INTERNATIONAL JOINT LABORATORY AGREEMENT ON SUSTAINABLE AND INTELLIGENT MANUFACTURING

between

NANJING UNIVERSITY OF AERONAUTICS AND ASTRONAUTICS (NUAA)

and

UNIVERSITAS NEGERI MALANG (UM)

UM Ref. No. 24.6.90/UN32/KS/2026

INTERNATIONAL JOINT LABORATORY AGREEMENT

ON SUSTAINABLE AND INTELLIGENT

MANUFACTURING

This Agreement is made on the 11th day of July, 2026.

BETWEEN

NANJING UNIVERSITY OF AERONAUTICS AND

ASTRONAUTICS in 29 Yudao Street, Nanjing, Jiangsu Province

210016, People's Republic of China (**NUAA**)

AND

UNIVERSITAS NEGERI MALANG

In No. 5 Semarang Street, Malang 65145, East Java, Indonesia (**UM**)

RECITALS:

A. Under the long-term collaborative cooperation between NUAA and UM on the aspects of students' cultivation and scientific research programs and with the fruitful results made, the parties wish to set up an international joint laboratory on **Sustainable and Intelligent Manufacturing** to contentiously improve the mutual academic development.

B. The parties wish to pursue their collaboration by the establishment of an international joint laboratory on Sustainable and Intelligent Manufacturing.

THE PARTIES AGREE:

1. DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this agreement (including the Recitals, any Schedules and Annexures) unless the context otherwise requires:

"Annexure" means an annexure to this agreement.

"Background IP" of a party means Intellectual Property belonging to that party prior to Commencement Date (and subsequent enhancements)

or acquired or created by that party independently of this agreement and which is used in a provision of the Project.

"**Commencement Date**" means the later of execution of this agreement or fulfilment of the condition precedent set out at clause 2.

"**Expiry Date**" means 5 (five) years from Commencement Date.

"**Intellectual Property Rights**" means all intellectual and industrial property rights, including without limitation:

(a) patents, copyright, rights in circuit layouts, plant breeder's rights, registered designs, trademarks, moral rights and the right to have confidential information kept confidential; and

(b) any application or right to apply for registration of any of those rights, and "**Intellectual Property**" means property created or arising from any such rights and all other intellectual property so defined in Article 2 of the Convention Establishing the World Intellectual Property Organization of July 1967.

"**Laboratory**" means the laboratory established under this agreement known as the "International Joint Laboratory on **Sustainable and Intelligent Manufacturing**".

"Laboratory Objectives" means the objectives for which the Laboratory is established, as set out in clause 3.1.

"Party" means a party to this agreement being either UM or NUAA.

"Project" means a specific project to be undertaken pursuant to the Research Plan.

"Project IP" means any Intellectual Property created, resulting from or arising in the course of carrying out a Project but excludes Background IP.

"Research Plan" means the research plan for the operation of the Laboratory attached as Schedule 1.

"Schedule" means a schedule to this agreement.

"Term" means the period during which this agreement is operative.

1.2 Interpretation

In this agreement (including the Recitals and any Schedules or Annexures) unless the context otherwise requires:

(a) a reference to this agreement or another instrument includes any amendment or replacement of it and despite any change in the identity of the parties;

(b) words denoting the singular number include the plural number and

vice versa and words importing one gender include the other gender.

2. PRECEDENT CONDITION

2.1 The obligations of the Parties under this Agreement are subject to the satisfaction of the following condition precedent:

Each Party shall ensure that its participation in this Agreement complies with the applicable laws and regulations of its respective country.

3. OBJECTIVES AND FUNCTIONS OF THE LABORATORY

3.1 The objectives of the Laboratory are to establish a leading laboratory with internationally top-level faculties, experimental and computational facilities, and academic reputation for research in fundamental and applied topics and education of young scholars in **Sustainable and Intelligent Manufacturing**, and to promote sustainable development of international collaboration.

3.2 The Laboratory aims to develop new theories, methods, technologies, and applications in the field of Intelligent Green Manufacturing, with a focus on achieving scientific and technological breakthroughs in sustainable manufacturing, intelligent machining and advanced simulation techniques. These activities will be based on original research,

integrated system development, and strong interdisciplinary collaboration. The Laboratory will undertake cutting-edge international research and contribute to major national and transnational research programs, producing outcomes with internationally recognized scientific value. It will serve as a platform to attract and connect leading scientists worldwide and to foster the training and growth of outstanding young researchers through joint supervision of graduate students, postdoctoral programs, and structured research mentoring.

3.3 In parallel, the Laboratory will promote high-level education through the active involvement of international faculty in teaching and training activities, including the delivery of joint courses, specialized short schools, hands-on workshops, and continuous professional development programs. It will also contribute to the scientific community by organizing international workshops, symposia, and conference sessions aimed at disseminating research results, strengthening global collaborations, and accelerating the transfer of innovative knowledge and technologies into Intelligent Green Manufacturing applications.

3.4 Along with the support of both parties, the Laboratory will be aided

by international cooperation projects, specific research projects and short-term projects funded by both parties as well as some supports from governments, societies and foundations of both Parties.

4. RESEARCH AREAS OF THE LABORATORY

4.1 The research areas of the Laboratory are as follows (including but not limited to):

(a) Area I: Sustainable manufacturing;

(b) Area II: Intelligent machining;

(c) Area III: Advanced simulation techniques.

4.2 This cooperation shall especially include the following topics of mutual interest (including but not limited to)

- Exchange of Personnel and Students;
- Co-direction of Post-graduate student theses;
- Joint research and training programmes;
- Preparation of joint proposals for external funding;
- Joint programmes of consulting and evaluation;
- Joint organisation of conferences and seminars;

- Joint publications.

4.3 Research at the Laboratory will be conducted in accordance with the Research Plan.

5. STATUS, LOCATION, AND RESPONSIBILITIES

5.1 The Laboratory is a collaboration arrangement between NUAA and UM and is not a separate entity with its own legal status.

5.2 The Laboratory will be located at NUAA Minggugong campus at Building of College of Mechanical and Electrical Engineering.

5.3 NUAA shall be responsible for establishment and day to day operating cost of the Laboratory.

5.4 A branch of the Laboratory may subsequently be established at NUAA subject to agreement between the parties. NUAA would be responsible for establishment and operating costs for any such branch.

6. STAFF AND STUDENT EXCHANGE

Staff and student exchange arrangements will take place on a project-by-project basis and detailed in a separate agreement in each case.

7. LABORATORY GOVERNANCE AND REPORTING

The parties will comply with the governance and reporting and other

operational requirements set out in Schedule 2.

8. RESEARCH PLAN

8.1 The Laboratory operations shall be in accordance with the Research Plan contained in Schedule 1.

8.2 The parties will carry out their respective obligations under each Project as specified in the Research Plan diligently and competently and in accordance with generally accepted professional, scientific, and ethical principles and standards.

8.3 The parties will each provide staff and facilities to the extent required by the Project Plan.

8.4 A party must not subcontract the whole or any part of a Project without the prior written consent of the other party, which consent the other party may withhold in its absolute discretion.

9. INTELLECTUAL PROPERTY

9.1 The parties agree that all rights including all Intellectual Property Rights in each party's Background IP will remain the property of that party.

9.2 Each party grants to the other party a non-exclusive, worldwide,

royalty-free license to use its Background IP for the purposes of carrying out and only to the extent necessary to carry out a Project. The licenses granted under this clause do not include the ability for either party to sub-license.

9.3 Each party warrants to the other that it has unimpeded title to its Background IP or is otherwise entitled to use its Background IP for the purposes contemplated by this agreement.

9.4 All intellectual property rights Project IP shall be owned equally by UM and NUAA as tenants in common, from the moment of its creation, unless the parties agree otherwise in writing. IP that originally belongs to each party will not be changed because of this Agreement. Each party's original Background IP will remain as their own.

9.5 Any proposal to commercialize Project IP shall be referred to the parties for review. Any commercialization or protection of Project IP must be agreed by both parties in writing in advance.

10. CONFIDENTIALITY

10.1 This Agreement creates a confidential relationship between the Parties. Each Party acknowledges and agrees that the terms of this

Agreement and any information or material proprietary to, treated as confidential by the disclosing Party ("Disclosing Party") or that would be treated as confidential by a reasonable person given the nature of the information or the circumstances surrounding its disclosure or access, whether in written, oral or other tangible or intangible form (including, but not limited to, trade secrets, know-how, software, source code, customers, providers or suppliers, business plans or operations, technical data, or other business or financial information concerning the business, operations, projects, technologies and affairs of the Disclosing Party that is conveyed to or obtained by the other Party in connection with this Agreement ("Recipient") is confidential to the Disclosing Party (the "Confidential Information"), and the Disclosing Party owns all copyright, trademark, trade secret, know-how, patent, data or other intellectual property rights in the Disclosing Party's Confidential Information.

Each party will have the right to publish and disclose information relating to or arising out of a Project provided that publication will not in any way prejudice registration of Intellectual Property Rights and commercial exploitation of the Project IP.

10.2 The Recipient agrees that in no event shall it disclose, transfer, copy, duplicate, translate, or publish any Confidential Information except with the prior written approval of the Disclosing Party. The Recipient further agrees that it shall not use any Confidential Information for any purpose whatsoever, whether for its own benefit or the benefit of any third Party, other than for performing its obligations under this Agreement. The Recipient shall be responsible for the unauthorized use or disclosure of any Confidential Information by its employees, agents, affiliates or subcontractors.

10.3 The restrictions mentioned above shall not apply to any Confidential Information that:

- was in the public domain before it was disclosed or has entered the public domain through no fault of the Recipient;
- was known to the Recipient, without restriction, prior to the time of disclosure;
- was disclosed with the prior written approval of the Disclosing Party.

10.4 In addition, Recipient may disclose the Disclosing Party's

Confidential Information as necessary to comply with applicable laws and regulations or to comply with a court or administrative order or to comply with Recipient's controlling authorities order; provided, however, that the Recipient shall provide immediate written notice thereof to the Disclosing Party and that the Recipient takes all reasonable and lawful actions to obtain confidential treatment (if possible) for such disclosure, and, to minimize the extent of such disclosure.

11. TERM OF AGREEMENT

The Term of this agreement begins on Commencement Date and ends on Expiry Date, unless extended or terminated earlier due to default.

12. EVENTS OF DEFAULT, TERMINATION AND CANCELLATION

12.1 If default is made by a party (the defaulting party) in the performance or observance of any obligation on its part contained in this agreement and if such default can be remedied, but is not remedied within three (3) months of written notification from the other party that it requires that default to be remedied, then the agreement can be terminated by the other party by written notification to the defaulting party.

12.2 If a party terminates this agreement under clause 12.1 the other party shall provide all reasonable assistance to allow the non-terminating party to complete the Projects and Staff/Student exchanges in place at the date of termination.

13. DISPUTE RESOLUTION

13.1 In the event of any dispute arising out of or in connection with this agreement (including but not limited to the controversy or claim arising out of or in relation to this agreement or the breach, termination or invalidity thereof) the Parties shall first endeavor to amiably negotiate to resolve such dispute within thirty (30) days after the date of the notification by one Party of such dispute to the other Party. Should the Parties fail to do so, then such dispute shall be referred to an arbitration. The arbitration shall be in accordance with the UNCITRAL Arbitration Rules for ad-hoc arbitration as in force at the date of this agreement. The parties agree to the appointment of a single arbitrator only who shall be nominated by the parties in the manner provided for in the UNCITRAL Arbitration Rules. The award made by the arbitral tribunal shall be final and binding upon the parties. Pending the reference to arbitration or until

the arbitral tribunal publish the award the parties shall continue to perform their obligations under the agreement without prejudice to a final adjustment in accordance with the award.

13.2 Nothing in this clause shall oblige the parties to settle a dispute through arbitration.

14. MISCELLANEOUS

14.1 Entire Agreement

This agreement contains all of the terms, conditions, representations and warranties in connection with the agreement reached between the parties with respect to the subject matter of this agreement.

14.2 Relationship of Parties

Nothing in this agreement creates a partnership or joint venture between the parties, and no party can bind of pledge the credit of the other party.

14.3 Governing Law and Arbitration

This agreement is governed by and construed in accordance with the laws mutually agreed upon by the Parties. In implementing this Agreement, each Party shall comply with the applicable laws and regulations of its respective country.

14.4 Costs

The parties agree to bear their own costs (including legal costs) in respect of this agreement.

14.5 Assignment

A party must not novate, assign or subcontract this agreement or any of its obligations under this agreement without the prior written consent of the other party.

14.6 Counterparts

This agreement can be executed in a number of counterparts and the counterparts taken together will be deemed to constitute the one and the same document.

15. LANGUAGE

The official language of this Agreement is the English language and all notices, reports, orders, instructions, documentation, literature, records and other written material pertaining to this Agreement shall be maintained and delivered in the English language.

16. NOTICES

16.1 Any notice, demand, consent, approval or other communication ("a Communication") in connection with this agreement by a party may (without limitation to any other valid form of execution) be signed by an authorized officer of that party (if a corporation), or by any solicitor acting for that party, whose signature may be hand-written or printed or otherwise reproduced by mechanical means.

16.2 In addition to any method of service provided for by statute, a Communication in connection with this agreement to be sent to or made upon a party is taken to have been given to or made on the party to whom it is addressed if:

(a) sent by facsimile or email addressed as follows:

(i) Prof. Ir. Rr. Poppy Puspitasari, S.Pd, M.T., Ph.D (UM),

Email: poppy@um.ac.id

Attention: Laboratory Director

(ii) Wenfeng Ding (NUAA),

Email: wfding@nuaa.edu.cn

Attention: Laboratory Director

(b) left for the addressee, or sent by mail (and by airmail if to an

address outside China) to the addressee at:

(i) any address of that person set out in this agreement; or

(ii) the registered office of any corporate addressee.

16.3 Service under clause 16.2 will be valid even though the addressee may have been wound up or in liquidation (if a corporation) or the addressee is absent from the place at or to which the Communication is left, delivered or sent, or where the Communication is sent by post or otherwise, it is returned unclaimed.

16.4 A Communication in connection with this agreement will be deemed to have been received by the person:

a) if left or delivered personally, on the same day;

b) if sent by post to a national address, on the second business day after the date of posting;

c) if sent by post to an international address, on the fourth business day after the date of posting;

d) in the case of a facsimile, on receipt of the facsimile in legible form.

16.5 The Parties may agree in writing on any alternative methods of

communication as necessary.

17. FORCE MAJEURE

17.1 Neither Party shall be liable for any failure or delay in the performance of its obligations under this Agreement if such failure or delay is caused by events beyond its reasonable control ("Force Majeure"), including but not limited to acts of God, natural disasters, war, terrorism, civil unrest, pandemics, government regulations, or any other similar events.

17.2 The affected Party shall promptly notify the other Party in writing of the occurrence of a Force Majeure event and use reasonable efforts to mitigate its effects and resume performance as soon as practicable.

17.3 If the Force Majeure event continues for a period exceeding ninety (90) days, the Parties shall consult in good faith to determine appropriate measures, including possible suspension or termination of this Agreement.

EXECUTED as an agreement.

SIGNED for and on behalf of **UNIVERSITAS NEGERI MALANG** by a duly authorized officer

Signature:

Name & Title: Prof. Dr. Hariyono, M.Pd, Rector of Universitas Negeri Malang

Dated: 24/7 2026

SIGNED for and on behalf of **NANJING UNIVERSITY OF AERONAUTICS AND ASTRONAUTICS** by a duly authorized officer

Signature:

Name & Title: Prof. Bin Jiang, President of Nanjing University of Aeronautics and Astronautics

Dated: 14/9 2026

SCHEDULE 1

RESEARCH PLAN

Collaborative Projects

The joint laboratory focusing on Sustainable and Intelligent Manufacturing will be established in the following key research areas:

(a) Area I: Sustainable manufacturing;

(b) Area II: Intelligent machining;

(c) Area III: Advanced simulation techniques.

During the joint research period, access to research facilities required by the research programs and projects defined by the two partners should be offered without charge.

SCHEDULE 2

LABORATORY GOVERNANCE AND REPORTING

Professor Wenfeng Ding (NUAA), Director and Scientific Advisor

Associate Professor Ning Qian (NUAA), Deputy Director and Coordinator

Prof. Ir. Rr. Poppy Puspitasari, S.Pd, M.T., Ph.D (UM), Director and Scientific Advisor

Diki Dwi Pramono, S.T., M.T. (UM), Coordinator

Activity plan

Year one

Setup the International Joint Laboratory on Sustainable and Intelligent Manufacturing, including finalizing the physical layout of the laboratory space at NUAA Minggugong campus (Building of College of Mechanical and Electrical Engineering) and procuring initial core equipment.

Define all aspects related to governance and structure, such as decision-making protocols (e.g., quarterly joint steering committee meetings), facility management rules (e.g., booking procedures for shared equipment), and financial oversight mechanisms (e.g., tracking of

operating costs).

Identify POC (Points of Contact) on both sides for each of the three focus research areas. These individuals will develop coherent research engagement plans that highlight synergies.

Identify 1-3 priority collaborative projects to launch initial engagement, with clear objectives (e.g., "machining with MQL"), timelines (6-12 months for phase 1), and cross-institutional research teams.

Establish a secure shared digital platform (e.g., encrypted cloud repository) for exchanging research data, project updates, and documentation—ensuring alignment with the confidentiality clauses (Clause 10) of the main Agreement.

Year two

Allocate resources from funded projects, including:

Travel exchange funds to support 4-6 short-term visits (2-4 weeks) of faculty/research staff between the two institutions—focused on project coordination, equipment training, and data validation.

Finalize and roll out standard operating procedures (SOPs) for free access to research facilities (per Schedule 1), including safety protocols,

equipment maintenance responsibilities, and access approval workflows for non-NUAA researchers.

Organize the first joint workshop (hosted at NUAA) focusing on 1-2 priority areas to share initial progress, address technical bottlenecks, and refine project roadmaps.

Launch the first round of student exchange programs: 2-3 graduate students per institution for hands-on training in the Laboratory's research areas, with paired mentors from both universities.

Year three

Advance the 1-3 priority projects to achieve key milestones.

Publish 1-3 joint peer-reviewed outputs (journal articles or conference proceedings) with co-authorship from both institutions, ensuring compliance with Intellectual Property (IP) ownership rules (Clause 9.4).

Host a biennial international symposium (co-organized by NUAA and UM) to invite external experts, showcase the Laboratory's achievements, and explore collaborations with industry partners.

Conduct a mid-term review of the Laboratory's performance: assess progress against the original objectives (Clause 3.1), evaluate resource

utilization, and adjust the research plan (if needed) to address gaps (e.g., reallocating funds to high-impact projects).

Year four

Prepare and submit 2-3 joint proposals for external funding: target national grants or international programs to support new projects in underdeveloped research areas.

Organize a summer school on "Sustainable and Intelligent Manufacturing" for early-career researchers (postdocs, junior faculty) from both institutions, featuring lectures by internationally recognized scientists (per Clause 3.2's goal to "gather top-level scientists").

Year five

Complete all ongoing collaborative projects and compile a comprehensive final report of outcomes: cumulative joint publications (3-5 total), technology validation results, and student/faculty exchange metrics.

Host a closing joint workshop (rotating to UM or held virtually) to review the Laboratory's 5-year achievements, share best practices for international academic collaboration, and discuss options for extending

the Agreement (if mutually agreed).

Initiate commercialization discussions for high-impact Project IP: engage technology transfer offices from both institutions to assess market potential, draft licensing agreements (per Clause 9.5), and identify industry partners for pilot-scale testing.

Evaluate the Laboratory's performance against its founding objectives (Clause 3.1): assess its academic reputation, contribution to young scholar development, and impact on international collaboration in Sustainable and Intelligent Manufacturing.

Prepare a transition plan: if extending the Agreement, define new research areas and resource commitments; if not, outline steps for orderly closure (e.g., transfer of research data, preservation of IP records, completion of pending student exchanges).