Agreement on the operation phase of the European XFEL Facility (Operation Agreement)

between

the European X-Ray Free-Electron Laser Facility GmbH

and

Deutsches Elektronen-Synchrotron DESY

The **European X-Ray Free-Electron Laser Facility GmbH**,

hereinafter referred to as “European XFEL GmbH”,

with registered address at:

Holzkoppel 4,

22869 Schenefeld,

Germany,

represented by its Managing Directors,

Professor Dr. Robert Feidenhans’l, Chairperson of the Management Board, and

Dr. Claudia Burger, Administrative Director,

and

the **Deutsche Elektronen-Synchrotron DESY**,

hereinafter referred to as “DESY”,

with registered address at:

Notkestrasse 85,

22607 Hamburg,

Germany,

represented by its Directorate,

hereinafter referred to as “Party” or jointly as “Parties”,

have concluded the following Agreement with a view to regulating the operation phase of the European XFEL Facility (hereinafter referred to as “Operation Agreement”):

Preamble

One of Europe's leading international research facilities is currently being installed in the metropolitan area of Hamburg and in Schleswig-Holstein—the European X-Ray Free-Electron Laser Facility ("European XFEL"). This globally unique facility, which with the help of superconducting accelerator technology will generate hyper-brilliant X-ray radiation, is expected to deliver revolutionary new research prospects in basic and applied sciences. These innovative insights into material-, nano-, and bio-material molecular processes, enabled by the European XFEL, stand to substantially transform our ability to control chemical and catalytic reactions and design new material and components, and will essentially pave the way towards quantum control of matter and energy.

The Parties to this Agreement jointly subscribe to an aim of transforming this globally unique research facility into an international scientific flagship. The European XFEL is intended to become an attraction for leading scientists from all over the world who will discover ideal conditions for successfully undertaking their ambitious scientific projects.

On the basis of acts of assent regarding a treaty between the Federal States of Hamburg and Schleswig-Holstein dated 28 September 2004, on 20 July 2006 the State Office for Mining, Energy and Geology in Clausthal-Zellerfeld officially declared its approval of the planned construction and operation of the X-ray free-electron laser, including requisite facilities and buildings. Originally, DESY was applicant and addressee for the plan approval decision.

Thereafter, the European XFEL GmbH, a limited liability company, was founded by DESY to enable the implementation of the European XFEL as an international large-scale facility, whose main shareholder DESY remains. As a second step, the responsibility for construction and operation of the European XFEL was transferred to the European XFEL GmbH in accordance with Article 1 para 1 of the Convention on the Construction and Operation of a European X-Ray Free-Electron Laser Facility. The corresponding change of the plan approval decision dated 20 July 2006 means that now the European XFEL GmbH is licensee and legal facility operator.

On the basis of this Agreement and after assignment of the plan approval decision, DESY acts upon the mandate of the European XFEL GmbH, having regard to its long-term experience in acceleration technology development, construction, and operation, acting as independent economic and organizational representative for the technical operation of the accelerator, and is in charge of its technical and scientific advancement and optimization. At the same time, the Parties have a strong interest in a long-lasting cooperation in their research activities at this facility and will provide the organizational and administrative framework conditions to ensure its successful operation.

Therefore it is now hereby agreed as follows:

Article 1

Subject matter

1.1 The European XFEL GmbH is owner and as authorization holder operator of the entire European XFEL Facility. According to this Agreement, DESY in particular assumes the execution of the technical operation of the accelerator and of the radiation protection within the range of the radiation protection authorization of the plan approval decision. The Parties will agree in form of supplements to this Agreement or in separate agreements on an individual basis regarding any further DESY services concerning the operation of the European XFEL Facility.

This Agreement and its Annexes define the tasks of the Parties resulting from their operation phase roles and regulate the cooperation of the Parties, including assignment of costs and liability risks occurring during the European XFEL Facility operation phase.

1.2 Subject of this Agreement is also the description of those facility parts to which the roles and duties of the Parties refer, as well as the differentiation from other buildings and facility parts not covered by this Agreement.

Article 2

Description of the Parties' roles

2.1 As operator of the entire European XFEL Facility and responsible for the European XFEL research project, the European XFEL GmbH holds, in addition to the technical operation of the photon beamlines and the experiment stations, in particular the overall scientific, economic, and administrative control of the European XFEL Facility and the European XFEL research project.

2.2 In addition to the radiation protection, DESY assumes for the European XFEL GmbH the technical operation of the accelerator along with the aim of scientific and technological refinement of the accelerator. To this end, DESY particularly assumes the tasks listed in Articles 3-8.

2.3 The concrete performance of tasks assumed and the internal organization remain the corporate responsibility of DESY. As a matter of principle DESY performs its tasks using its own employees, but third parties may be engaged if necessary.

Article 3

Tasks of DESY

3.1 DESY is particularly tasked with the technical operation of the accelerator in line with Article 5, and assumes radiation protection tasks in line with Article 6, as far as covered by the legal radiation protection authorisation. DESY renders all contractual services in line with the annually agreed budget.

3.2 DESY's tasks are substantiated in broad terms in an annually agreed service catalogue. This service catalogue is drawn up together with the budget (Article 15) but is non-binding with regard to the success of the services targeted. Upon completion of the relevant service period, there is joint consultation on the extent to which the service targets have been met. Particular attention is

paid to recording in a year-end report and the annual final accounts (Article 15) the extent of the target achievement, the reasons for exceeding, meeting, or missing targets, and the corresponding measures aiming at improving the operation. The period of performance for DESYs tasks owed under this Agreement is always the calendar year.

3.3 The Parties agree that with the European XFEL Facility operation new technical ground is being broken towards making innovative scientific discoveries. Against this background, DESY undertakes to apply its best efforts and take all appropriate measures to achieve the tasks at hand.

3.4 DESY will make declarations towards authorities on behalf of the European XFEL GmbH. In this regard, the European XFEL GmbH grants DESY power of attorney. DESY shall be entitled to grant sub-authorizations with prior written approval of the European XFEL GmbH. If necessary, the European XFEL GmbH shall issue written single authorizations.

Procurements will be prepared and processed by DESY as part of its overall performance. According to Annex 4, the respective contracts shall be signed either by DESY on its own behalf for account of the European XFEL GmbH, or by the European XFEL GmbH on its own behalf for its own account.

DESY performs all other legal transactions and declarations on its own behalf and for the account of the European XFEL GmbH.

Article 4

Transfer of ownership

4.1 The Parties agree that the ownership of items acquired by DESY on its own behalf, especially of spare parts, is to be transferred to the European XFEL GmbH at the time of complete reimbursement of the respective annual final invoice according to cf. Article 15.4.2.

4.2 DESY uses these items to fulfil its contractual tasks. If a delivery is not possible or desirable, DESY concedes indirect possession of them to the European XFEL GmbH.

4.3 If third parties should acquire direct possession of the items mentioned above, DESY hereby assigns its existing and future surrender claims against the respective third party to the European XFEL GmbH. The European XFEL GmbH accepts this assignment. DESY takes care that these items are identifiable.

Article 5

Technical operation of the accelerator

5.1 The technical accelerator operation by DESY encompasses the facility parts belonging to the accelerator complex. It ranges from the electron injector (Bahrenfeld location) to the beam absorbers (Schenefeld location). The basic utilities for the photon tunnel and the experiment hall fall under this Agreement. The facility parts belonging to the undulator systems in the undulation

sections (Osdorfer Born / Schenefeld locations) are operated by the European XFEL GmbH and do not belong to the technical operation of the accelerator.

5.2 The technical operation by DESY covers the accelerator operation and the associated supply systems, the performance of the requisite servicing and repair works, as well as the optimization of the operational parameters and the technical and scientific further development of the accelerator in consultation with the European XFEL GmbH. DESY makes available all staff required for this in the context of the matrix organisation of its Accelerator Division M. The operational control of the accelerator is performed by a machine coordinator and a core team led by him, also responsible for all necessary planning and consultation processes with the European XFEL GmbH.

5.3 DESY's tasks include:

a) Accelerator operation:

- Start-up, running, and shut-down
- Monitoring the operation
- Setting and fine-tuning the agreed beam parameters
- Measures in case of disruptions of the facility (immediate measures by shift employees and standby services, if necessary protracted work by technical groups of the Accelerator Division)

b) Accelerator maintenance:

- Servicing
- Inspection
- Elimination of disruptions

c) Other services:

- Repairs
- Measures necessary by dint of statutory or official requirements or a change to the operation/labour safety provisions
- General overhauling
- Further development of the accelerator

5.4 The technical operation of the accelerator by DESY depends on the users' needs. The users' needs are to be defined by the European XFEL GmbH in such a way that they can actually and in a legally permissible manner be fulfilled by DESY.

5.5 During the technical operation of the accelerator, DESY undertakes to comply with all relevant legal provisions, approvals, permits, conditions, and official directives.

5.6 DESY's services for the technical operation of the accelerator and the territorial scope of application of these services are covered in detail in Annex 1 to this Agreement.

Article 6

Radiation protection

6.1 As approval owner and operator of the European XFEL Facility covered by the plan approval decision, the European XFEL GmbH bears the sole responsibility for the radiation protection.

6.2 DESY assumes the performance of the necessary technical and organizational radiation protection measures based on the German Radiation Protection Ordinance (“Strahlenschutzverordnung” – “StrlSchV”), as far as covered by the radiation protection authorization of the plan approval decision. DESY is to take care that a sufficient number of suitable and experienced DESY employees can be deployed by the European XFEL GmbH as authorized radiation protection commissioners (“Strahlenschutzbevollmächtiger”) and officers (“Strahlenschutzbeauftragter”) for the operation of the facility in line with the operating permit. The European XFEL GmbH is charged with the necessary coverage of radiation liability risks (“atomrechtliche Deckungsvorsorge”) for European XFEL Facility operation.

6.3 The Parties agree that only that person may be appointed as radiation protection commissioner or officer, whom both Parties trust. Therefore, their appointment is carried out in mutual agreement of the Parties. The European XFEL GmbH will comply with DESY’s request for withdrawal of an appointed radiation protection commissioner and officer. The right of the European XFEL GmbH to withdraw a radiation protection commissioner or officer remains unaffected.

6.4 DESY’s services for radiation protection and the territorial scope of application of these services are covered in detail in Annex 2 to this Agreement.

Article 7

General safety and emergency management

7.1 The Parties aspire to a high level of safety in the operation of the European XFEL Facility. This means that, during the operation of the European XFEL Facility, each Party complies with all statutory and official safety requirements falling to them. In addition, DESY also assumes safety-relevant tasks of a technical, organizational, and personnel nature, as described in this Agreement and its Annexes, falling within the European XFEL GmbH’s area of responsibility.

7.2 Areas of responsibility and services of both Parties regarding general safety and emergency management (including technical emergency services), as well as the relevant territorial scope of application, are covered in detail in Annex 3 to this Agreement.

Article 8

Research and development / further accelerator development

The Parties accord high priority to the European XFEL Facility’s scientific and technical further development. For this purpose, an R&D budget is determined as an integral part of the annual budget. On its basis, DESY shall propose an R&D programme for the further development of the accelerator to be executed following consultations by mutual consent with the European XFEL GmbH. During

mentioned consultation, agreements on usage and exploitation rights beyond the scope already regulated in Article 16.2 shall also be concluded, where necessary. This should take adequate account of the interests of the European XFEL GmbH's shareholders.

Article 9

Access

The Parties shall at all times grant access to their operation locations, suppositional the observance of the current valid safety regulations, with a view to ensure the orderly European XFEL Facility operation.

Article 10

Disposal

The European XFEL GmbH is, as European XFEL Facility operator and owner, accountable for the proper and harmless recycling of existing waste or its disposal without jeopardising the common good. DESY undertakes the waste disposal connected with its tasks under this Agreement.

Article 11

Duties of information and involvement

11.1 In performance of the Agreement, the Parties shall make their best efforts to mutually support each other and undertake all actions necessary to orderly perform the operation of the European XFEL Facility. The Parties shall mutually inform each other about all significant matters and ensure that the responsible contact persons perform their tasks in a cooperative and trustworthy manner.

11.2 While taking the regulations of this Agreement into account, the Parties coordinate in the organizational structure of Article 12 the performance of their areas of responsibility.

Article 12

Organisation and joint committees

12.1 The Parties shall draw up a coordinated organization structure to implement this Agreement. They coordinate the performance of their respective task areas in the European XFEL Facility operation on three hierarchical organisational levels, for whose committees both Parties shall appoint suitable members:

12.1.1 **Governing Board:** The Governing Board discusses and coordinates all matters of strategic or otherwise superior significance between the DESY Directorate and the European XFEL GmbH Management Board. This involves especially:

- Coordination on the contractual budget (Article 15.2.4) and DESY services in connection therewith (Article 3.2)
- Coordination on significant changes to the agreed budget and/or DESY services in

connection therewith

- Coordination on R&D program for further development of the accelerator (Article 8).

The Governing Board meetings are regular, taking place at least once a month, in principle alternately at DESY's or the European XFEL GmbH's premises. Each Party is entitled to call extraordinary meetings. The meetings are alternately organized and led by the chairperson of the DESY Directorate or the European XFEL GmbH's Management Board or their deputy. Minutes are taken of the joint meetings.

The Governing Board shall adopt its rules of procedure.

12.1.2 **Operation Board and Administrative Board:**

The Operation Board, while considering safety related aspects, coordinates the technical/scientific operation of the accelerator and other services covered by this Agreement at the operational control level. This includes especially:

- Coordination of operational and service parameters
- Coordination of schedules for user operation, other operational times, maintenances, and further developments of the facility
- Preliminary coordination of the service catalogue (Article 3.2)
- Coordination on measures to adhere to the agreed budget
- Exchange of experiences and development of proposals for improvement of the facility operation
- Preliminary coordination of the R&D programme for the accelerator further development (Article 8).

The Administrative Board coordinates at the operational control level the administrative and financial aspects of implementing this Agreement. This includes especially:

- Preliminary coordination of the contractual budget (Articles 15.2.4)
- Monitoring of the budget planning, the budget implementation in the current business year, and the final accounting
- Coordination on control and reporting in the context of this Agreement
- Quality control of administrative processes at both Parties in the context of this Agreement.

If necessary, and especially for preliminary coordination and follow-up of the contractual budget and DESY services in connection therewith (Article 3.2), joint meetings of the Operation and Administrative Boards shall take place.

The Operation and Administrative Boards shall adopt their rules of procedure, to be confirmed by the Governing Board.

12.1.3 **Operational level:**

The every day's tasks of the European XFEL Facility at an operational level are coordinated

by the respective specialist groups from both Parties. They can adopt its rules of procedure or operation.

12.2 With the aim of amicable settlement, differences of opinion in the sense of Article 14.1 between the Parties' representatives at one level are immediately submitted to the level above.

12.3 The respective level above is to be informed immediately of problems and improvement proposals of overriding importance.

Article 13
Decision-making authority

13.1 The decision-making authority for the European XFEL Facility operation lies with the European XFEL GmbH.

The European XFEL GmbH is entitled to substantiate its decisions in all contractual matters by means of binding unilateral declarations. DESY is to implement the European XFEL GmbH's decisions, provided DESY has no right of objection under Article 13.2.

13.2 DESY may object to the European XFEL GmbH declarations, if one of the following criteria is fulfilled:

- The implementation would be legally inadmissible, especially if it contradicted radiation protection or other statutory/official safety requirements.
- The implementation would necessitate non-budgeted services, whose funding by the European XFEL GmbH or third parties is not secured.
- The implementation would be scientifically/technically impossible.
- The implementation would jeopardize justified and significant operational interests of DESY.
- The declaration targets a matter within DESY's internal organizational responsibility, which encompasses the organization and concrete performance of services and lies within DESY's entrepreneurial responsibility.

Article 14
Conciliation

14.1 In case of disputes, the Parties shall aim to reach an amicable solution.

14.2 In case of legal disputes that cannot be solved on an amicable basis, the Parties are entitled to take recourse to courts. Before taking legal action, the Council of the European XFEL GmbH should be consulted.

14.3 In case of any other disputes that cannot be solved on an amicable basis, if appropriate, upon consultation with the relevant European XFEL GmbH scientific and administrative advisory committees (MAC, SAC, AFC), the matter shall be submitted for final resolution to the Council of the European XFEL GmbH. Should the Council be unable to reach a final resolution, binding external arbitration shall be sought.

Article 15

Costs/remuneration

15.1 Costs

15.1.1 The European XFEL GmbH shall reimburse DESY's costs incurred in connection with the performance of this Agreement, in accordance with the following regulations:

The remuneration of DESY's contractual services is governed by the principles of cost effectiveness, economic efficiency, and purposefulness with regard to the pursued scientific targets.

The costs are divided into individual costs and overhead costs. As far as possible, costs incurred shall be allocated to individual costs.

15.1.2 Individual costs in the sense of this Agreement are applicable directly to the services rendered and can sensibly be individually calculated and reimbursed. They are basically subdivided into 3 types of costs: personnel expenses, recurrent expenses, and capital expenditures.

15.1.3 Overhead costs in the sense of this Agreement are incurred in connection with DESY's contractual operations that cannot be directly accounted for as services rendered for the European XFEL GmbH, even though they are absolutely needed for service exchange between DESY and the European XFEL GmbH. As a matter of principle, eligible costs centres are those listed in Annex 4. Changes in cost centres that are partially charged to the European XFEL GmbH shall be indicated early on in the respective annual budget before the beginning of the year and be the subject of binding agreements. This also applies to applicable allocation formulas. The Parties additionally agree that fixed overhead rates can be agreed per FTE.

15.2 Budget

15.2.1 Budget preparation comprises the process of preparing the medium-term financial estimates and the operating budget in connection with the performance of the Agreement. The medium- term financial estimate covers a period of five years. The process for preparing the operating budget in connection with the performance of the Agreement covers a period of two years prior to the financial year and ends with the cost follow-up in ongoing operations that are covered by the contract.

15.2.2 The budget is subdivided into two methods of presentation listing, on the one side, planned costs and, on the other side, commitments to be entered in the planning period.

15.2.3 The basis of budget planning are assumptions agreed between DESY and the European XFEL GmbH including, among other things, a price escalation model, the structure required for planning, and the degree of detail in service catalogues and planning figures, as well as binding, time-related agreements on budget planning.

15.2.4 The costs to be fixed in the budget consist of the refundable costs and of those costs, according to which DESY in line with Article 3.4 prepares and takes over procurements on behalf and for account of the European XFEL GmbH (hereinafter „administered costs"). The costs qualifying for reimbursement and their amount for the operative business year are found in the jointly agreed

budget. The administered costs shall be fully administrated and monitored by DESY. Only the invoices accrued in this context will be settled directly by the European XFEL GmbH.

15.2.5 The budget is subject to a binding resolution by the Council of the European XFEL GmbH. Only upon approval by the Council a binding agreement is reached between the Parties.

15.2.6 If, within a reporting period, it appears that additional costs are arising as compared to those agreed between the Parties ahead of time as the budget of the business year, DESY must immediately inform the European XFEL GmbH Management Board. The total of refundable and administered costs has to be taken into account for the evaluation of imminent cost overruns.

15.2.7 A joint analysis will be performed by DESY and the European XFEL GmbH regarding the amount and justification for excesses over planned costs.

15.2.8 DESY and the European XFEL GmbH shall discuss the relevant measures for cost overruns, the aim being an unanimous result.

15.2.9 Insofar as the cost overruns objectively have been or will be caused by the rendering of services to the European XFEL GmbH, they are to be borne by the European XFEL GmbH in the jointly determined amount.

15.3 Reporting and control

15.3.1 DESY and the European XFEL GmbH agree on a coordinated reporting.

15.3.2 The basis of the reporting is a detailed, regular reporting on the refundable and administered costs arising in connection with the services rendered to the European XFEL GmbH. This includes the costs already incurred, those committed to, and a forecast of those costs probably arising by the year's end. This should be drawn up at the latest by the end of the following month for each preceding reporting period.

15.4 Calculation methods

15.4.1 The basis for invoicing refundable personnel, power, recurrent, and overhead costs is, if not agreed otherwise, an annual total calculated on the basis of the budget figures.

15.4.2 During the year, the invoicing shall be carried out via monthly instalments. The final calculation takes place once a year upon the determination of the actual calculation units for invoicing.

15.4.3 Detailed agreements and methods regulating costs/remuneration in Annex 4 form an integral part of this Agreement.

Article 16

Exchange of knowledge

16.1 “Knowledge” in the sense of this Agreement means information, data, drawings, research results, technology, methods, materials, and any other form of know-how irrespective of nature or storage medium and regardless whether it is protected or protectable as intellectual property right.

16.2 The Parties each remain owner of any knowledge they possessed before the entry into force of this Agreement. They shall mutually make available to each other, free-of-charge and irrevocably, the usage rights to this background knowledge, as well as to the knowledge created after the entry into force and during the execution of this Agreement, for the sole purpose of the proper operation of the European XFEL accelerator, as far as required for this purpose.

16.3 The granting of any more extensive usage and exploitation rights is subject to separate agreements, especially those according to Article 8.

Article 17

Publication

17.1 Each Party is entitled to publish those research results, which have been exclusively gained by its employees in the performance of this Agreement, by making reference to the European XFEL Project.

17.2 Following mutual coordination, those research results generated by the employees of both Parties in performance of this Agreement are to be published jointly by both Parties with reference to the European XFEL Project. Upon request by one Party, its employees contributing substantially to the research results shall be named in the publication.

Article 18

Public relations

The press departments of the Parties work closely together on public relations relating to this Agreement. They shall inform each other in a timely fashion, if possible with advance notice of seven calendar days, of all planned publications, visits, and events of special interest.

Article 19

Confidentiality and operational and research results

19.1 Each Party shall treat all information and documents that have been provided by the other Party in connection with the performance of this Agreement as confidential, if they have been appropriately designated as such or, according to the circumstances, are recognizable as business or trade secrets of that Party or of its business partners; they shall be kept confidential for a period of 5 years after their disclosure and the appropriate steps be taken to prevent any exploitation, unauthorized recording, or disclosure by or to third parties.

19.2 Under this Agreement, such information shall not be regarded as confidential, which:

- at the time of disclosure had already been published or otherwise been made available to the public,
- becomes public after its disclosure without a breach of obligations under this Agreement by the receiving Party,
- is received in a lawful way before its disclosure, independently or from a third party, or
- the receiving Party is obliged to disclose according to a statute, non-legislative standards, its Articles of Association, a court order, or an official decree.

In the latter case, the other Party is to be informed of the intended disclosure in advance in writing. The disclosure of confidential information should be limited to the extent necessary, and the interests of the other Party should be upheld, as far as legally possible, in particular via the conclusion of appropriate non-disclosure agreements with third-party recipients.

Article 20

Liability in external relationships

In its capacity as the responsible European XFEL Facility operator, the European XFEL GmbH is liable towards third parties for all claims arising from the execution of this Agreement, and will indemnify DESY from compensation claims by third parties regardless of their legal grounds.

Article 21

Liability in internal relationship

21.1 Claims for compensation for direct damages or personal injuries regardless of their legal grounds are disclaimed in the Parties' internal relationship, except in case of wilful misconduct or gross negligence. Further claims for damages, in particular claims for compensation for indirect damages, or for damages resulting from operational interruptions, are disclaimed.

21.2 The Parties agree further that any liability for damages due to a breakdown of technical equipment cannot be attributed to DESY.

Article 22

Duration and termination

22.1 This Agreement enters into force with the transfer of the plan approval decision from DESY to the European XFEL GmbH and expires automatically ten years after its entry into force. No later than four years before the expiration of this Agreement, the Parties shall start to revise the Agreement with the aim of prolonging it with adjusted provisions, if any. No later than two years before the expiration of this Agreement, the results of the revision shall be presented to the Council of the European XFEL GmbH. Any prolongations of this Agreement, including interim solutions, require the prior approval by the Council of the European XFEL GmbH.

Notwithstanding this, this Agreement ends in any case upon termination of the Convention on the

Construction and Operation of a European X-Ray Free-Electron Laser Facility dated 30 November 2009 (according to its Art. 15 para. 1).

22.2 The ordinary termination of this Agreement is excluded. For single DESY tasks, differing regulations regarding an ordinary termination may be agreed upon in the appropriate Annexes, as long as these do not affect the technical operation of the accelerator (Article 5) and the radiation protection (Article 6).

22.3 The Parties' right to terminate this Agreement by mutual consent or for good cause remains unaffected.

Article 23

Adjustment to this Agreement

Not all circumstances arising from technical, economic, legal, and, in particular, fiscal development can be foreseen and governed exhaustively at the conclusion of this Agreement. The Parties shall include potentially necessary adjustments in the Agreement, which most approximates its meaning and purpose.

Article 24

Annexes

24.1 The Annexes are subject to provisions of this Agreement and form an integral part thereof. Each Annex requires signatures by both Parties.

24.2 In case of discrepancy between provisions of an Annex and this Agreement, the provisions of this Agreement shall prevail. Exceptions are contrary provisions outlined in Article 22.2 of this Agreement, where Annex provisions prevail.

Article 25

Final provisions

25.1 There are no side agreements. Changes to this Agreement, amendments, termination, and cancellation thereof have to be agreed in writing. If these are essential, the European XFEL GmbH informs its Council in advance. This written form requirement also applies to any waiver of this requirement.

25.2 If any provision of this Agreement should be wholly or partly ineffective, the validity of the remaining provisions is not affected. The Parties shall replace legally invalid provisions by valid provisions that approximate the intended regulations. The same applies if the Agreement contains any omissions.

25.3 The transfer of rights and obligations under this Agreement requires the written consent of the other Party.

25.4 This Agreement is subject to and is to be construed in accordance with German law. It is

executed in German and English. In case of discrepancies between the German and English versions, the German version shall prevail.

25.5 Place of jurisdiction for all disputes arising out of or in connection with this Agreement and its Annexes is Hamburg.

Established in German and English in Hamburg and Schenefeld on_____(date) in duplicate.

Signed for and on behalf of **DESY**:

Professor Dr. Helmut Dosch	Christian Harringa
Chairperson of the Directorate	Director of Administration

Signed for and on behalf of the **European XFEL GmbH**:

Professor Dr. Robert Feidenhans'l	Dr. Claudia Burger
Managing Director and Chairperson of the Management Board	Managing and Administrative Director

Annex 1

Technical operation of the accelerator

1. Introduction

The European XFEL accelerator will be technically operated by DESY on behalf of the European XFEL GmbH which has the overall and legal responsibility for operation of the facility. This Annex of the Operation Agreement describes the general scope (no. 2), the European XFEL accelerator (no. 3), the related operational tasks of DESY (no. 4), the organizational structure that will be set-up by DESY to fulfill its commitments (no. 5), and DESYs corresponding documentation duties (no. 6).

2. General scope

The European XFEL accelerator includes all components of the electron beam path from the injector building XTIN up to the final electron beam dumps in the shafts XSDU1 and XSDU2, see the schematic representation in Figure 1 below.

It is intended that the European XFEL accelerator is operated about 5000-6000 hours/year in average. Maintenance days and long maintenance periods have to be distributed over the year. The user, machine studies, maintenance and shutdown periods are defined by the European XFEL GmbH management after close consultation with the DESY team in charge of operating the accelerator.

Operation of the accelerator covers all tasks related to 24/7 user operation, re-commissioning after breaks and shutdowns, machine studies, maintenance and repair of all accelerator components and sub-systems, maintenance and operation of test equipment/test stands and of special technical infrastructure (e.g. RF test stands, clean room and treatment facilities), maintenance and operation of utility infrastructure (e.g. power, water cooling, helium plant), radiation protection (see Annex 2), technical safety and occupational safety in the groups (see Annex 3).

There is agreement between the Parties that DESY will conduct European XFEL-specific accelerator R&D, financed by European XFEL GmbH operations funds, with the aim to further improve the facility's performance and prepare for future upgrades of the accelerator complex (see Art. 8 of the Operation Agreement).

3. Description of the European XFEL accelerator and infrastructure

In the following, the European XFEL building and beamline section naming convention (see Figure 1 and Figure 2) will be used to define in detail the territorial scope to which the tasks of DESY at its technical operation of the European XFEL accelerator are related.

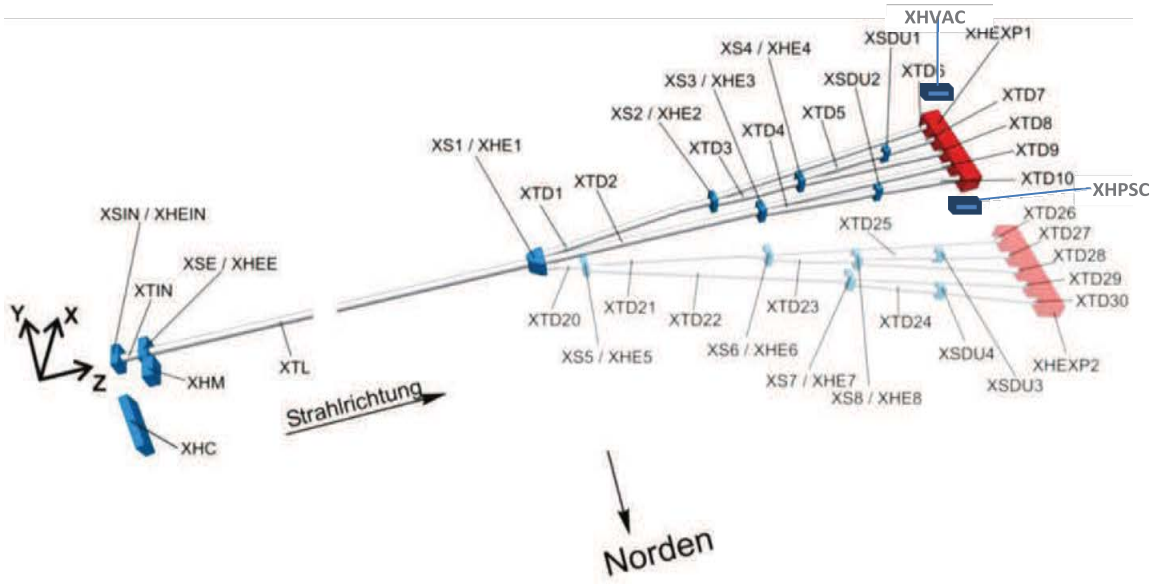


Figure 1: Building naming convention of the European XFEL

The European XFEL injector is located in the XTIN building. The 7th basement houses the accelerator itself, consisting of the rf photocathode gun, a standard 1.3 GHz module, a superconducting 3.9 GHz module, a laser heater, a diagnostic section with a transverse deflecting structure and 4 imaging stations, a spectrometer arm with additional diagnostic and a solid state 40 kW dump. The LLRF electronics and all other sensitive electronics are located in radiation shielded racks below the accelerator. The 6th basement could accommodate a similar installation but is left empty for the time being. On the 5th basement the laser systems for the photo-injector and laser-heater as well as for the timing system are installed in air-conditioned laboratories. The 4th basement has space for diagnostic electronics, IT infrastructure and the machine protection system (MPS). The 3rd basement houses the two RF installations (pulse transformer and klystron) for the gun and the 1.3 GHz module. Magnet power supplies for all warm magnets from the injector up to the end of the last bunch compressor sections are placed on the 2nd basement. The 7th and 6th basement are constructed as radiation enclosure to allow independent operation of the injector.

The injector is accessed via the XSIN shaft. This shaft houses further infrastructure, for instance the gun cooling equipment.

The XSE shaft connects the injector building XTIN with the main accelerator tunnel XTL. The 7th and 6th basement of the XSE are occupied by the electron beam path, a dogleg structure that transports the beam from the injector level to the accelerator tunnel level. This part of the XSE is sealed off with a non-permanent radiation protection enclosure, so that the remainder of the shaft building is accessible during beam operation. Within the XSE shaft are further infrastructure installations, most notable the cold box housing, the cold compressors and the helium distribution box.

The XSIN and XSE shaft buildings are covered by the above ground buildings XHEIN and XHEE. Adjacent to XHEE is the modulator hall XHM that houses the 29 modulators (including 2 spares) that feed the pulse transformers in the tunnel with HV pulses through long pulse cables.

The HERA cryo-hall XHC with the refurbished European XFEL related part of the DESY cryo-plant is connected to the XHEE via the 150 m long XRTL cryo-transfer line. Cooling towers and HVAC (heating, ventilation, and air conditioning) units are located close to the XHEE building.

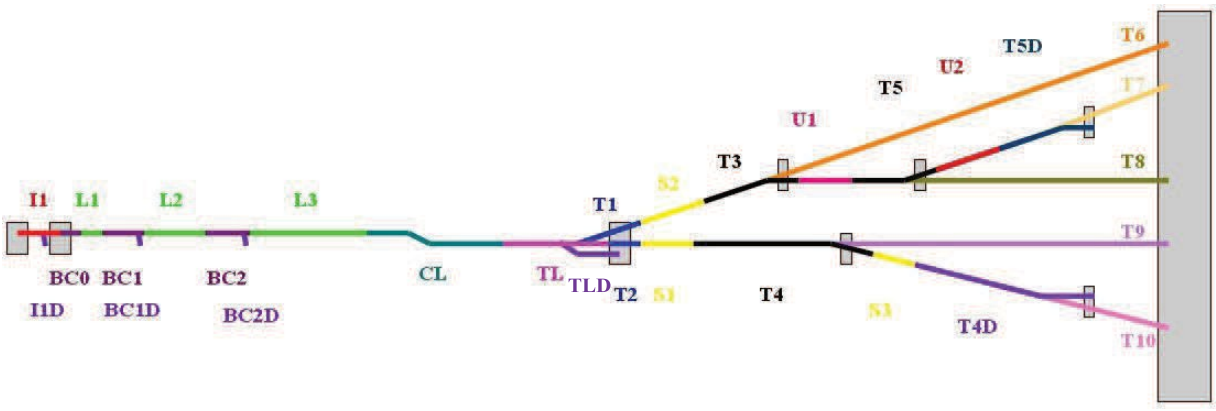


Figure 2: Beamline section names

After the XSE shaft the beam enters the main accelerator tunnel XTL with a beam energy of about 130 MeV. A first bunch compression chicane (BC0) compresses the bunch longitudinally by a factor of two. The first linac L1 consists of four 1.3 GHz modules connected by a feedbox and endbox to the cryo-system. All four modules are fed by one klystron, providing an average accelerating voltage of about 17 MV/m.

At an energy of about 600 MeV the second bunch compression (BC1) reduces the bunch length by a factor of five. The chicane is followed by a diagnostic section similar to the one in the injector, i.e. a

transverse deflecting structure and imaging stations for projected and slice diagnostics. A commissioning dump that is capable to accept a small fraction of the nominal beam power is used to tune up this bunch compression stage. The bunch compressor beamline hardware is operated at ambient temperature and the complete installation is bypassed by a cryo-transfer line.

The second linac L2 consists of 12 modules fed by 3 klystrons with an average accelerating voltage of about 19 MV/m. It is followed by the third bunch compression (BC2), which compresses the bunch by another factor of 10. Similar diagnostics as in the previous bunch compressor is installed with all installation scaled to the requirements at higher energies. The commissioning dump is capable of accepting the full bunch train at a reduced macro-pulse repetition rate. Again a cryo-transfer line bridges the bunch compressor.

The third or main linac consists of 84 modules. As before, 4 modules are fed by one klystron. An average accelerating gradient of 23.6 MV/m yields a final energy of 17.5 GeV, assuming that 1 klystron / 4 modules are idling as reserve. The modules are supported from the ceiling while the LLRF, diagnostic and vacuum electronics, magnet power supplies, etc. are installed in radiation shielded racks below the modules. 12 modules form a cryo-string connected together by the string connection boxes. The turnbox at about z = 1500 m marks the temporary end of the linac and closes the linac cryo-system. Space is foreseen to extend the linac by another 12 modules, at present a 150 m long warm beamline section is installed.

The about 200 m long collimation section protects the downstream equipment and removes beam halo at about 50 beam sigma. It consists of 4 main collimators, designed to temporarily withstand 12 kW losses and 3 supplementing collimators to protect the collimation system vacuum from stray particle hits. This dispersive section will also be used to measure the beam energy and the result can be fed back into the RF system to control the relative energy accuracy below the 1e-4 level. A transverse intra-bunch feedback system corrects the beam trajectory to micron accuracy after the collimation section.

The beam distribution system consists of two kicker systems, one can steer single, arbitrary selected bunches into the linac beam dump (TLD beamline) and the other a part of the complete pulse train into the T1 beamline (towards SASE2) in the XTD1 tunnel, while the T2 beamline (towards SASE1 and SASE3) continues straight towards the XTD2 tunnel. At the end of the XTL tunnel three beamlines, T1, T2, and TLD, run in parallel into the shaft XS1. The TLD beamline ends in the main linac dump, a 300 kW solid-state beam dump located in the XS1 building.

The straight beam path continues into the XTD2 tunnel towards the SASE1 undulator and afterwards to the deflection arc T4, where the photon beam is separated from the electron beam and is transported through the XTD9 towards the experiment hall. The electron beam continues passing the

shaft building XS3 towards the tunnel XTD4 which houses the 21 unit cells of the SASE3 undulator in a similar arrangement as described above. After SASE3 the electron beam is transported towards the 300 kW beam dump T4D in the XSDU2 shaft, where the photon beam is separated from the electron beam and travels towards the tunnel XTD10.

The bend beam path continues to the tunnel XTD1 and SASE2. Behind the undulator a matching section leads to the deflection arc T3. Afterwards the beams pass through the shaft XS2, with the photons continuing in XTD6 while the electrons travel through the presently unused undulator tunnel XTD3 (possible position for undulator section UN1), the shaft XS4 towards the unused undulator tunnel XTD5 (possible position for undulator section UN2) and finally to the dump T5D in the XSDU1 building.

All undulator sections consist of 37 (SASE1/2) or 23 (SASE3) unit cells with space for a 5 m long undulator module and an intersection with a moveable quadrupole, permanent magnet phase shifter, synchrotron light absorber and vacuum pump and a cavity BPM all mounted on a common granite block. The responsibility for the vacuum system, diagnostics and quadrupole magnet lies with DESY, while the undulator, phase-shifter and quadrupole movers are within European XFEL GmbH responsibility. It is understood that the complete system can only be operated together, and the motion of the quadrupole and undulator will be initiated via the accelerator control system DOOCS. The undulators are housed in a climate housing, installed and operated under European XFEL GmbH responsibility.

The XHE1 building and its vicinity accommodate water cooling infrastructure for the XTL and all magnet power supplies for the warm magnets after the L3 up to (and including) the SASE1 and SASE2, while power supplies for the magnets after SASE1 and including SASE3 are located in XHE3. Magnet power supplies for the magnets after SASE2 and including UN1 are located in XHE2, for the section after UN1 and including UN2 in XHE4. Power supplies for the section after SASE3 and UN2 are in the XHPSC building close to the experiment hall.

The HVAC (heating, ventilation, and air conditioning) units are distributed along the facility, with air treatment units at XHE1, XHE2, XHE3 and XHE4 and in the XHVAC building close to the experiment hall.

The accelerator vacuum system always extends beyond the electron and photon-beam separations up to the first valve (VV0) of the sections T6, T7, T8, T9, T10.

4. Description of tasks and technical systems

In the following, technical systems and operation tasks and related services of DESY are briefly described. The technical groups within DESY's organizational structure in charge of the respective tasks are denoted in brackets. The technical groups organize 24/7 on-call duties where necessary for efficient operation of the facility. The technical operation of the accelerator by DESY is organized in so-called Operation Packages (OPs). For information purposes, the DESY services described below are linked in a non-binding way with the OP numbers valid at present.

Power, Ventilation, Water (MKK; OP-510, 345, 530)

Operation, maintenance and repair of power, water, air systems of the technical infrastructure as needed for the accelerator operation. It comprises equipment installed under the responsibility of DESY in the buildings XHVAC, XHPSC, XHEIN, XSIN, XTIN, XHM, XHEE, XSE, XTL, XHE1-4, XS1-4, XTD1-10 (except for special undulator temperature stabilization systems and instrument installations in the photon tunnels), XSDU1-2, AMTF (as need for European XFEL related purposes) and the cryogenics hall (XHC). The basic utility equipment in the experiment hall XHEXP1 is included here, but not special equipment in the experiment areas.

Operation, maintenance and repair of the magnet power supply systems (excluding the power supplies for the undulator air coils).

Cryogenic Systems (MKS; OP-225, 530)

Operation, maintenance and repair of the European XFEL related part of the DESY cryogenic plant (in part through contract to and supervision of an external company). Operation, maintenance and repair of the cryogenic distribution systems to the XTIN, XTL and AMTF (as needed for European XFEL related purposes).

Accelerator Modules (MHF-sl, MKS; OP-220, 530)

Operation of modules, maintenance and repair of module auxiliaries (coupler and tuner systems), maintaining of infrastructure capabilities (e.g. cavity treatment and test systems, clean rooms, assembly tools) for complete module repair and refurbishment.

RF systems (MHF-p, MSK, MIN; OP-210, 230, 235)

Operation, maintenance and repair of the high-power RF system in the injector and main linac sections.

Operation, maintenance and repair of the low-level RF system in the injector and main linac sections.

Operation, maintenance and repair of RF system for the 3.9 GHz module in the injector section.

Operation, maintenance and repair of the RF system for transverse deflecting structures.

RF synchronization and feedback systems (MSK; OP-215, 325, 430)

Operation, maintenance and repair of the RF synchronization system and optical synchronization systems.

Operation, maintenance and repair of longitudinal and transverse IBFB systems, including support through PSI.

Beam diagnostic (MDI, MSK; OP-360, 365)

Operation, maintenance and repair of all diagnostic elements, including support for BPM electronics from PSI.

Vacuum system (MVS; OP-341, 530)

Operation, maintenance and repair of warm and cold vacuum systems, including beam vacuum system throughout the electron beam path, accelerator module insulation and RF coupler vacuum systems.

Injector (MIN, FSLA, MVS; OP-310, 315, 320)

Operation, maintenance and repair of the injector RF gun, the laser and laser heater systems.

Warm Magnet Systems (MEA, MIN, MVS; OP-345, 350)

Operation, maintenance and repair of the magnets in the warm beam lines and of the beam distribution kicker system.

Beam dumps (MIN, D3; OP-355)

Operation, maintenance and repair of dump sub-systems.

Installation and alignment (MEA; OP-515)

De-installation, transport and re-installation of components to be repaired/maintained/exchanged.

Survey, alignment and realignment of components as necessary.

Radiation Protection (OP-450)

See Annex 2 of the Operation Agreement document.

Personnel Interlock, DACHS System (MPS; OP-440, 530)

Operation, maintenance, and repair of the personnel interlock system for beam operation and magnet current operation of the accelerator and the photon tunnels. These, as well as further tasks of DESY related to the personnel interlock system are defined in more detail in Annex 2.

Operation, maintenance, and repair of the DACHS system for access control to the accelerator and photon tunnels, to underground areas and to utility buildings on the DESY, Osdorfer Born and Schenefeld sites. These, as well as further tasks of DESY related to the DACHS system are defined in more detail in Annex 3.

Controls (MCS, IT, MPY; OP-330, 335, 420, 425)

Operation, maintenance and repair of the machine controls infrastructure and network, control system (DOOCS), middle layer servers and services and high level applications software.

Accelerator Physics (MPY; OP-415)

Specification and verification of operation envelope (range of accessible beam parameters), support for beam time scheduling and for the machine development program, support for accelerator operation with scientific shift operators.

Accelerator Operation (MBB; OP-410)

Allocation of technical control room crew and operators.

Accelerator Coordination (MXL) – "core team" in terms of Art. 5.2 of the Operation Agreement (OP-100)

Coordination of accelerator operation. Interface with European XFEL GmbH coordination team and with users. Delivery of operation statistics and follow-up of component failures and maintenance and repair/improvement measures. Planning of accelerator development studies. Proposals for planning of facility improvements and future developments. Responsibility for delivering budget forecasts and longer term planning.

Accelerator Division Management (M/MR; OP-100)

Overall responsibility for the DESY accelerator division activities related to the operation of the European XFEL accelerator. Supervision of respective group leaders and machine coordinators.

Safety and technical emergency service (SAVE; OP-445, -610)

Operation and maintenance of safety systems (e.g. fire alarm systems), emergency safety service and inspections for the accelerator complex. These, as well as further tasks of DESY related to the safety and technical emergency service are defined in more detail in Annex 3.

Tracking system (OP-445)

Operation and maintenance of the tracking system (via transponders) for the accelerator complex. These, as well as further tasks of DESY related to the tracking system are defined in more detail in Annex 3.

EDMS and CAD systems (IPP; OP-525)

Maintenance of accelerator related documents in EDMS or a similar system during the operation phase of the European XFEL Facility.

Communication systems (IT; OP-520)

Operation and maintenance of private mobile radio system and mobile phone service related to the accelerator complex.

Technical services/workshops (ZE, ZM; OP-100)

DESY mechanical (ZM) and electronics (ZE) workshops will be employed by M-division groups for accelerator maintenance/repair work.

Buildings (V1, BAU; OP-610)

Maintenance of European XFEL buildings XHEIN, XSIN, XSE, XHEE, XTIN, XHM, XTL and AMTF (as needed for European XFEL related purposes) includes cleaning and caretaker services.

Procurement, finance department (V3, V4; OP-615)

Handling of all procurements related to the accelerator operation at DESY, financial controlling, accounting/billing, as defined in more detail in Annex 4. Also includes goods acceptance, transport, inventory, and storage.

5. Organization

Operation of the European XFEL accelerator will be coordinated by the XFEL machine coordination (MXL – “core team” in terms of Art. 5.2 of the Operation Agreement) at DESY. The machine coordination provides also the interface to the European XFEL GmbH and the users. MXL and the respective specialist groups of the European XFEL GmbH shall draw up procedural regulations in accordance with Art. 12.1.3 of the Operation Agreement for the coordination of their every day’s tasks.

Most of the personnel that is required for the operation will be provided by the DESY M-division with its established matrix structure. It is assumed that the operation can benefit from synergies with the operation of other accelerator facilities at DESY, although their operation is no pre-requisite to the operation of the European XFEL accelerator.

6. Documentation

Daily accelerator operation is documented in the XFEL electronic logbook. In addition, MXL will set up a system to monitor and track component availability, failures and repair times. DESY grants the European XFEL GmbH regular access to both systems.

Established in German and English in Hamburg and Schenefeld on (date) in duplicate.

Signed for and on behalf of **DESY**:

Professor Dr. Helmut Dosch	Christian Harringa
Chairperson of the Directorate	Administrative Director

Signed for and on behalf of the **European XFEL GmbH**:

Professor Dr. Robert Feidenhans'l	Dr. Claudia Burger
Managing Director and Chairperson of the Management Board	Managing and Administrative Director

Annex 2

Radiation Protection

This Annex regulates the cooperation in regard to radiation protection between the European XFEL GmbH and DESY after the transfer of the operation permit for the European XFEL Facility from DESY to the European XFEL GmbH has taken place. This Annex describes the assignment of tasks in radiation protection between the European XFEL GmbH and DESY for the operation of the European XFEL Facility as far as the radiation protection authorization of the plan approval decision reaches. In this document, the fundamentals of cooperation will be regulated; further details as well as technical and personnel variable matters will be regulated within separate contracts; these will be pointed out within the text. All these documents must be present before the transfer of the operation permit and will come into effect at the same time as the transfer and the Operation Agreement.

After the transfer of operation permit, the following will apply:

After the transfer of the operation permit, the European XFEL GmbH as owner and holder of the operating permit of the European XFEL facility bears the sole responsibility for radiation protection of the European XFEL Facility and is therefore the responsible person for radiation protection ("*Strahlenschutzverantwortlicher*") for the operation of the European XFEL Facility (according to the plan approval decision).

The European XFEL GmbH and DESY agree that radiation protection for the operation of the European XFEL Facility must be always in accordance with the law. Therefore, the two Parties will agree on a common radiation protection concept in writing that includes, inter alia, a common radiation protection organisation.

There will be a radiation protection commissioner ("*Strahlenschutzbevollmächtigter*") who supports, informs, and gives advice to the responsible person for radiation protection fulfilling his tasks for the operation of the European XFEL Facility (according to the plan approval decision).

This radiation protection commissioner will be a DESY employee provided by DESY; this person will have sufficient competence, necessary expertise ("*Fachkunde*"), and experience to adopt this position. The radiation protection commissioner is responsible for the organization of radiation protection for the operation of the European XFEL Facility (according to the plan approval decision). His main duties include the preparation of proposals for radiation protection documents, like the radiation protection concept, and if necessary their updating due to technical, safety-relevant, or legal radiation protection matters, the coordination of all persons involved in radiation protection and their tasks as well as the follow up on the implementation and effectiveness of the radiation protection concept by carrying out spot checks. These and other tasks will be determined in a separate contract between the responsible person for radiation protection and the radiation protection commissioner.

Along with this organization of radiation protection, there will be a distribution of tasks for radiation protection officers (“*Strahlenschutzbeauftragte*”) as well as a list with the names of radiation protection officers.

Radiation protection officers are competent, qualified, and experienced employees of DESY and the European XFEL GmbH, according to their areas of tasks, who will be appointed by the responsible person for radiation protection in separate contracts. DESY will ensure to provide the European XFEL GmbH with a sufficient number of competent, qualified, and experienced DESY employees, to take over these positions.

Regulations for the appointment of external radiation protection officers will be made in a separate contract.

Only candidates trusted by both the European XFEL GmbH and DESY shall become radiation protection commissioner or radiation protection officers. Therefore, appointments will only be made by mutual agreement. The European XFEL GmbH will comply with the request of DESY to cancel the appointment of a radiation protection commissioner or radiation protection officer. The right of the European XFEL GmbH to dismiss a radiation protection commissioner or a radiation protection officer remains unaffected.

DESY will perform the required organizational, administrative, and technical radiation protection measures for the implementation of the common radiation protection concept. Hereby excluded are radiation protection measures of appointed employees as radiation protection officers of the European XFEL GmbH.

In a separate contract, DESY and the European XFEL GmbH conclude a delimitation contract according to Article 15 of the German Radiation Protection Ordinance (“*Strahlenschutzverordnung - StrlSchV*”) where the official and legal measures for access of DESY employees to the European XFEL Facility will be regulated.

This Annex shall be executed in both the German and the English language.

Established in Hamburg and Schenefeld on_____(date) in duplicate.

Signed for and on behalf of **DESY:**

Professor Dr. Helmut Dosch	Dr. Reinhard Brinkmann
Chairman of the DESY Board or Directors	Director of the Accelerator Division Responsible person for radiation protection in the sense of Sec. 31 para. 1 sent. 3 StrlSchV of DESY

Signed for and on behalf of the **European XFEL GmbH**::

Professor Dr. Robert Feidenhans'l	Dr. Claudia Burger
Chairperson of the Management Board and Managing Director Responsible person for radiation protection in the sense of Sec. 31 para. 1 sent. StrlSchV of the European XFEL GmbH	Administrative and Managing Director

Annex 3

General safety, security and emergency management

1. Introduction

According to article 7 of the operation agreement both partners aim for a high level of safety for the operation of the European XFEL facility. The European XFEL company and DESY ensure the compliance of the respective legal and official safety requirements. In addition DESY takes over specific tasks in technical and organisational safety as well as in terms of personnel within the area of responsibility of European XFEL GmbH. The present Annex 3 defines in detail – within article 7 of the operation agreement – these safety relevant tasks, which DESY takes over within general safety and technical emergency services for European XFEL GmbH.

Annex 3 regulates DESY's tasks both in areal and factual regard

- In regard to general safety (including occupational safety, machine and industrial safety, access control systems, safety systems, waste disposal) and
- In regard to emergency management (including technical emergency services and fire protection) during the operation of the European XFEL facility

as well as the coordination of the parties.

Services within the area of radiation protection are not included in the present Annex 3; they are regulated separately in Annex 2 of the Operation Agreement. The security of the data networks is not included in this Annex 3.

2. Definitions

The following abbreviations shall be used in this Annex 3:

ASiG	Occupational Safety Act (law on company doctors, safety engineers and occupational health and safety specialists)
DACHS	DESY Access Handling System
DARF DACHS	DESY data base to manage access rights and their requirements
D5	DESY-Group "Safety and Environmental Protection"

MEA 3	DESY-Group “Safety and Interlock Systems, Special Vehicles“
MPS	Group Personal Safety Systems, DESY-group within the Accelerator Area M
MPY	DESY-group “Machine Physics Group” within the Accelerator Area M
SAVE	DESY-group “Service Centre Facility Safety, Preventive Fire Protection, Emergency Service” within the Administrative Area V
SRP	Group “Safety and Radiation Protection” of the European XFEL GmbH
TN	Section SAVE 1 (Technical Emergency Services) of DESY
TS	Group “Technical Services” of the European XFEL GmbH
WP	Work Package
XHQ	Lab and administrative building XHQ of the European XFEL GmbH on the facility premises at Holzkoppel 4, 22869 Schenefeld

3. Contact Persons

The following persons function as contact persons within this Annex 3 of the Operation Agreement:

	European XFEL GmbH	**DESY**
Occupational safety:	Head SRP	Head D5
Machine and Industrial Safety:	Head TS, head SRP	Head D5, MEA 3
Access Control:	Head SRP	Head MPS
Transponder System:	Head SRP	Head IT
Safety Systems:	Head SRP	Head SAVE, Head D5
Technical Emergencies and Fire Protection:	Head SRP, Head TS	Head SAVE

All contact persons need to be named in writing, named contact persons need to be forwarded to the other partner immediately. Each partner reserves the right to replace contact persons after informing the other partner in writing.

4. Occupational Safety

According to the German law on occupational safety the employer needs to ensure safe working environment for employees at their work place and as well as the implementation of preventive measures.

DESY and the European XFEL GmbH ensure that legal safety requirements, as stated in article 7 of the Operation Agreement, will be fulfilled.

Within the whole facility of the European XFEL GmbH safety labelling needs to be done in English and German. Safety training will be carried out in English and German.

4.1 Definition of areas of supervision/responsibilities of occupational safety

Due to the whole length of the European XFEL facility and due to the fact that the Bahrenfeld site is mainly taken care of by DESY-employees, two areas of supervision will be defined in regard to occupational safety:

- Area of supervision 1: Bahrenfeld site (including all buildings) till western end of tunnel XTL
- Area of supervision 2: Osdorfer Born site (including all buildings), photon tunnel XTD 1-10 as well as Schenefeld Campus (including all buildings)

DESY Group D5 takes over all tasks regarding occupational safety of the European XFEL GmbH for the area of supervision 1. All tasks regarding occupational safety for the area of supervision 2 will be taken care of by the European XFEL GmbH by their SRP group.

4.2 General tasks of occupational safety groups within their area of responsibility

General tasks of occupational safety taken over by DESY, area of supervision 1, especially include:

- Advise and support of employees in respect of occupational safety,
- Informing of SRP group and exchange of all matters regarding occupational safety,
- Ensure that legal and official requirements as well as safety guidelines of the European XFEL GmbH are observed, implementation of a safety organisation (e.g. appointment of responsible persons for occupational safety, draft of safety concepts and coordination of these safety concepts with SRP group),

- Follow up of safety risk assessments of DESY, follow up of equipment and devices subject to legally required safety checks (see article 5),
- Documentation and archiving of all documents regarding occupational safety (e.g. safety risk assessments, reports, workplace safety instructions, correspondence with authorities),
- Distribution and recollection of transponders for underground area,
- Organisation and provision of safety trainings in German and English (general and special safety trainings),
- Preparation of workplace safety instructions in German and English,
- Safety labelling in German and English,
- Regular monitoring/inspection of workplaces, especially during maintenance periods,
- Hazardous waste disposal.

4.3 Coordination occupational safety

4.3.1 Meetings of occupational safety groups

The aim of both parties is a common approach in regard to safety issues and emergency management. Therefore it is essential that both groups responsible for occupational safety, D5 and SRP, are in close contact and meet on a regular basis,

- To discuss and coordinate safety issues,
- To check and if necessary develop concepts and to coordinate administrative issues regarding access control, tracking system and safety relevant systems (e.g. laser interlock systems),
- To prepare and coordinate safety trainings and
- To prepare/draft safety information and guidelines for the whole European XFEL facility.

4.3.2 Common safety committee

A common safety committee for the whole European XFEL facility needs to be established. This common safety committee meets on a regular basis. The committee will be chaired by the head of the SRP group and consists of all heads of contact persons listed under section 3 as well as of the appointed responsible persons of both partners and, as needed, of the corresponding directors of both

partners. Within this committee upcoming safety issues will be reported and discussed. Safety guidelines and rules of the European XFEL facility will be prepared.

The common safety committee sets up rules of procedure. Within these rules of procedure the approval process of all safety guidelines and rules for the entire European XFEL facility will be defined.

5. Machine and Industrial safety

The industrial safety regulation demands the conduct of periodical check-ups for specific devices and installations, e.g. personal and device safety systems as well as all from DESY installed laser safety systems of the laser labs at the European XFEL facility. All devices/setups requiring check-ups are entered into a common inventory data base of the European XEL GmbH and will be checked according to a defined schedule. DESY makes sure that all devices and systems installed at the European XFEL facility stated above will be checked on a regular basis and, if necessary, will be maintained. This includes the preparation, conduct and documentation of inspection and approval by a certified body.

DESY guarantees the safety of all devices, equipment and machines for the area of supervision 1 as well as all equipment for the operation of the accelerator, as described in annex 1, item 4. This includes the documentation, service, maintenance and inspection according to legal and official requirements.

DESY provides all documents regarding devices, equipment and machines for a central inventory data base to the European XFEL facility.

The machine risk assessment of devices, equipment and machines purchased by DESY is part of this documentation.

6. Access control and tracking systems

The European XFEL facility is equipped with an access control system and with a personnel tracking system. Both are necessary to fulfil the requirements of the official plan approval order. The access control system ensures that trained persons only have access to underground areas. The tracking system allows to track personnel in all underground areas.

6.1 Access control system DACHS (DESY Access Handling System)

6.1.1 Technical operation

The access control system DACHS, operated by DESY, is used by DESY and the European XFEL. One common access card will be used by guests and employees for all sites. The card will only differ in lay-out design of the respective partner and personal status. The electronic access system will operate online as well as offline readers. Online readers or terminals are used in case access control is linked with an interlock system (accelerator, area search required for radiation protection areas, laser laboratories, transponder) and/or in case of archiving of access data or creation of evacuation lists is legally required. When a card is placed at a dedicated online terminal access rights for a defined area of offline readers will be transferred onto the card.

DESY operates the infrastructure (at the moment e.g. IF6040 from Interflex, DARF-DACHS, the DACHS network and all network devices) as well as all online terminals at all sites. DESY maintains the hard ware of the access control system in the area of supervision 1. DESY provides stations to produce access cards to the European XFEL GmbH in Schenefeld. Offices and other doors equipped with an offline reader will be added into the data base by DESY DACHS (at the moment IF 6040, DARF-DACHS).

In case of malfunction regarding the online components first measures like reset of a component will be taken care by European XFEL GmbH. Pursuing repairs will be taken care of by DESY during regular working hours.

DESY is responsible to provide all necessary licences and service/maintenance contracts as well as all equipment for card production like printer including service/maintenance contracts, licences, PCs, monitors, consumables like covers, ribbons, printer ribbons and different blank cards.

6.1.2 Data administration

Access rights and necessary requirements such as training for all areas within the area of supervision 2 (excluding the accelerator area) will be given by employees of the European XFEL GmbH. DESY provides the necessary infrastructure for this purpose.

DESY instructs European XFEL employees in the administration of access rights and necessary requirements. Those trained persons from European XFEL will then be able to instruct internally European XFEL staff and guests.

The European XFEL GmbH is first contact person for all users of the access control system and in case of questions regarding the data management system (first level support).

Resolving more complex problems (second level support) as well as the support of the card issuing points are tasks carried out by DESY.

Required regulations for personal data protection to fulfil the tasks mentions above can be found in the umbrella agreement on data protection.

6.2 Tracking system for underground areas

The tracking system for all underground areas is one requirement of the safety concept in the official plan approval order. It will be used by the group TN and the fire brigade to track persons in real time in case of an emergency. The management of transponders required for the operation of the accelerator and for the access to the experimental hall shall be done by the occupational safety groups according to the areas of supervision stated in Article 4.1.

DESY is responsible for the following tasks:

- Service/maintenance, repair and installation of components: e.g. calibration of HF- and LF tags,
- Exchange of faulty devices or parts,
- Updates of firm- and software,
- Connection to additional visualization clients,
- Software installation for visualization of movement data for the emergency control room XHGATE and the SRP group.

The exchange of batteries for transponders will be done by DESY in supervision area 1.

7. Waste disposal

According to Article 10 of the Operation Agreement waste disposal will be taken care of by DESY within scope of tasks and frame work of this agreement.

8. Emergency management and technical emergency service

The safety concept of the plan approval order specifies the implementation of an “emergency control room technical emergency services”. The emergency control room must be manned at all times, as long as persons are underground (tunnel, shaft buildings, experimental hall). The emergency control room receives incoming emergency calls, alarms which are immediately forwarded to the local fire

brigades. They also initiate first measures in rescue as well as damage prevention until arrival of the external fire brigade.

DESY has a strong collaboration with the local fire brigades, especially the Hamburg fire brigade. A common agreement had been developed during drills and practices with the fire brigades ensuring a well-adapted emergency management. This applies in particular to emergencies in the underground tunnel system. Main objective of this agreement is to profit from those long-term experiences of DESY as well as the existing cooperation with the local fire brigades not only for the Bahrenfeld Site, but also for the Schenefeld and the Osdorfer Born site. DESY is responsible for the manning of the emergency control room and takes over the following tasks for the whole European XFEL facility. These tasks will be carried out by the group DESY SAVE.

The already established processes, scenarios and instructions developed by DESY need to be adapted to the given conditions of the European XFEL GmbH.

Within a regular jour fixe between SAVE, SRP and TS the work will be evaluated, necessary adjustments will be made, further potentials of cooperation will be discussed and fixed. The results will be documented by SRP. The frequency of the jour fixe will be adapted to the needs of the European XFEL GmbH.

On the Bahrenfeld campus the existing infrastructure of DESY will be used. On the Schenefeld campus an emergency control room will be equipped in the entrance building XHGATE. Tasks will be fulfilled by personnel of TN of DESY. Main task of the emergency control room in XHGATE is the permanent presence at the emergency control room, the monitoring and the coordination of emergencies. The emergency control room XHGATE will be staffed with two persons per shift within a three shift operation (24/7).

Furthermore SAVE takes over the gate keeping task for the site access of the European XFEL GmbH facility in Schenefeld and Osdorfer Born.

The entire fire alarm and detection system of the facility of the European XFEL GmbH in Schenefeld and Osdorfer Borsn as well as the 2nd part (western half) of XTL is connected to the emergency control room in Schenefeld.

The DESY emergency control room (SAVE) in Bahrenfeld is connected with the fire alarm and detection system for buildings of the European XFEL GmbH located on the Bahrenfeld site including the first (eastern) part of XTL and is monitored from there. Nevertheless the alarm processing and emergency operations of the DESY emergency control room (SAVE) extend over the entire XTL tunnel. Alarm processing and emergency operations for Schenefeld and Osdorfer Born sites including the photon tunnels will be monitored by the emergency control room XHGATE.

8.1 Services of technical emergency for the entire site of the European XFEL GmbH and the entire facility European XFEL

8.1.1 General tasks of the TN

DESY SAVE provides the complete service “technical emergency” for the whole site of the European XFEL GmbH and the whole European XFEL facility. Essential tasks will be listed hereinafter and will be specified in detail within given written instructions of the European XFEL GmbH. The DESY instructions will be adapted to the conditions of the Schenefeld site in coordination with the European XFEL GmbH and DESY SAVE.

DESY provides the following services to European XFEL GmbH:

a) Emergency Management

- Monitoring and handling of all incoming emergencies like fire alarm, first aid, technical emergencies etc.
- Duty as in-house paramedic or first aider in case of emergencies,
- Coordination and instruction of local fire brigades and ambulances,
- Monitoring of all fire detection alarms (excluding alarms of the facility management control system). Forwarding/processing of alarms and contact of on-duty personnel according to specification (emergency plan),
- Provision of respiratory protective devices, call for tender and organisation of external check-ups as well as cleaning and testing in own respiratory protection workshop,
- Preparation and update of alarm charts and alarm texts including important information for the different sites during operation, update of fire brigade plans,
- Update of rescue and emergency plans,
- Determination of assembly points in coordination with SRP,
- Preparation of plans for the fire brigade giving locations of hydrants for water supply,
- Installation and operation of all necessary installations for the TN, including furniture, vehicle fleet, equipment, clothing, and computing for the emergency control room,
- Development of deployment scenarios and coordination with emergency response of the authorities,

- Organisation and performance of evacuation/fire alarm drill in cooperation with SRP.

b) Maintenance/service and check-up (site specific fire protection)

- Regular inspections of all portable fire extinguishers, water hydrants, fire protection doors, surface hydrants, underground hydrants and hold-open systems for fire protection doors by a certified body,
- Regular functional testing and corresponding documentation for all extinguishing and protection systems,
- Control and observation of manometers, temperature displays, filling levels and other operational equipment (excluding equipment and installations monitored by the facility management system),
- Assignment and supervision of external companies for pressure testing of fire extinguisher containers and maintenance/service of the fire extinguishing systems of the buildings,
- Procurement / installation / replacement and regular check of first aid material and equipment,
- Regular functional test and maintenance/service of rescue vehicles for tunnel area.

c) Operation of the fire detection system

The operation of the fire detection system at DESY and European XFEL GmbH follows the norm DIN 14675 and DIN VDE 0833.

- Quarterly inspection of fire detection systems (DIN VDE 0833) (three times per year),
- Preparation and observation of the annual service/maintenance and check (4th inspection) of maintenance company,
- Commissioning fault elimination,
- Preparation, performance, coordination and evaluation of the call for tender for the framework agreement for the alarm technologies,
- Monitoring of budget, calculation and processing of orders under the framework agreement,
- Commissioning, preparation, performance and documentation of inspections and approvals by certified bodies for alarm technology according to the inspection directive,

- Contribute to identification and linking of other alarm systems to the fire detection system. Further requirements of the European XFEL GmbH will be agreed on separately.

d) Primary activities/tasks, inspection tours

- Regular inspection tours of the whole premises,
- General safety inspection as well as control of rescue and emergency escape routes, report of new special hazards to the European XFEL GmbH, check and ensure functioning of safety equipment,
- Examination, supervision, monitoring and organisation of permits for work involving an increased risk of fire (hot work permit),
- Mounting and dismounting of barriers in coordination with TS and SRP,
- Support in de-icing icy areas, in addition to the regular winter services organised by TS,
- Control and documentation of bake out works,
- Control and maintenance of safety lighting devices,
- Any kind of help e.g. rescuing persons trapped in the elevator, general incidences, in special cases provision of fireguards,
- Connection of gas bottles containing toxic gases to gas supply.

e) Site access (protection and organisation of access to the Schenefeld and Osdorfer Born site)

- Registration of visitors and guests at arrival (beyond regular working hours of administration),
- Directions for new employees, guests and deliveries,
- Issuing of access control cards at arrival for user beyond regular working hours,
- Beyond regular working hours and during weekends issuing of documents to users and guests, which have been deposited by the User Office or the Human Resources Department of the European XFEL GmbH,
- Issuing of self-rescue devices for tunnel access,

f) Provision of a fire prevention officer for the European XFEL GmbH (see chapter 8.2)

DESY provides all personnel, administrative, conceptional and operational requirements to ensure that all tasks of the TN within the frame of this contract can be provided.

The SRP group will cooperate in the preparation of operational concepts and workplace safety instructions of the emergency management for the European XFEL facility and will participate in coordination and control of activities between the European XFEL group TS and DESY SAVE.

8.1.2 Equipment of the control room/gatehouse XHGATE on the Schenefeld campus

In-kind contributions of DESY within WP 36 during construction of the facility include provision and equipment of work places in the emergency control room to monitor and control the operation of the fire alarm system. This includes adequate work places with necessary communication equipment, computer and visualisation techniques.

Other infrastructure like e.g. process control equipment for gates/accesses, barriers, video etc. will be provided by the European XFEL GmbH.

The European XFEL GmbH will equip in the XHGATE building a social room with a kitchen.

8.1.2.1 Personnel

Manning of the control room XHGATE with two DESY employees of TN per shift will be ensured at all times. The control room is manned at all times with one person permanently monitoring the fire alarm system and taking care of gatekeeper services. The second person will be all over the sites most of the time to fulfil the other tasks agreed on. In case of illness, fluctuation or unforeseen events it might be possible that only one person will be on duty. In that case DESY ensures to man the emergency control room XHGATE with two persons within 2-3 hours. DESY has the right to refer to staff from external companies if necessary. In this case it must be ensured that at least one employee at the control room XHGATE will be from TN.

When staffing the control room one person will always be in the lead and function as first contact person.

The qualification requirements of the employees at SAVE are the same, so all employees of SAVE can either work in Bahrenfeld or in Schenefeld.

For particular tasks, requiring special expertise, some DESY employees will be qualified and officially appointed (sprinkler guard (Sprinklerwart), check of fire extinguishers, representative according to

Medical Devices Act (Medizinproduktegesetz) etc.). If necessary appointments for the European XFEL GmbH will be coordinated by the SRP group.

Employees of TN speak German and have at least knowledge of the English language level A2 or more.

In case of an emergency they have the authority to give instructions.

8.1.2.2 Working clothes/Personal protective equipment

Varying from working clothes on the Bahrenfeld campus staff of the emergency control room XHGATE will wear working clothing provided by the European XFEL GmbH.

In case of a fire alarm special protective equipment will be worn. This ensures that the employees of TN are easily identifiable by staff and external forces of the fire brigade as contact persons.

8.1.3 Access rights Technical Emergency Services (TN) / execution of property rights

In order to fulfil the tasks the TN needs to have access to all parts of the whole site. This is necessary for:

- carrying out inspection tours,
- locating unique circumstances on site,
- the acquirement of knowledge regarding special hazardous situations in case of an emergency,
- for emergency and rescue operations.

Information regarding special hazards or changes will be provided by TS and SRP during regular meetings.

To fulfil the tasks DESY's Technical Emergency Services (TN) has the authority to exercise property rights beyond normal working hours for the European XFEL facility and the facility site of the European XFEL GmbH.

8.1.4 Reporting, communication

During every shift the TN keeps a log file where emergency responses, deficiencies and other special incidents will be documented. The Management Board and SRP have to be informed immediately in case of an emergency response. In all other cases only SRP needs to be informed right away. These

notes need to be accessible for SRP and TS at all times. On demand a copy needs to be handed out to SRP and TS.

In case of emergency response, deficiencies and other special incidents a standardised separate report of DESY will be prepared and immediately send to SRP and to the respective supervisors of persons or areas affected.

In an emergency situation a chain of information according to the European XFEL emergency management will be started. Incidents like fire alarm, first aid response, alarm of external forces etc. will be recorded by DESY and statistically evaluated. The results will be presented by DESY to the European XFEL GmbH within the first quarter of the following year.

8.1.5 Education, training

DESY is responsible for the education and training of all employees of TN. All new employees of TN receive an internal basic training including final exams. After that they will be trained for four and a half months in all areas of service and at all sites at the individual emergency control rooms (“training on the job”). Training includes the DESY campus as well as the entire European XFEL facility. For tasks in the area of TN regular theoretical and practical training is required, these will be defined in an annual plan. Those trainings will be provided by external and internal trainers.

8.2 Fire Protection Officer

DESY provides a fire protection officer for the European XFEL GmbH. The fire protection officer will be responsible for assigned areas and installations of the European XFEL GmbH. The European XFEL GmbH will officially appoint the fire protection officer.

DESY ensures that the fire protection officer has the required knowledge according DGUV Information 205-003 “Tasks, Qualifications, Training and Appointment of Fire Protection Officers” of the accident insurer.

The fire protection officer provided by SAVE will be present at all safety monitoring tours of the assigned area.

The fire protection regulation for the European XFEL GmbH will be prepared by the European XFEL GmbH with the support of the fire protection officer of DESY appointed by European XFEL GmbH and the fire protection officer of the European XFEL GmbH.

8.3 Maintenance contracts, Service and New installation in the fire protection area

All maintenance contracts, services and new installations for fire alarms and fire prevention will be commissioned by European XFEL GmbH.

Not all services that are required for a seamless commissioning of testing/works (systems subject to monitoring and testing) can be ensured by SAVE. Therefore external companies or experts must be put into charge.

These services include:

- Certification by an expert,
- Maintenance of fire detection systems,
- Maintenance of extinguishing systems,
- Repair of faults in the fire detection system,
- Special checks on fire extinguishers, etc.

Those services will be prepared, coordinated and carried out by SAVE, the ordering of services will be carried out by European XFEL GmbH.

The fire detection system plays a special role. Every four years (legal requirement) the frame contract for “extension, repair and maintenance works of the alarm technologies” must be tendered at DESY. All required works so called call-ups are initiated from this frame contract.

The alarm technologies of the European XFEL GmbH that SAVE is responsible for will be included in the scope of the tender.

Established in German and English in Hamburg and Schenefeld on_____(date) in duplicate.

Signed for and on behalf of **DESY**:

Professor Dr. Helmut Dosch	Christian Harringa
Chairperson of the Directorate	Administrative Director

Signed for and on behalf of the **European XFEL GmbH**:

Professor Dr. Robert Feidenhans'l	Dr. Claudia Burger
Managing Director and Chairperson of the Management Board	Managing and Administrative Director

Annex 4

Costs/Reimbursements and Procurement Process

1. Costs

1.1. The costs incurred in connection with the performance of the Agreement are presented in a format that is structured as agreed upon by DESY and the European XFEL GmbH and set out in Appendix 1. These costs are classified as either direct costs or overhead costs.

1.2. In accordance with Art. 15.1.2 of the Operation Agreement (OpA), direct costs are applicable directly to the services rendered and can sensibly be individually calculated and reimbursed. From the perspective of the European XFEL GmbH, they are basically subdivided into 3 types of costs: personnel expenses, recurrent expenses, and capital expenditures. For the calculation of recurrent expenses for services rendered in certain cases prices are valid, that have been agreed on by the parties before the services completion.

1.3. Characteristics of overhead costs in accordance with Art. 15.1.3 are:

- Only indirectly attributable to individual cost units
- Incurred in direct relation to direct costs
- Allocated to cost centres (work packages) and charged via fixed overhead rates based on FTEs (per cost centre / work package)

1.4. Art. 15.1.3 OpA requires DESY to calculate reimbursable overhead costs based on the cost centres listed in Appendix 2. The calculation shall be based on the amounts underlying the most recent audited financial statements of DESY plus a growth of initially 2.5% p.a.. Starting with the budget for 2019, the fixed growth rate of 2.5% p.a shall be replaced by the average growth rate (in percent p.a.) of the respective amounts underlying the last three audited financial statements of DESY.

An overhead rate is derived from the total reimbursable overhead costs and charged, in addition to personnel expenses, on the FTEs required for the services to be rendered by DESY under the contract. Reimbursable overhead costs shall be adjusted by overhead-reducing income and by expenses that are not attributable to the services covered by the agreement.

The overhead rate is calculated by dividing reimbursable overhead costs by the number of Campus FTEs as determined using the following formula: The number of Campus FTEs is

calculated as the current number of DESY FTEs in Hamburg as of 31 December of the immediately preceding year plus a fixed number of 500 guest scientists plus a fixed number of 50 service providers.

The number of Campus FTEs is reviewed annually; however, the fixed numbers used for guest scientists and service providers are left unchanged.

2. Budget

2.1. Budget preparation comprises the process of preparing the medium-term financial estimate and the operating budget in connection with the performance of the Agreement. A tabular summary of the budgeting process is set out in Appendix 3. Each year, the European XFEL GmbH sets a specific schedule for the budgeting process in cooperation with DESY.

2.2. The medium-term financial estimate covers a period of five years from the current financial year. The level of detail of the medium-term financial estimate is limited to the categories personnel expenses, recurrent expenses and capital expenditures by “major activity” (see budget table in Appendix 4). The medium-term financial estimate is prepared using a rolling process by which the financial estimate is updated annually and is based on the rough operating plan agreed on by the Operation Board.

In a semi-annual cycle including appropriate lead times, the Operation Board, the Administrative Board, and the Governing Board each agree on the medium-term financial estimate in connection with the performance of the Agreement in time for the meetings of the Administrative and Finance Committee (AFC) and the Council. The Management Board of the European XFEL GmbH submits the medium-term financial estimate to the AFC at its meeting during the first half of the year, and, once the AFC has reviewed it, submits it to the Council for a decision at the meeting during the second half of the year.

2.3. The process for preparing the operating budget in connection with the performance of the Agreement covers a period of two years prior to the financial year and ends with the cost follow-up in ongoing operations that are covered by the contract.

Based on the operating plan for operating year X, which shall be agreed upon by the Operation Board by the end of the 3rd quarter of year X-2, an operating budget detailed by personnel expenses, recurrent expenses, and capital expenditures “by work package” is agreed upon by the Administrative Board and, on a timely basis, the Governing Board and approved by the European XFEL GmbH Management Board by the end of year X-2 before being provided to the AFC during the 1st half of year X-1 as part of the “Provisional Annual Budget Proposal”. By the

end of the 1st half of year X-1, DESY prepares the operating budget at the level of detail of the budget table (Appendix 5). The Operation Board, the Administrative Board and the Governing Board are informed of any changes to the operating budget arising during year X-1. Once the Governing Board has decided on the finally coordinated budget in connection with the performance of the Agreement and the AFC has reviewed the budget proposal, the European XFEL GmbH Management Board submits it to the Council for a decision during the 4th quarter of year X-1.

The costs included in the proposed budget shall be reasonable and related to the services in the scope of the Agreement. They shall be explained on request.

2.4. The price escalation model referred to in Art. 15.2.3 OpA is agreed as follows:

Actual figures and historical experience serve as the starting point for preparing the budget. In addition to changes in the content, the following price escalation rates shall be included in deriving the budgeted amounts:

Each year, personnel expenses shall be adjusted by a percentage calculated as the average of collectively bargained wage increases under the applicable collective bargaining agreement for the last four years prior to the date the first draft of the budget is prepared. The resulting percentage shall be rounded up to the nearest half or whole percentage.

The cost of electrical power and helium shall be adjusted by the percentage recommended for electrical power and helium, respectively, for the relevant year by the Helmholtz Association senate in its programme-oriented funding process.

The remaining costs shall be adjusted annually by the percentage recommended for recurrent expense and capital expenditures for the relevant year by the Helmholtz Association senate in its programme-oriented funding process.

If and when sufficiently reliable information regarding actual changes in costs becomes available, such as wage increases arising from collective bargaining agreements concluded, this information shall be reflected in the above price escalation model.

3. Budget deviations

3.1 Should it appear during a reporting period that actual costs incurred will exceed the budgeted amounts agreed upon between the parties prior to the beginning of the year, DESY will inform the European XFEL GmbH Management Board without delay.

Cost overruns as contemplated here include all costs exceeding budgeted costs in accordance

with the following premises: Negative budget variances in the categories “recurrent expenses”, “capital expenditures” as well as negative budget deviations not exceeding 5% in the “personnel expenses” category (except for electrical power and R&D expenses) can be offset by cost savings in other categories, and are not considered cost overruns if this is the case. Such offsetting is only permitted provided the services set out in the budget are still rendered in full. As a basic principle, shifts within the same category are not considered cost overruns. However, budget deviations with respect to electrical power and R&D expenses are not eligible for the offsetting mechanism set out above.

3.2 By the 5th day of the month following receipt of the information regarding cost overruns (No. 3.1), the Operation Board shall investigate the cost overruns as required by Art. 15.2.7 OpA and provide a written report to the Administrative Board. The report shall explain what caused the cost overruns. In addition, the report shall demonstrate that the cost overruns objectively have been or will be caused by the rendering of services to European XFEL GmbH. Finally, the report shall point out potential countermeasures suitable for preventing the cost overruns and meeting the budget. Additional experts can be consulted as necessary on a case-by-case basis. By the 10th day of the month following receipt of the information regarding cost overruns from DESY (No. 3.1), the Administrative Board comments on the Operation Board’s report at its regular meeting and may recommend additional countermeasures in cooperation with the Operation Board. By the 20th day of the month following receipt of the information and based on the Operation Board’s and Administrative Board’s reports and comments, if available, the Governing Board comes to a decision regarding appropriate measures to be taken in accordance with Art. 12.1.1. The Operation Board and the Administrative Board as well as the finance departments and the departments affected by the measures are informed of the decision within five business days. The Chair of the European XFEL GmbH Council may be consulted to help resolve any differences of opinion within the Governing Board regarding appropriate measures.

4. Reporting and controlling

4.1 As part of the detailed regular reporting process, Art. 15.3.2 requires DESY to provide monthly reports on reimbursable and administered costs incurred in connection with rendering services to the European XFEL GmbH. These reports shall be submitted by the 13th day of the month following the reporting period and shall be discussed by representatives of the DESY and European XFEL GmbH financial departments at a regular meeting by the 15th day of such following month. The monthly reports include an overview of costs already incurred, costs committed to, and a forecast with respect to meeting budgeted amounts for the current financial

year. If cost overruns become apparent in the forecast for the year contained in the monthly report, the report shall include detailed information regarding their amount and an assessment as to the causes of the cost overruns. The granularity of the monthly reports corresponds to that of the operating budget table (see Appendix 5).

4.2 In addition to the monthly reports, DESY provides the European XFEL GmbH with the journal entries electronically by work package and cost type for further processing.

4.3 On a case-by-case basis, DESY provides further detail on specific costs on request to the extent that doing so does not violate any contractual agreements with third parties or mandatory legal or regulatory requirements, especially data protection requirements.

4.4 The regular reporting process includes specifying total personnel expenses as well as the number of FTEs by work package and month.

4.5 The European XFEL GmbH is notified of changes in personnel expenses on a timely basis and no later than 30 days before the change becomes effective.

4.6 DESY prepares a report on the expenses of the prior year annually by the end of February to facilitate an analysis of total personnel expense. In any event, this report sets out the number of FTEs by pay group and pay level under the collective bargaining agreement. Any increases in personnel expenses shall be explained separately for pay scale increases and other causes. For the annual analysis of the personnel expense, the template attached as Appendix 6 shall be used.

This reporting requirement is only effective to the extent it does not violate any mandatory legal or regulatory requirements, especially data protection requirements, or works agreements.

5. Invoicing process

5.1 Personnel expenses and overhead costs

The personnel expenses and overhead costs are defined as the costs of the provision of the personnel necessary for the technical operation of the accelerator, including radiation protection, and all other parts of services covered by the Agreement as set out in the specification of services.

Personnel expenses may be subject to change during the year (due to wage adjustments, changes in the legal environment, etc.).

5.2 Electrical power

While the supply of electrical power for the operation of the European XFEL facility and the invoicing and administration of the related expenses is covered by this Operating Agreement as part of the overall performance, the related details are governed by a separate agreement between the parties.

5.3 Recurrent expenses and capital expenditures

The current reduction of approximately 5% of DESY's claims for input tax credits results in additional costs of just under 1% of the net purchase price for purchased goods and services for which DESY claims the input tax credit. The adverse economic impact on the European XFEL GmbH resulting from this cost factor in connection with DESY's invoicing of services to European XFEL GmbH shall not exceed 100 k€ p.a. (representing a net purchase price of 10 M€). Should this amount be exceeded, the parties will come to a further agreement on this issue.

5.4 Invoicing

The costs according No. 5.1 to 5.3 will be invoiced by monthly instalment invoices plus statutory VAT during the year, until the 15th day of the respective following month. The partial payments are based on the actual costs booked, budgeted overhead costs and agreed prices until the appointed date. Separate supporting vouchers are provided on request for the instalment invoices. If the respective instalment invoice or final invoice includes costs of pre-previous months, for all these costs individual receipts and explanations have to be provided.

The invoice amount is payable in full within 14 days from the date of issue.

An advance payment of 1/12 of the reimbursable costs on the basis of the agreed budget plus statutory VAT has to be paid to DESY immediately after DESY in its role as a shareholder paid the first rate of the contribution of the respective annual budget to the European XFEL GmbH. The advance payment will be deducted on the invoice of the partial payment of December.

Once the actual invoiceable services / expenses have been determined (while maintaining the budgeted overhead rate per FTE and the agreed prices), the final invoice is issued once a year by 15 February of the following year. The final invoice includes the booked costs and furthermore an estimate of the costs which will be invoiced to DESY after the due date of the final invoice, the estimate being based on the principles of commercial law. To the extent that both parties have previously agreed in the process required by No. 3.2 that the European XFEL GmbH is responsible for absorbing any cost overruns included in the balance receivable or payable, that balance receivable or payable is paid within 14 days after invoicing.

Mid of April the concrete proof of the costs of the estimate will be presented. If the proofed amount is below the estimate, a credit note will be issued for the following annual budget. An additional

charge in case the proofed amount is above the estimate is excluded.

Accelerator development in the context of the R&D program according Art. 8 of the OpA will be reported and invoiced analogously.

6. Procurement process

Procurements to facilitate the rendering of DESY's services covered by the Agreement are prepared and processed by DESY.

For procurements with a net purchase price of a maximum of less than 100 k€ per order, the limit being agreed by both parties in advance, DESY enters into the necessary agreements in its own name and on behalf of the European XFEL GmbH unless otherwise agreed between the parties in a particular case. The same applies to withdrawals of items from the DESY warehouse and collective purchases not legally separable (e.g. for certain maintenance services or the electrical power for the cryo facility as well as procurements of items from e.biss supplier catalogues).

For procurements with a net purchase price equal to or higher than the limit per order, the European XFEL GmbH enters into the necessary agreements in its own name and on its own behalf unless otherwise agreed between the parties in a particular case. The procurement regulations issued by the European XFEL GmbH Council (specifically the Procurement Rules and Art. 5 of the Financial Rules) shall be complied with for these transactions. In addition, the procurement documents prepared by DESY in its data processing systems shall be provided to the European XFEL GmbH ready for signature.

The staff of both parties' departments responsible for procurements will agree in writing on detailed procedural rules for implementing the key features outlined above, particularly with respect to embedding the Procurement and Financial Rules for procurements in the name of the European XFEL GmbH in the most resource-conserving manner possible.

7. Revision

DESY and the European XFEL GmbH intend to evaluate the key features of the invoicing and procurement process outlined above until the end of the year 2019 and to decide on any adjustments.

Established in German and English in Hamburg and Schenefeld on_____(date) in duplicate.

Signed for and on behalf of **DESY**:

Professor Dr. Helmut Dosch	Christian Harringa
Chairperson of the Directorate	Administrative Director

Signed for and on behalf of the **European XFEL GmbH**:

Professor Dr. Robert Feidenhans'l	Dr. Claudia Burger
Managing Director and Chairperson of the Management Board	Managing and Administrative Director

Appendix 1: Preliminary structure work packages

Appendix 2: Relevant cost centres overheads

Appendix 3: Tabular summary of the budgeting process

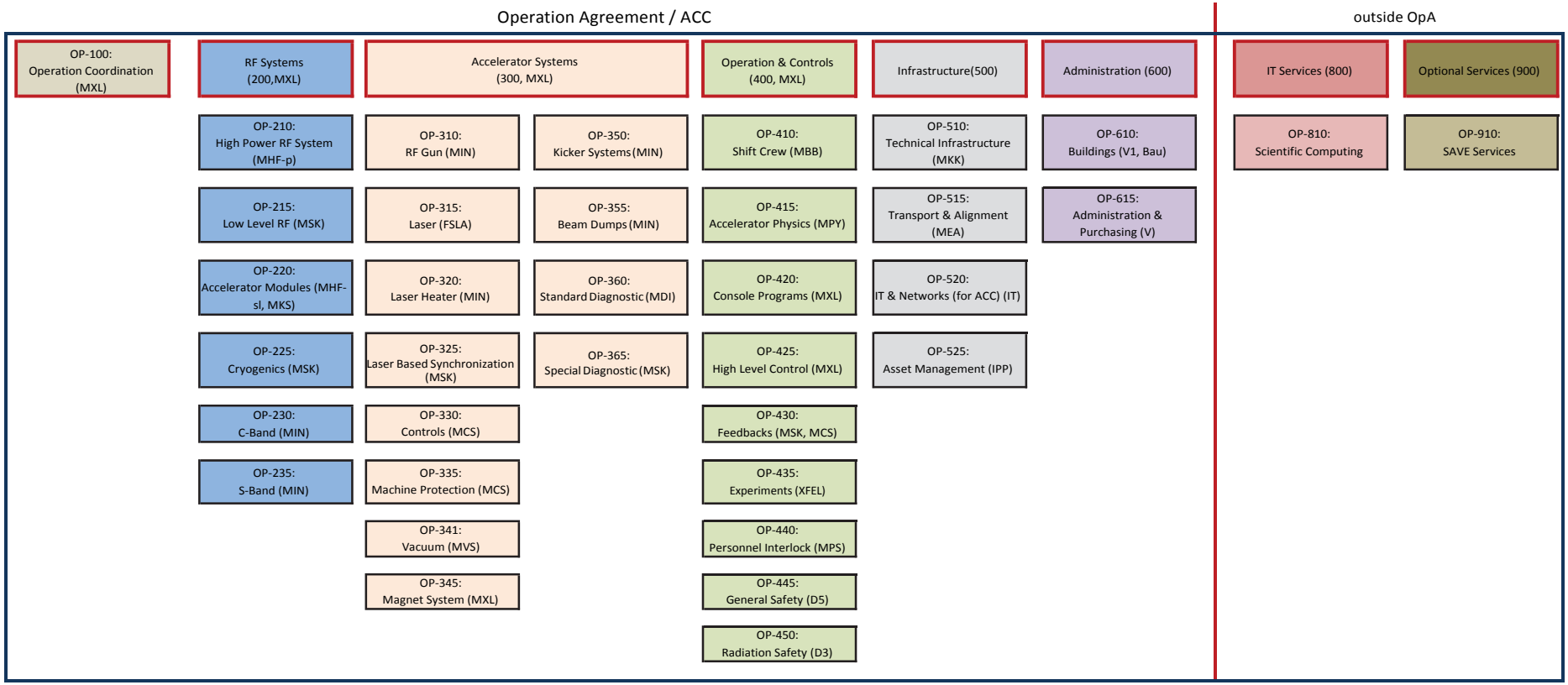
Appendix 4: Structure of medium-term financial estimate

Appendix 5: Structure of operating budget and reports

Appendix 6: Template for the annual analysis of the personnel expense

Operation Agreement - Annex 4
Appendix 1
Workpackage structure

DESY cost centre structure for the operation of the European XFEL accelarator



Operation Agreement - ANNEX 4
Appendix 2 relevant DESY costs centres for the calculation of the overheads per FTE

No.	Category	Name	Cost centre	Description / current evaluation	DESY Code	Area	POF	POF II	Overhead DESY	Overhead XFEL	Overhead XFEL II	Remark
5	LK IV	Sonderaufgaben	209	EDU-SP Physik begreifen	Gemeinkosten	FH-Bereich	LK41113	411	x	x	1	
14	LK IV	Sonderaufgaben	20904	Detektor-Projekte an Schulen	Gemeinkosten	FH-Bereich	LK41113	411	x	x	1	
16	LK IV	Sonderaufgaben	35301	ZMAS Duale Studenten	Gemeinkosten	FS-Bereich	LK41111	411	x	x	1	
17	LK IV	Sonderaufgaben	52002	Ausbildung Verwaltung	Gemeinkosten	V-Bereich	LK41112	411	x	x	1	
33	IK V	Zentrenltg., Mgmtunterst.	100	GD-VORSITZENDER/DIRE	Gemeinkosten	V-Bereich	IK51111	511	x	x	9	50%
34	IK V	Zentrenltg., Mgmtunterst.	101	DIB-DIREKTORIUMSBUER	Gemeinkosten	V-Bereich	IK51111	511	x	x	9	50%
35	IK V	Zentrenltg., Mgmtunterst.	102	D2 INNENREVISION	Gemeinkosten	V-Bereich	IK52111	521	x	x	1	
38	IK V	Zentrenltg., Mgmtunterst.	110	BR BETRIEBSRAT	Gemeinkosten	V-Bereich	IK53111	531	x	x	1	
39	IK V	Zentrenltg., Mgmtunterst.	111	FV FRAUENVERTRETUNG	Gemeinkosten	V-Bereich	IK53131	531	x	x	1	
42	IK V	Zentrenltg., Mgmtunterst.	115	Campusbewirtschaft.	Gemeinkosten	V-Bereich	IK52191	521	x	x	1	
43	IK V	Zentrenltg., Mgmtunterst.	190	VERWALTUNGSRAT+WISSE	Gemeinkosten	V-Bereich	IK52141	521	x	x	9	50%
44	IK V	Zentrenltg., Mgmtunterst.	191	DESY-GREMIEN WR,WA	Gemeinkosten	V-Bereich	IK52142	521	x	x	9	50%
45	IK V	Zentrenltg., Mgmtunterst.	200	FH-LEITUNG	Gemeinkosten	FH-Bereich	IK51141	511	x	x	9	50%
51	IK V	Zentrenltg., Mgmtunterst.	500	V - Leitung	Gemeinkosten	V-Bereich	IK51161	511	x	x	1	
52	IK V	Zentrenltg., Mgmtunterst.	520	V2-PERSONALABTEILUNG	Gemeinkosten	V-Bereich	IK54121	541	x	x	1	
53	IK V	Zentrenltg., Mgmtunterst.	530	V3-FINANZABTEILUNG	Gemeinkosten	V-Bereich	IK54131	541	x	x	2	
56	IK V	Zentrenltg., Mgmtunterst.	550	V5-RECHTSABTEILUNG	Gemeinkosten	V-Bereich	IK52131	521	x	x	1	
58	IK V	Zentrenltg., Mgmtunterst.	570	VQ Geschäftspr./Qual	Gemeinkosten	V-Bereich	IK54171	541	x	x	1	
59	IK V	Zentrenltg., Mgmtunterst.	571	VDV Datenv. Verwalt.	Gemeinkosten	V-Bereich	IK54171	541	x	x	1	
60	IK V	Zentrenltg., Mgmtunterst.	590	VSB-SOZIALBERATUNG	Gemeinkosten	V-Bereich	IK53121	531	x	x	1	
122	IK V	Zentrenltg., Mgmtunterst.	52001	V2-MAG-Trainings	Gemeinkosten	V-Bereich	IK54121	541	x	x	1	
128	IK V	Zentrenltg., Mgmtunterst.	53004	V3-Proj. Leistungsab	Gemeinkosten	V-Bereich	IK54131	541	x	x	1	
129	IK V	Zentrenltg., Mgmtunterst.	53004	V3-Proj. REMIS, Reorganisation SAP	Gemeinkosten	V-Bereich	IK54131	541	x	x	1	
140	IK V	Zentrenltg., Mgmtunterst.	60099	M-LEITUNG	Gemeinkosten	M-Bereich	IK51121	511	x	x	9	reduced by direct reimb.
180	IK VI	Wissenschftl. Infrastr.	289	L Bibliothek	Gemeinkosten	FH-Bereich	IK64111	641	x	x	2	
181	IK VI	Wissenschftl. Infrastr.	290	L Dokumentation	Gemeinkosten	FH-Bereich	IK64111	641	x	x	2	
185	IK VI	Wissenschftl. Infrastr.	340	IT INFORMATIONTECHN	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
186	IK VI	Wissenschftl. Infrastr.	345	IT/TK-KABELTRUPP	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
187	IK VI	Wissenschftl. Infrastr.	346	IT/TK-Fernspr./Uhren	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
195	IK VI	Wissenschftl. Infrastr.	359	ZM 4 TISCHLEREI	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
198	IK VI	Wissenschftl. Infrastr.	370	ZM 2 HALBZEUGLAGER	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
199	IK VI	Wissenschftl. Infrastr.	371	ZM 1 PAUS/REPROANL.	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
212	IK VI	Wissenschftl. Infrastr.	508	INNERBETRIEBL. FORTB	Gemeinkosten	FH-Bereich	IK64121	641	x	x	1	
231	IK VI	Wissenschftl. Infrastr.	3003	IPP TUOVI	Gemeinkosten	FH-Bereich	IK62151	621	x	x	1	
233	IK VI	Wissenschftl. Infrastr.	3005	IPP ASSET MANAGEMENT	Gemeinkosten	FH-Bereich	IK62151	621	x	x	1	
234	IK VI	Wissenschftl. Infrastr.	3006	IPP Aktivitäten	Gemeinkosten	FH-Bereich	IK62151	621	x	x	1	
253	IK VI	Wissenschftl. Infrastr.	10399	D3 STRAHLENSCHUTZ	Gemeinkosten	M-Bereich	IK63131	631	x	x	5	
261	IK VI	Wissenschftl. Infrastr.	13590	ZM 4 TISCHLEREI	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
311	IK VI	Wissenschftl. Infrastr.	35001	ZM MB	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
312	IK VI	Wissenschftl. Infrastr.	35005	ZM-Infrastruktur	Gemeinkosten	FS-Bereich	IK61111	611	x	x	1	
315	IK VI	Wissenschftl. Infrastr.	43400	IT-Pool-Allgemein	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
322	IK VI	Wissenschftl. Infrastr.	43421	IT-Desktop	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
323	IK VI	Wissenschftl. Infrastr.	43422	IT-Unix	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
325	IK VI	Wissenschftl. Infrastr.	43424	IT-USG	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
326	IK VI	Wissenschftl. Infrastr.	43425	IT-SAP	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
327	IK VI	Wissenschftl. Infrastr.	43426	IT-Datennetze	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
328	IK VI	Wissenschftl. Infrastr.	43427	IT-Anwendungssoftwa	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
329	IK VI	Wissenschftl. Infrastr.	43428	IT-Schulung	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
330	IK VI	Wissenschftl. Infrastr.	43429	IT-Allgemein	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
331	IK VI	Wissenschftl. Infrastr.	43430	IT-Telekommunikatio	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
333	IK VI	Wissenschftl. Infrastr.	43432	IT-Windows-NT	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
334	IK VI	Wissenschftl. Infrastr.	43433	IT-Datennetze exter	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
335	IK VI	Wissenschftl. Infrastr.	43434	IT WWW (world wide	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
338	IK VI	Wissenschftl. Infrastr.	43437	IT Printing	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
339	IK VI	Wissenschftl. Infrastr.	43438	IT Mail-Dienste	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	

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No.	Category	Name	Cost centre	Description / current evaluation	DESY Code	Area	POF	POF II	Overhead DESY	Overhead XFEL	Overhead XFEL II	Remark
340	IK VI	Wissenschftl. Infrastr.	43439	IT Meeting Support	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
342	IK VI	Wissenschftl. Infrastr.	43442	IT Mass Storage	Gemeinkosten	FH-Bereich	IK62111	621	x	x	2	
347	IK VI	Wissenschftl. Infrastr.	43447	IT Dienste für M	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
348	IK VI	Wissenschftl. Infrastr.	43448	IT Dienste für V	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
350	IK VI	Wissenschftl. Infrastr.	43450	IT RZ-Datennetz hochperformant	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
351	IK VI	Wissenschftl. Infrastr.	43451	IT Netz u. Rechner Sicherheit	Gemeinkosten	FH-Bereich	IK62111	621	x	x	1	
358	IK VII	Basisbetrieb	105	D5 SICHERHEIT	Gemeinkosten	V-Bereich	IK73121	731	x	x	2	
359	IK VII	Basisbetrieb	107	D4 SICHERHEIT/DATEN	Gemeinkosten	V-Bereich	IK73111	731	x	x	1	
361	IK VII	Basisbetrieb	120	BA BETRIEBSARZT	Gemeinkosten	V-Bereich	IK73131	731	x	x	1	
362	IK VII	Basisbetrieb	362	ZM5 BETRIEBSHANDW.	Gemeinkosten	FS-Bereich	IK71111	711	x	x	1	
364	IK VII	Basisbetrieb	364	BAU BAUBüRO	Gemeinkosten	V-Bereich	IK71111	711	x	x	1	
365	IK VII	Basisbetrieb	365	ZTS TECHN.NOTDIENST	Gemeinkosten	V-Bereich	IK71131	711	x	x	1	
366	IK VII	Basisbetrieb	366	BAU AUSSENANLAGEN	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
367	IK VII	Basisbetrieb	367	BAU INST.uLABORGEB.	Gemeinkosten	V-Bereich	IK71111	711	x	x	10	
372	IK VII	Basisbetrieb	510	V1 ALLGEMEINE ABTEIL	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
373	IK VII	Basisbetrieb	511	V1 Fahrbe.+Fahrzeugp	Gemeinkosten	V-Bereich	IK72111	721	x	x	5	
374	IK VII	Basisbetrieb	512	V1 FOTOLABOR	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
376	IK VII	Basisbetrieb	514	V1 DRUCKEREI	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
377	IK VII	Basisbetrieb	515	V1 FERNSPRECHZENTRAL	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
378	IK VII	Basisbetrieb	516	V1 HAUSMEISTER + REI	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
379	IK VII	Basisbetrieb	517	V1 BEWACHUNGS-+ PFöR	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
380	IK VII	Basisbetrieb	518	V1 FOTOKOPIERSTELLE	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
381	IK VII	Basisbetrieb	519	V1 DESY-FAHRRAEDER	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
386	IK VII	Basisbetrieb	580	KANTINE	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
389	IK VII	Basisbetrieb	589	Automaten-Kantine	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
416	IK VII	Basisbetrieb	5134	V1 Raumvermietungen	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
417	IK VII	Basisbetrieb	5135	V1 DESY-Kindergarten	Gemeinkosten	V-Bereich	IK72111	721	x	x	1	
442	IK VII	Basisbetrieb	11051	D5 PCB-Entsorgung	Gemeinkosten	V-Bereich	IK73121	731	x	x	2	
443	IK VII	Basisbetrieb	11052	D5 Sondermüll-Entsor	Gemeinkosten	V-Bereich	IK73121	731	x	x	2	
444	IK VII	Basisbetrieb	12001	Gesundheitsmanag.	Gemeinkosten	V-Bereich	IK73131	731	x	x	2	
499	IK VII	Basisbetrieb	22352	Gebäude 03 Laborgeb.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
500	IK VII	Basisbetrieb	22379	Gebäude 14 Chemiehal	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
501	IK VII	Basisbetrieb	22380	Gebäude 14 Anbau	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
502	IK VII	Basisbetrieb	22410	Gebäude 01b Aufstock	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
503	IK VII	Basisbetrieb	23623	Gebäude 25b Labor+Bü	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
506	IK VII	Basisbetrieb	23771	Gebäude 01 Kontrolls	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
507	IK VII	Basisbetrieb	23772	Gebäude 10 Werkstatt	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
508	IK VII	Basisbetrieb	23773	Gebäude 11 Warenwirt	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
509	IK VII	Basisbetrieb	23774	Gebäude 19 Tischlere	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
510	IK VII	Basisbetrieb	23775	Gebäude 09 Kantine	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
511	IK VII	Basisbetrieb	23776	Gebäude 05 Vorlesung	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
512	IK VII	Basisbetrieb	23777	Gebäude 02 Laborgebä	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
513	IK VII	Basisbetrieb	23778	Gebäude 30 Versorgun	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
514	IK VII	Basisbetrieb	23779	Gebäude 16 Kraftstat	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
515	IK VII	Basisbetrieb	23780	Gebäude 17 Heizzentr	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
516	IK VII	Basisbetrieb	23781	Gebäude 24 Linac 2	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
517	IK VII	Basisbetrieb	23783	Gebäude 20 Synchrotr	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
518	IK VII	Basisbetrieb	23784	Gebäude 13 Verflüssi	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
519	IK VII	Basisbetrieb	23785	Gebäude 18 Betriebsh	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
520	IK VII	Basisbetrieb	23786	GEBäUDE 37 LAGER	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
522	IK VII	Basisbetrieb	23788	Gebäude 36 Erweiteru	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
524	IK VII	Basisbetrieb	23793	Gebäude 30b Büro u.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
527	IK VII	Basisbetrieb	23801	Gebäude 49d Laserlab	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
528	IK VII	Basisbetrieb	23806	Geb. 35 Techn. Notd.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
537	IK VII	Basisbetrieb	23816	Gebäude 49b Laserlab	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	

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No.	Category	Name	Cost centre	Description / current evaluation	DESY Code	Area	POF	POF II	Overhead DESY	Overhead XFEL	Overhead XFEL II	Remark
538	IK VII	Basisbetrieb	23817	Gebäude 49 Kryo-Tech	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
539	IK VII	Basisbetrieb	23818	Gebäude 01c Aufstock	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
540	IK VII	Basisbetrieb	23819	Gebäude 13 Gashaus B	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
542	IK VII	Basisbetrieb	23824	Gebäude 06 Verwaltun	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
545	IK VII	Basisbetrieb	23829	Gebäude 22 Synchrotr	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
546	IK VII	Basisbetrieb	23830	Gebäude 22a Strahlen	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
561	IK VII	Basisbetrieb	23846	Gebäude 12 Notkestr.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
563	IK VII	Basisbetrieb	23848	Gebäude 00 Luruperch	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
564	IK VII	Basisbetrieb	23849	Gebäude 26a Bürogeb.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
567	IK VII	Basisbetrieb	23859	Gebäude 26a Azubi-El	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
570	IK VII	Basisbetrieb	23864	Gebäude 48 EMBL	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
571	IK VII	Basisbetrieb	23865	An-/Ausbau Geb. 49	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
575	IK VII	Basisbetrieb	23874	Gebäude 29 Enteisenu	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
579	IK VII	Basisbetrieb	23884	Gebäude 25f HASYLAB	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
580	IK VII	Basisbetrieb	23886	Gebäude 11b Kabellag	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
584	IK VII	Basisbetrieb	23890	Gebäude 66 (Blauer P	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
585	IK VII	Basisbetrieb	23891	Geb.55 Lab.+Bürogeb.	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
588	IK VII	Basisbetrieb	23894	Gebäude 02-Umbau Sch	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
594	IK VII	Basisbetrieb	23915	Gebäude 70 Testhalle	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
616	IK VII	Basisbetrieb	24679	Gebäude 49a Containe	Gemeinkosten	V-Bereich	IK71111	711	x	x	2	
622	IK VII	Basisbetrieb	32097	MEA6 Infrastruktur	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
623	IK VII	Basisbetrieb	32099	MEA6 SERVICE-BETR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
635	IK VII	Basisbetrieb	38099	MEA-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
636	IK VII	Basisbetrieb	38199	MEA1	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
637	IK VII	Basisbetrieb	38397	MEA3, Infrastruktur	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
638	IK VII	Basisbetrieb	38399	MEA3, Allg.Versorgug	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
639	IK VII	Basisbetrieb	38497	MEA2	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
640	IK VII	Basisbetrieb	38499	MEA2 Allg.Versorgung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
641	IK VII	Basisbetrieb	38897	MEA5 Allgem. Versorg	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
642	IK VII	Basisbetrieb	38899	MEA5 Allgem. Versorg	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
643	IK VII	Basisbetrieb	38997	MEA4, Infrastruktur	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
644	IK VII	Basisbetrieb	38999	MEA4	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
645	IK VII	Basisbetrieb	51001	V1 Betriebssport	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
646	IK VII	Basisbetrieb	51002	V1 Postdienste	Gemeinkosten	V-Bereich	IK72111	721	x	x	2	
652	IK VII	Basisbetrieb	60398	Masch.koord.Schichtd	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
654	IK VII	Basisbetrieb	60699	MPL-PLANUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
655	IK VII	Basisbetrieb	61099	MHF-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
658	IK VII	Basisbetrieb	61597	MHFsl-SUPRAL.HF-BESC	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
659	IK VII	Basisbetrieb	61598	MHFsl-SUPRAL.HF-BESC	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
660	IK VII	Basisbetrieb	61599	MHFsl-SUPRAL.HF-BESC	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
661	IK VII	Basisbetrieb	61798	MHFp-PROTONEN	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
662	IK VII	Basisbetrieb	61799	MHFp-PROTONEN	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
663	IK VII	Basisbetrieb	62099	MVA-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
664	IK VII	Basisbetrieb	62199	MVA-VAKUUMKAMMERN	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
665	IK VII	Basisbetrieb	62399	MVA-ELEKTRONIK+MEßTE	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
666	IK VII	Basisbetrieb	62599	MVA-VAKUUMBAUTEILETE	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
667	IK VII	Basisbetrieb	63197	MCS 1+3 MASCH.Infra.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
668	IK VII	Basisbetrieb	63198	MCS 1+3 MASCH.KONTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
669	IK VII	Basisbetrieb	63199	MCS 1+3 MASCH.KONTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
670	IK VII	Basisbetrieb	63299	MSK STRAHLKONTROLLEN	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
671	IK VII	Basisbetrieb	63397	MDI-1 Datenüb. Infra	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
672	IK VII	Basisbetrieb	63398	MDI-1 DATENUEBERTRA.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
673	IK VII	Basisbetrieb	63399	MDI-1 DATENUEBERTRA.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
674	IK VII	Basisbetrieb	63498	MCS 2 PROZ.MAGKONTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
675	IK VII	Basisbetrieb	63499	MCS 2 PROZ.MAGKONTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	

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No.	Category	Name	Cost centre	Description / current evaluation	DESY Code	Area	POF	POF II	Overhead DESY	Overhead XFEL	Overhead XFEL II	Remark
676	IK VII	Basisbetrieb	63597	MPS Interlo. Infras.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
677	IK VII	Basisbetrieb	63599	MPS Interlocksyst.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
678	IK VII	Basisbetrieb	63697	MDI-2 Strahlins.Infr	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
679	IK VII	Basisbetrieb	63698	MDI-2 STRAHLINSTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
680	IK VII	Basisbetrieb	63699	MDI-2 STRAHLINSTR.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
681	IK VII	Basisbetrieb	63797	MDI-5 SIGNAL/STEUKAB	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
682	IK VII	Basisbetrieb	63798	MDI-5 SIGNAL/STEUKAB	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
683	IK VII	Basisbetrieb	63799	MDI-5 SIGNAL/STEUKAB	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
684	IK VII	Basisbetrieb	63899	MPS Dachs Allg.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
685	IK VII	Basisbetrieb	64099	MIN-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
686	IK VII	Basisbetrieb	64198	MIN-BESCHLEUNIGER+ST	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
687	IK VII	Basisbetrieb	64199	MIN-BESCHLEUNIGER+ST	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
688	IK VII	Basisbetrieb	64299	MIN-INJEKTION u.SYST	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
689	IK VII	Basisbetrieb	64399	MIN-GEPULSTE MAGNETE	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
690	IK VII	Basisbetrieb	64499	MIN-GEPULSTE MAGNETE	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
692	IK VII	Basisbetrieb	65097	MKK-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
693	IK VII	Basisbetrieb	65099	MKK-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
695	IK VII	Basisbetrieb	65197	MKK-ALLGEMEINE VERSO	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
696	IK VII	Basisbetrieb	65199	MKK-ALLGEMEINE VERSO	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
698	IK VII	Basisbetrieb	65216	MKK2 Verbesserung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
700	IK VII	Basisbetrieb	65297	MKK2 WASSER/KüHLUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
701	IK VII	Basisbetrieb	65299	MKK2 WASSER/KüHLUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
704	IK VII	Basisbetrieb	65316	MKK3 Klima/Lüftung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
706	IK VII	Basisbetrieb	65397	MKK3 KLIMA/Lüftung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
707	IK VII	Basisbetrieb	65398	MKK3 KLIMA/Lüftung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
708	IK VII	Basisbetrieb	65399	MKK3 KLIMA/Lüftung	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
710	IK VII	Basisbetrieb	65497	MKK3 Wärmevers.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
711	IK VII	Basisbetrieb	65498	MKK3 Wärmevers.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
712	IK VII	Basisbetrieb	65499	MKK3 Wärmevers.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
713	IK VII	Basisbetrieb	65516	MKK1 Verbesserung Wa	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
715	IK VII	Basisbetrieb	65597	MKK1 Überwachg.+ Aut	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
716	IK VII	Basisbetrieb	65598	MKK1 Überwach.+ Aut.	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
717	IK VII	Basisbetrieb	65599	MKK1 Überwachg.+ Aut	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
718	IK VII	Basisbetrieb	65697	MKK1-MAGNETSTROMVERS	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
719	IK VII	Basisbetrieb	65698	MKK1-MAGNETSTROM	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
720	IK VII	Basisbetrieb	65699	MKK1-MAGNETSTROMVERS	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
724	IK VII	Basisbetrieb	67099	MKS-LEITUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
725	IK VII	Basisbetrieb	67199	MKS3 KALTE MAGNETE	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
726	IK VII	Basisbetrieb	67299	MKS4-MAGNETMESSUNG	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
727	IK VII	Basisbetrieb	67399	MVP1-VAKUUM	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
728	IK VII	Basisbetrieb	67499	MVP2-VAKUUM-KONTROLL	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
730	IK VII	Basisbetrieb	67599	MKS1-KRYOGENIK	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
731	IK VII	Basisbetrieb	67699	MKS1-HELIUM-VERTEILU	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
732	IK VII	Basisbetrieb	67799	MKS2-KRYOKONTROLLEN	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
733	IK VII	Basisbetrieb	67898	MCS 4 Kontr.Schichtd	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	
734	IK VII	Basisbetrieb	67899	MCS 4 Kontrollen	Gemeinkosten	M-Bereich	IK71121	711	x	x	5	

Operation Agreement- Annex 4
Appendix 3 Budget planning process **(finalisation of some dates to be clarified, but principally agreed upon)**

Deadlines for the budget planning process: Annual Budget for year x and Medium-Term Financial Estimates (MTFE) years x+5

Year	Due date	responsible	task	… relating to the Annual Budget year x	... relating to the MTFE years x+5
x - 2 years (18 Monate)	30. Jun	XFEL MB	Scheduling of the strategic operation planning (Shut-downs, Upgrades, etc.), which is taken as a basis for the budget planning process	for the next 2 ½ years	for the next 7 ½ years
x - 2 years (	30. Jun	XFEL CO	Programming of delivery times in context of the scheduling for the annual budget planning process	./.	./.
x - 2 years (	30. Sep	Operation Board	Operation planning (Shut-downs, maintenance schedules, modifications, etc.) including the schedules and budget indications	Concrete operation planning and connected budget indications	Rough operation planning and rough budget indications connected for the next 7 ¼ years.
x - 2 years (	31. Dez	Administration Board	Figures breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments"	per work package	per "Major Activity" for the next 7 years
x - 1 year	28. Feb	Governing Board	Agreement upon proposals from XFEL.EU- and DESY regarding the entire XFEL operation budget and the MTFE to be presented to the XFEL MB	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¾ years
x - 1 year	31. Mrz	XFEL MB	Approval of the budget proposal as well as the MTFE and subsequent dispatch to the AFC	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¾ years
x - 1 year	21. Apr	AFC	Recommendation for the preseneted provisional annual budget proposal and the MTFE to the council	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¾ years
x - 1 year	05. Jun	Council	Acknowledgement the provisional annual budget proposals as well as the MTFE and resultant determination of the Income-Budgets for the year x	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ½ years
x - 1 year	30. Jun	DESY V3	Provision of the detailed budget plan	per work package using the detailed template file	./.
x - 1 year	22. Sep	XFEL MB	Approval of last adjustments for the final budget proposal and forwarding to the AFC including the MTFE	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¼ years
x - 1 year	15. Okt	AFC	Recommendation regarding the presented annual budget proposal and the MTFE for the Council	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¼ years
x - 1 year	30. Nov	Council	Approval of the annual budget and the MTFE	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per work package	breakdown to "Personnel Costs", Recurrent Costs", and "Capital Investments" per "Major Activity" for the next 6 ¼ years
x	01. Jan	ALLE	The annual budget year starts, actuals are registered per work package according to the template and compared with the budget	per work package using the detailed template file	./.

This is an exemplary schedule of the planning process. According to this schedule, concrete data are to be communicated at 30.06. of each year, 2 years ahead.

Operation Agreement - Annex 4

Appendix 4

structure of mid term financial estimates

Medium-Term Financial Estimates

	Items	Forecast for current year		Budget for year 2016		Plan for year 2017*[1]		Plan for year 2018		Plan for year 2019		Plan for year 2020	
		Paymts	Comm	Paymts	Comm	Paymts	Comm	Paymts	Comm	Paymts	Comm	Paymts	Comm
By major activities	**Accelerator (total)**					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Personnel*[2]												
	Recurrent												
	Capital												
	Research and Development (total) *[4]					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Personnel*[2]												
	Recurrent												
	Capital												
	Technical Infrastructure (total)*[3]					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Personnel*[2]												
	Recurrent												
	Capital												
	Administr. and General Support (total)					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Personnel*[2]												
	Recurrent												
	Capital												
	Grand Total					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL overhead costs												
	TOTAL excluding overhead costs					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
By title	**Total Personnel*[2]**					0	0	0	0	0	0	0	0
	Total Recurrent					0	0	0	0	0	0	0	0
	Total Capital					0	0	0	0	0	0	0	0
	Grand Total					**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Operation Agreement- Annex 4
Appendix 5
template budget planning and reporting

Operation-Phase Budget - Plan per operation package

OP	Name
XXX	OP xxx

xx.xx.xx current status

Payments per year for operation

(based on 2017 prices, please note escalation factor if known)

Commitments per year for operation

A) Capital Investments

only investments for stand-alone usable items or upgrades (new investments or improvement / extension of existing items)

No.	Item	Description / assumptions	Scope of item	Escalation factor	Plan 2017 6 months k€	Plan 2018 TY k€	Plan 2019 TY k€	Plan 2020 TY k€	Plan 2021 TY k€	Plan 2017 k€	Plan 2018 TY k€	Plan 2019 TY k€	Plan 2020 TY k€	Plan 2021 TY k€
1				2%										
2				2%										
3				2%										
4				2%										
5				2%										
6				2%										
7				2%										
8				2%										
9				2%										
10				2%										
11				2%										
12				2%										
13				2%										
14				2%										
15				2%										
16				2%										
17				2%										
18				2%										
19				2%										
20				2%										
	Sub-Total Capital Investment at real value (k€)				**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**

Assumptions / Notes

B) Personnel

					FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE	FTE
					0,0	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**

	Category	Note / assumptions	DESY reference	Escalation factor	k€	k€	k€	k€	k€	k€	k€	k€	k€	k€
	Salary	cost per FTE		3%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Overhead	cost per FTE		2%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Total Personnel Cost				**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**

Operation-Phase Budget - Plan per operation package

OP	Name
xxx	OP xxx

xx.xx.xx current status

Payments per year for operation

(based on 2017 prices, please note escalation factor if known)

Commitments per year for operation

C) Recurrent Costs

services and consumables for operation and maintenance (incl. spare parts)

	Category	Note / assumptions	DESY reference	Escalation factor	Payments: Plan 2017 6 months k€	Payments: Plan 2018 TY k€	Payments: Plan 2019 TY k€	Payments: Plan 2020 TY k€	Payments: Plan 2021 TY k€	Commitments: Plan 2017 k€	Commitments: Plan 2018 TY k€	Commitments: Plan 2019 TY k€	Commitments: Plan 2020 TY k€	Commitments: Plan 2021 TY k€
	Consumables Equipment	Consumables Equipment	#406000-407999		0,0	0,0	0,0	0,0	0,0					
	Consumables Materials	Consumables Materials	#402000-404199; 408000-409999		0,0	0,0	0,0	0,0	0,0					
	Consumables Components				0,0	0,0	0,0	0,0	0,0					
	Consumables Gas	Consumables Gas	#404200-404210		0,0	0,0	0,0	0,0	0,0					
	Power	Consumables Power	#413000		0,0	0,0	0,0	0,0	0,0					
	Water/Heating				0,0	0,0	0,0	0,0	0,0					
	Subtotal Materials/Consumables				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Training	Training	#481000		0,0	0,0	0,0	0,0	0,0					
	Subtotal Training/Social Services				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Travel/Transport Employees	Travel inland and abroad	#469000; #469500		0,0	0,0	0,0	0,0	0,0					
	Subtotal Travel/Representation				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Rental for Premises				0,0	0,0	0,0	0,0	0,0					
	Other Leasing	Rental, Leasing	#463000-464000		0,0	0,0	0,0	0,0	0,0					
	Repairs/Maintenance	Repairs, Maintenance; details required	#445000-449000		0,0	0,0	0,0	0,0	0,0					
	IT Services				0,0	0,0	0,0	0,0	0,0					
	Professional Services/Fees				0,0	0,0	0,0	0,0	0,0					
	Subscriptions				0,0	0,0	0,0	0,0	0,0					
	Maintenance/Fees SW				0,0	0,0	0,0	0,0	0,0					
	Other consumables/equipment				0,0	0,0	0,0	0,0	0,0					
	Subtotal General Operation				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Other costs	misc. other Costs	#489000 (Rest Kostenartengruppe POF-5600)		0,0	0,0	0,0	0,0	0,0					
	Subtotal Other Costs				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Total Recurrent Costs	**at real value (k€)**			**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**

Assumptions / Notes

D) Recurrent Costs Details and Side Calculations

No.	Item	Sub-Item	Notes	Escalation factor	0,00 k€	k€	k€	k€	k€	k€	k€	k€	k€	k€
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										

Operation-Phase Budget - Plan per operation package

OP	Name
xxx	OP xxx

xx.xx.xx current status

Payments per year for operation

(based on 2017 prices, please note escalation factor if known)

Commitments per year for operation

					Plan 2017 6 months	Plan 2018 TY	Plan 2019 TY	Plan 2020 TY	Plan 2021 TY	Plan 2017	Plan 2018 TY	Plan 2019 TY	Plan 2020 TY	Plan 2021 TY
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
				2%										
					0									

E) Summary (Operation)

					k€	k€	k€	k€	k€	k€	k€	k€	k€	k€
	Personnel Salary				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Personnel Overhead				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Recurrent				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Capital				0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
					0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
					0,0	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**

Assumptions / Notes

Operation Agreement- Annex 4
Appendix 6 Template for the annual analysis of the personnel expense

1. Number of FTE per Pay group and level

Pay Grp	1	2	3	4	5	6		Total FTE	relevant personnel costs in k€
15									
14									
13				15,4					
12		1,3	3						
11									
10	5	4,4		25,4					
9b									
9a			10						
8									
7									
6									
5									
4									
3									
2									
1									
Subtotal								**64,5**	**4500**
other non-pay-scale								**15**	**1300**
Total								**79,5**	**5800**

2. Reconciliation of salary costs (template)

Category		EUR	% of (1)	% of (3)	Note / Reference
Total Salary Costs 2016	(1)				
Total Salary Costs 2017	(2)				
Salary costs increase 2016/2017	(3)				
Thereof due to general cost increase	(4)				
Thereof due to individual increase					

The parties agreed to do the best effort to explain deviations

Supplementing table

Year	Average FTE p.a.	Growth %	Salary costs EUR (5)	Growth %	Ø per FTE EUR	Growth %	new FTE Ø	Salary costs EUR new Staff	Ø per FTE EUR	FTE leave Ø	Salary costs EUR FTE leave	Ø per FTE EUR
2016												
2017												

(5) Total salary costs of the year

3. Head report and FTE report per workpackage without names and costs

FTE	work package
0,2	xx
0,1	xx
0,5	xxx
0,5	xxx
0,8	xx
1	x
1	x
	x

4,1	**Total**