

The transcript of an interview with an Aeronautical Engineering student who used SCORG alto for his Final Year Project at City, University of London in 2021

Hello there. Welcome to my presentation. My name is Rohaib Ahmed, and I'm a final year student at City, University of London. I am currently studying aeronautical engineering. I have an interest in computing technology. This is why I chose to do this project, as it was interesting to me. The title of the project is Cloud Computing – CFD analysis of a Twin-Screw Compressor. The main aim of my project was to compare two different platforms. One is a local platform, and the second one is SCORG alto, the platform I'm going to talk about today.

The main objectives were to analyse the performance of the screw compressor, evaluate in-depth SCORG alto and compare the features of SCORG alto to a local computer. I'd gather results of SCORG alto and local computer and compare them in terms of efficiency and producibility and how hard was the utilisation. To gather one of my results, I was using SCORG. This software allows users to design and analyse positive displacement machines. I'd be using commercial CFD software ANSYS CFX to perform my CFD calculations.

"Is cloud computing the future?" Cloud computing means that you can access a computer with the aid of an Internet connection. It's a computer located away from you, so not in your location. However, with the aid of an internet connection, you can access the computer. It's very beneficial, especially in the current climate during the pandemic where people are forced to not go to work, not go to university. If all their work was at uni, it could be a problem for accessing it. So with cloud computing, that would be possible. Because of cloud computing, many offices, businesses, and educational institutions were allowed to operate because of this technology.

In terms of some results that I've gathered from my project, I compared SCORG alto and the local platform's connection speed. It's pretty essential because when you're using computing, you want to make sure that the Internet connection is good and you're not suffering from any delays. My local PC had 72.05 Mbps download, and 18.55 Mbps upload speed, which is good and above the UK average. However, when you compare it to SCORG alto, which has 494.18 Mbps download and 924.24 Mbps upload speed, you can see that this is so much faster than anything you can get.

Another thing that I compared is how the hardware behaves when performing CFD calculations. The local PC used only 28% of the CPU for the dry compressor, while SCORG alto was using 54% and less RAM than the local PC. CPU utilisation was 61% on local PC and 100% on SCORG alto for the oil-injected compressor.

When it came to the results from ANSYS CFX, SCORG alto was faster in every single test I did for both compressors, even though I was using fewer resources. To keep it fair, I had several iterations, and I matched it on both computers. One starts from 450 to 460 I was using two cores, so for my PC, it took 46 minutes and the virtual PC 90 minutes. This is the same trend for all the results. SCORG alto was much faster.

Q&A

How do you find using SCORG software?

I think the software is straightforward to use, and I like the GUI. It makes it clear what the user has to do. I like the fact that it gives you reports about machines you're analysing. In my case, it was a positive displacement machine. I also like that you can get a 3D view of it at the end, like a full 360-degree view of it. It makes work easy and it's really user friendly.

How did you learn and get trained?

Majority of my training came from easy-to-follow tutorials that are in SCORG alto. It's a PDF file, and it gives you step by step instructions. It goes from all steps, e.g. how would you like to change your geometry and analyse it. That was useful. Also, webinars were beneficial. I like that during webinars, someone is talking over it, making it clear what it is. They have a handbook as well so if you want any more extra details about how to use the software, you can go there.

Can you tell us more about your experience with cloud computing and SCORG alto?

I found that it is effortless to use a SCORG alto. The process to purchase it is also very simple. I like the user interface of the SCORG alto portal. It has big icons with clear information on days used and days left, so the user won't look for how many days left. I like the fact that when your cloud computer is about to expire, SCORG alto will email you in advance, saying how many days you have left and asking if you want to extend it.

How has SCORG alto impacted your engineering educational experience?

Before this project, I wasn't aware that you could even do the CFD calculation in the cloud. After this project, I realised the potential that cloud computing has and how useful it is. I also realised that it would have been advantageous as a uni student. I was always transferring files from my local PC to my uni PC. If I have a cloud computer, it would have made it much more manageable.

Were your project objectives met?

Yes, my project objectives were met. The key was to compare the results from SCORG alto and a local PC. I made some comparisons regarding internet connection speed, hardware utilisation, and the key outcomes: how quickly it takes to do iterations.

What were the main outcomes and achievements of your work?

The main outcomes were to use the platform SCORG alto itself, compare the previously showed results, to run and use SCORG on the virtual computer, not just the local one.

How was the CFD modelling and analysis done with SCORG alto?

One problem was using my mesh directly from SCORG because it was too big to analyse, so my supervisor sent me a smaller case to perform calculations. So I imported that model into ANSYS CFX and started performing CFD calculations that way.

What were the technical challenges faced, and how they were overcome? Any typical examples?

There weren't many technical challenges whilst using SCORG alto. However, one challenge I faced was that there was no graphics card installed on my virtual computer. So I couldn't do any post CFX work, and you couldn't see the compressor module. There was just a black screen where the model should show up. So I couldn't overcome that because we didn't install the graphic card. But except that, there were no other challenges.

Was there anything that does not work the way it should? Did it crash? Did it get slow?

The virtual computer did not crash despite doing heavy hardware demanding calculations. Moreover, I noticed that when using four cores oil-injected calculations, the processor use went up to 100% but did not crash. One more thing was that I have tried to do some basic paint 3D work, but because of the lack of a graphic card, I couldn't do it.

What do you like the most about SCORG alto?

I like that it was such a fast Internet connection speed that you're never slowing down when you are online. The portal tells you that when your computer is running or when it's not with the red dot, that's easy for someone to see. The purchasing process is very simple. You have got emails regarding key information. When performing CFD calculations, they can be heavy in terms of storage. In SCORG alto, I like the fact that there is no limit to storage. On my local computer, I had to delete some files because CFD files got too big. However, with SCORG alto, you have basically unlimited storage.

In case you are a STEM student and looking forward to work on twin screw machines such as compressors and expanders, register yourself on SCORG alto portal and avail the 50% discount for academic license → <https://scorg.info>

SCORG alto is not made just for students. So please browse the above website to check what can we offer you.