



EURO^{4SEE}

EuroCC Projesi ve NCC Türkiye

Özlem Sarı

EUROCC PROJESİ

EuroCC Projesi	EuroCC 2 Projesi
1 Eylül 2020	1 Ocak 2023
31 Aralık 2022	31 Aralık 2025



33 Ülke ve Tek bir Amaç!

- HPC/HPDA/AI alanlarında yetkinlikleri artırmak.
- Ulusal Yetkinlik Merkezleri (NCC'ler) kurmak



NCC Koordinatörü

TÜBİTAK ULAKBİM TRUBA

- ✓ Yönetim ve Koordinasyon
- ✓ YBH Uzmanlığı
- ✓ YBH Altyapı Desteği

Paydaşlar

ODTÜ
SABANCI ÜNİVERSİTESİ
İTÜ UHeM

- ✓ Akademik Danışmanlık
- ✓ Eğitim
- ✓ YBH Altyapı Desteği



NCC Türkiye Etkinlikleri

Sayılarla

35+
Eğitim

45+
HPC Seminer

15
Bilgi Günü

13
Çalıştay

2
Konferans



> 15000 Katılımcı

FİRMALARA ÖZEL EĞİTİMLER

- Firmalar için tasarlanan AI ve HPC konularını içeren demo ve uygulamalı ücretsiz online eğitimler/MOOC içerikleri

01

Firmaların Eğitim
İhtiyaçlarının
Belirlenmesi – Anket

02

İhtiyaçlara Dayalı
Eğitim Konularının
Belirlenmesi

03

Firmaları Hedefleyen
Özel Eğitimlerin
Planlanması

04

Eğitimde Uygulamalı
Oturumlar - Hands-on
TRUBA

05

Eğitim Sonrası Geri
Bildirim Anketinin
Yapılması

VAKA ÇALIŞMALARI:

Firmalarla 6 ay süren HPC (YBH), HPDA ve AI alanındaki projeler

- ✓ YBH Kaynağı (CPU ve GPU)
- ✓ Danışmanlık
- ✓ YBH Uzmanlığı

38 Vaka Çalışması **14** Başarı Hikayesi



FF4EuroHPC
Success Stories

SME Innovation Through HPC

Improvement of Graphene-Epoxy Based Composite Materials Production Through HPC

Organizations

Nanografi is a manufacturer and supplier of advanced nanomaterials with one of Europe's largest graphene production plants. All Dynamics is an SME focusing on advanced aerospace manufacturing technologies. Middle East Technical University (METU) is a Turkish public university that provides HPC expertise. TÜBİTAK ULAKBİM is a Turkish national centre providing HPC and data storage to academia and industry.

The Challenge

Some of the most popular products of Nanografi are nano-sized graphene and graphene oxide (GO)-enhanced polymer composites. Together with All Dynamics, they try to find the optimal composite properties (eg. the dispersion of graphene layers) by an expensive trial-and-error experiment-based approach which does not always provide the necessary insights. The challenge is to replace this time-consuming and costly process with HPC simulations.

The Solution

The types and number of functional groups on GO, the mass percentage of GO in the resin matrix, and the structure of the epoxy resin were optimized with HPC simulations. The material were manufactured, tested for material properties and simultaneously modelled by the HPC experts. With classical molecular dynamics simulations, which due to the size of the systems and level of interaction required HPC, strong candidates for the actual synthesis stage have been identified.

The Impact

Thanks to this experiment, All Dynamics is able to reduce the development time for new high-quality epoxy-graphene nanocomposite materials by up to 1% and the costs by up to 20%. Employing the new HPC workflow, new materials with improved properties can be designed and produced on a large scale with very high accuracy. The company expects to reduce testing material waste by 75% (approx. €300,000 savings per year) and raw material consumption by 40% (approx. €350,000 savings per year). The new HPC-based workflow will provide All Dynamics with a competitive advantage and a corresponding increase in revenue (expected to add up to €90,000 during the next 3-4 years). Nanografi will be able to sell significantly more nanocomposite products to customers, especially automotive and aerospace companies, because of the optimization provided by All Dynamics. As a result of the experiment, graphene will gain a stronger foothold in the composites market as a mechanical performance-enhancing and weight-reducing additive, both of which are highly desired properties for aerospace applications.

Benefits

- All Dynamics expects to save over €400,000 per year (production level tests are necessary)
- All Dynamics expects an increase in revenue up to €90,000 during the next 3-4 years
- Within 3 years, Nanografi expects to increase sales of graphene-related products by a factor of 20

Industry Sector: Manufacturing

Technology used: HPC Simulations, Finite Element Simulations, IEC

Find out more

İletişim Kanalları



Teşekkürler!



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the European Union



EuroHPC
Joint Undertaking

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