

Assignment Letter/Surat Tugas

No. AL/FEIT/A214/VII/22
 Date July 5, 2022
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 Doc. Type Main Document / *Dokumen Utama*

Dena Hendriana, B.Sc., S.M., Sc.D

Activity Assignment

Penugasan Kegiatan

Dean of the Faculty of Engineering and Information Technology

Dekan Fakultas Teknik dan Teknologi Informasi

In consideration of:

His appointment as the Dean of the Faculty of Engineering and Information Technology under agreement no. SK/017/Y-SGU/VIII/2018

Mengingat:

Pengangkatannya sebagai Dekan Fakultas Teknik dan Teknologi Informasi di bawah perjanjian no. SK/017/Y-SGU/VIII/2018

Herewith permits to

Dengan ini menugaskan kepada

Name/*Nama:*

Dena Hendriana, B.Sc., S.M., Sc.D

Position/*Jabatan:*

Head of Master of Mechanical Engineering Department/
Kepala Program Studi Magister Teknik Mesin

Faculty/*Fakultas:*

Engineering and Information Technology/ Teknik dan Teknologi Informasi.

To become a speaker on the following activity below:

Untuk menjadi pembicara pada kegiatan berikut dibawah ini:

No	Activity / <i>Kegiatan</i>	Organizer / <i>Penyelenggara</i>	Day & Date / <i>Hari & Tanggal</i>	Venue / <i>Tempat</i>
1.	Training on: Efisiensi dan Konversi Energy Telkom Group Series 3 & 4	Telin - Telkom Corporate University	July 7 th , 2022	Bandung

The Appointed shall accomplish the task in responsible ways in line with the related guidelines and other regulation given by SGU.

Pihak yang bersangkutan harus melaksanakan tugas dan tanggung jawab sebaik-baiknya, sesuai dengan petunjuk dan peraturan dari SGU.

Assignor / *Pemberi Ijin:*

Chap/Signature of Organizer



Dr. Maulahikmah Galinium, S.Kom., M.Sc

Dean of Faculty Engineering and Information Technology
Dekan Fakultas Teknik dan Teknologi Informatika



JEMY V. CONFIDO
SGM TELKOM CORPORATE UNIVERSITY CENTER CENTER

Certificate of Appreciation

C.TEL. 00705/PD620/TCU-10000000/132/01/2022

This certificate presented to

Dena Hendriana

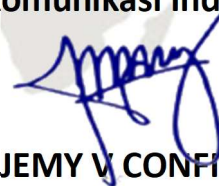
In Grateful Recognition of Valuable Contribution as Speaker in the Training of

Efisiensi dan Konversi Energy TelkomGroup Series 3 & 4

Held on Bandung, July 7th, 2022

Bandung, July 7th, 2022

PT. Telekomunikasi Indonesia, Tbk.



JEMY V. CONFIDO

SGM TELKOM CORPORATE UNIVERSITY CENTER CENTER



Aerodynamic and Thermal Simulation to Improve Energy Efficiency in Telecommunication Companies

Dr. Dena Hendriana, MSc. BSc.

Pelatihan Efisiensi dan Konversi Energy Telkom Group
6 Juli 2022

Dr. Dena Hendriana, MSc. BSc.

Pendidikan:

- *BSc. in Mechanical Engineering, Northeastern University, Boston, USA*
- *MS. in Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, USA*
- *Sc.D in Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, USA*

Pengalaman kerja:

- *Automotive Industry, USA ~ 14 tahun*
- *Akademisi/Peneliti, Indonesia ~ 9 tahun*

Spesialisasi: Computational Fluid Dynamics (CFD)

Topic of interest: Fluid dynamics, Heat Transfer, Thermodynamics, Energy, Renewable energy, Automation, Mechatronics, Automotive.

*Peningkatan Aktifitas Bidang telekomunikasi →
Meningkatnya Jumlah Cooling dalam RBS dan Infrastruktur
lainnya → Meningkatkan kebutuhan Energi*

***Alokasi energy untuk Cooling dalam RBS adalah sekitar
25% (Roy, 2008)***

*Meningkatkan efisiensi Cooling di bidang telekomunikasi --
→ mengurangi pemanasan global & peluang finansial.*

*Pengurangan konsumsi energi dari Sistem Tenaga
Telekomunikasi → penghematan sumber daya - →
pembangunan yang “berkelanjutan”.*

Objective untuk melakukan Simulasi Aerodinamik dan Thermal

- *Memberikan gambaran sirkulasi udara dalam proses pendinginan*
 - *Distribusi kecepatan udara*
 - *Distribusi tekanan udara*
 - *Distribusi suhu udara*

- *Meng-optimalkan sirkulasi udara proses pendinginan*
 - *Penempatan A/C outlet*
 - *Penempatan fan*
 - *Penempatan rongga udara*
 - *Penutupan rongga udara*

Contoh Aplikasi Simulasi Aerodinamik dan Thermal dalam Industri Telco

- *BTS Cabinet*
- *Battery Enclosure*
- *BTS Shelter room*
- *Data Centre room (Server room)*
- *General Building*
 - *Rooms*
 - *Warehouse*
 - *A/C Outdoors*

Dapat di aplikasikan di PT. Telkom jika diperlukan.





Simulasi Aerodinamik dan Thermal software : OpenFOAM

OpenFOAM®

= **O**pen **F**ield **O**peration **a**nd **M**anipulation

- Solve the Partial Differential Equations using the finite volumes method
- Multiphysic simulation platform mainly devoted to fluid flow
- Manage 3D geometries by default
- Open-source software developed in C++ (object-oriented programming)
- Can be freely download at www.openfoam.com
- Designed as a toolbox easily customisable
- Parallel computation implemented at lowest level
- Cross-platform installation (Linux preferred)



-  1989 : First development at Imperial College London
-  1996 : First release of FOAM
-  2004 : OpenFOAM release under GPL licence by OpenCFD Ltd.
-  2014 : version 2.3.0 ; acquisition of OpenCFD by ESI Group

935457 Gibril TCUNAS	Dr. Dera Hendriana, BSc, MSc	Anggoro TCUNAS	Citra Sari Indah, MC	935457 Nindya TCUNAS
Moderator Dr. Joga D. Setiawan	Dr. Agus Sudiyono - LAP ITB	905114 Antonius Giqih	Okbivanus B. Afo	Ulman
935457 Andi Muhammad Asmir	835831 Anniary	735610 Harzak Hery Cahyadi	945257 Rudi Rinaldi	710529 Sigit Sujendro
618256 Sasonoko	995151 Muhammad Nawir	645807 Dedy Setiadi	Nasrul Amin	835632 Dadi Ruswand
775096 Erwin	Ujoko Rantau	835546 Akhmad Sofyan	970289 Nida Azizan	Nathan Rombo