the part, repair or coating achieve? *

What decision is required from Exafuse, and by when?

Minimum acceptable technical result or release condition

Scope boundary. Describe the required outcome rather than selecting a process too early. Process choice depends on geometry, material, access, finishing and acceptance criteria.

02 Part and geometry

Define the physical envelope, affected zone, reference surfaces and access constraints.

Part name / number *

Drawing / CAD revision

Overall dimensions *

Approximate mass

Required quantity / annual demand

New part or existing component

Maximum handling / lifting constraint

Available datum / reference surfaces

Describe or mark the deposition, repair or coating zone. Include dimensions and its relationship to critical surfaces. *

Geometry and access checks

- ☐ Native CAD model available
- ☐ Dimensioned drawing available
- ☐ Photographs include a scale
- ☐ Critical surfaces are identified
- ☐ Deposition access considered
- ☐ Machining / grinding access considered
- ☐ Handling and fixturing constraints known
- ☐ 3D scan or measured deviation data available

Known access restrictions, collision risks, thin sections, internal features or masking requirements

Surfaces that must remain untouched, protected or used as references

Access check. A feasible deposition path must also leave a workable route for machining, grinding, inspection, handling and final measurement.

03 Material and current condition

Record the substrate, previous condition and the service environment relevant to the requested work.

Known base material / best assumption *

Material standard / grade / certificate

Heat-treatment or hardness condition

Existing coating, plating or surface treatment

Previous repair / welding history

Material certificate available?

Current damage, wear, corrosion, dimensional error or design limitation *

Service and failure context

Dominant load / failure mechanism

Operating medium / atmosphere

Service temperature / thermal cycle

Counter-surface / lubrication / contact condition

Load, pressure, speed or duty cycle

Expected remaining service life

Known condition information

- ☐ Damage dimensions measured
- ☐ Crack location / extent assessed
- ☐ Remaining sound substrate known
- ☐ Failure mechanism understood
- ☐ Contamination / cleaning status known
- ☐ Inspection or failure report available

Unknown substrate details, contamination risks, embedded media, hazardous residues or cleaning restrictions

Material boundary. A material family name alone does not establish compatibility or qualification. Unknown substrate condition, systemic cracking or inaccessible damage may require testing or may exclude a repair route.

04 Application-specific details

Complete only the route or routes relevant to the request. A process-selection review may be used when the route is still open.

A New LMD build or local feature

For a near-net-shape component, structural build-up or a new feature on an existing substrate.

Functional surfaces, interfaces and required final geometry *

Target material / material family

Planned machining allowance *

Build orientation, thermal, interface, support or fixturing constraints already known

B Repair or modification

For worn, undersized, damaged or incorrectly machined regions, or a local geometry modification.

Nominal geometry and measured deviation, material loss or damage extent *

Damage cause, previous repair history and target restored condition

Replacement lead time

Downtime / availability concern

Areas to remove before repair, minimum remaining substrate or disassembly limitations

04 Application-specific details - continued

Define surface-function requirements for cladding or build and post-processing constraints for SLM / LPBF.

C Laser cladding / functional layer

For a metallurgically bonded layer applied to a defined wear, corrosion, oxidation or thermal zone.

Dominant failure mechanism *

Target property / performance *

Substrate material *

Preferred cladding material, if specified

Coating zone, target thickness / build-up and local masking or transition requirements *

Operating medium, temperature, counter-surface, lubrication and final machining / grinding / polishing route *

D SLM / LPBF part

For compact parts where fine detail, internal geometry or powder-bed-native design features determine the value.

Internal channels, lattices, supports, trapped volumes or powder-removal constraints *

Target material *

Intended build quantity *

Critical dimensions, surfaces and orientation-sensitive features *

Heat treatment, support removal, machining, surface finishing and inspection requirements

05 Finishing, inspection and acceptance

Define the final delivered condition and the evidence required for acceptance.

Required final operations

- [ ] Machining
- [ ] Grinding
- [ ] Polishing
- [ ] Heat treatment
- [ ] Surface treatment / coating
- [ ] Cleaning / passivation
- [ ] Balancing / assembly
- [ ] Other operation identified below

Critical tolerance(s) *

Required surface condition *

Machining / grinding allowance

Acceptance owner / release authority

Applicable specification / standard

Deviation / nonconformance handling

Expected evidence

- [ ] Dimensional inspection
- [ ] Visual / surface examination
- [ ] PT / MT crack testing
- [ ] UT / CT or other volumetric inspection
- [ ] Hardness testing
- [ ] Metallography / microscopy
- [ ] Material certificate / traceability
- [ ] Process documentation
- [ ] Project-specific inspection report
- [ ] Customer witness / hold point

Acceptance criteria, measurement method and sampling plan *

Required documentation package, language and file format

Inspection boundary. Process monitoring, dimensional inspection, NDT and metallographic evidence answer different questions. State the acceptance basis rather than assuming that one method proves complete part quality.

06 Schedule, commercial context and logistics

Record timing, comparison basis, handling limitations and delivery conditions.

Requested delivery / decision date *

Prototype or production quantity

Project milestone driving the date

Required proposal / quotation validity

Main commercial driver

- [ ] Avoid component replacement
- [ ] Reduce downtime / lead time
- [ ] Improve surface performance
- [ ] Add a new function or geometry
- [ ] Reduce material or machining effort
- [ ] Compare LMD with another route
- [ ] Create a repeatable repair / spare route
- [ ] Reduce supply-chain or obsolescence risk

Current replacement cost / estimate

Current replacement lead time

Downtime cost / operational impact

Budget range, if defined

Commercial constraints, quotation structure or comparison basis

Part handling and delivery - complete for existing components

Current part location

Declared part availability date

Shipping / package dimensions and mass

Delivery location / return destination

- [ ] Physical part can be supplied for review
- [ ] Original review should happen first
- [ ] Part is cleaned / decontaminated
- [ ] Hazardous residue / handling information required
- [ ] Part can be delivered clean and safe
- [ ] Special packaging / insurance required

Delivery, lifting, storage, disassembly or site-access instructions

07 Files, confidentiality and submission

List the available data package, open assumptions and agreed transfer method.

Files prepared for review

- ☐ Native CAD / STEP file
- ☐ Drawing / specification
- ☐ Overview photographs
- ☐ Detail photographs with scale
- ☐ Material certificate / grade information
- ☐ Damage measurements / scan
- ☐ Existing inspection / failure report
- ☐ Current process or repair history
- ☐ Customer standard / acceptance document
- ☐ Other supporting file

Attachment manifest

No.	File name	Description / relevant content	Revision / date
1			
2			
3			
4			
5			
6			

Known assumptions, missing information or questions for Exafuse

Confidentiality and transfer

- ☐ Initial discussion may use non-confidential / redacted data
- ☐ NDA required before detailed files
- ☐ Secure file transfer required
- ☐ Customer-specific transfer or access rules apply

Confidentiality contact, NDA reference or transfer instructions

Send the brief

Email	kontakt@exafuse.de
Contact page	exafuse.de/en/contact
RFQ guide	exafuse.de/en/knowledge/lmd-rfq-guide
Suggested file name	`Company_Project_Exafuse_Brief_YYYY-MM-DD.pdf`

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