



July 1st, 2016

Dr. Morse
Deputy Director, Center for Precision Engineering
108A Duke Centennial Hall
Mechanical Engineering and Engineering Science
The University of North Carolina at Charlotte
9201 University City Blvd, Charlotte NC 28223

Dr. Morse, Cummins Inc. is a global power leader that designs, manufactures, sells and services diesel engines and related technology around the world. Cummins has more the 100 manufacturing and more the 20 technical design sites as well as a network of 600 company-owned and independent distributor facilities and more than 7,200 dealer locations in over 190 countries and territories.

This global footprint requires Cummins to employ the latest in design and manufacturing technology to meet the needs of our diverse customer base and to meet the ever increasing demands for clean power. These advanced technology needs drive tighter tolerances in our designs and manufacturing space which in turn drive the need for more and more accurate measurements to validate these designs and control the manufacturing processes. As a result the need for advanced Metrology technology and the associated skills is critical for the success of our business.

While the needed advanced measurement technology presents several unique challenges, the skills to select, implement and manage this technology within our processes presents the greatest challenge. There are many Metrology related skills associated with various engineering and scientific disciplines, unfortunately however there are very few degree programs that include these skills as part of their core curriculum. Even when course work is available as an elective the students do not understand the potential importance to their future employer. As a result companies like Cummins, where Metrology is a critical components of their processes, are forced to develop internal training programs or attempt to partner with universities and colleges to develop the necessary course work.

Recently Cummins Inc. performed an internal survey asking engineers associated with design, manufacturing and supplier development, if Metrology courses where available would they be willing to take this courses. The survey had an almost 70% return rate showing a strong interest in gaining these skills and of the participants 1/3 indicated they would attend a college level course to gain the necessary skills.

Cummins Inc.
500 Jackson St.
Columbus, IN, 47201
Tel (812) 212-1960
Steven.r.stahley@cummins.com
www.cummins.com



While I personally have spent more than 30 years working in the Metrology discipline at not only Cummins, but within DoD as well as the electronics and aerospace industries I see not only the need for developing Metrology skills but having programs that can validate these skills.

My interest is not in the development of degree programs specific to Metrology but more to enhance existing engineering and scientific degree program curriculums. It is also very important that any such enhanced curriculum not just be available to students currently in a degree program but be available to professional in the work force who wish to learn Metrology relate skills critical to their roles. This then drives need for remote learning to allow professionals to attend course work while still in their current jobs. In addition as these Metrology skills would be an enhancement to their existing education, it is important there is a form of certification to assure the skill have met certain minimum requirements.

After having reviewed the proposed UNCC Graduate Certificate in Precision Metrology program, as the Global Leader of Metrology for Cummins Inc. I fully support this program, I see it as not only benefiting Cummins Inc. but more generally US industry.

Sincerely

A handwritten signature in black ink, appearing to read 'St Stahley', with a long horizontal flourish extending to the right.

Steven Stahley
Director of Measurement Excellence
Cummins Inc.

July 15, 2016

Professor Edward Morse
University of North Carolina at Charlotte
Department of Mechanical Engineering and Engineering Science

Re: Graduate Certificate in Precision Metrology

Dear Professor Morse,

On behalf of the Corning Optical Communications' measurement and metrology engineering community, we are delighted by the potential for a certificate program in Precision Metrology to be offered by UNC Charlotte's Dept. of Mechanical Engineering. As a high-volume manufacturer of dimensionally precise products, robust metrology and measurement engineering plays a distinct role in the success and advancement of our products and manufacturing processes. Unfortunately, there are significant challenges and barriers relative to the skills in precision metrology and engineering we desire. That is, well-trained engineers are few in number in the job market and quality education and training opportunities in precision metrology for our current engineers is difficult to find.

The proposed program would play a significant role in filling the training opportunity void. Our intent to support engineers in their pursuit of further and higher education would be well complimented by this program, particularly those aligned with precision metrology and engineering. Also encouraging is the availability in the mid-to-long term of candidates for hire having completed this program. Such candidates would possess the precision engineering and metrology fundamentals often evident in UNC Charlotte MSME graduates that are vital to our engineering and scientific activities.

Please consider our support in moving forward with the establishment of this program.

Regards,



Charlie Stroup



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June 30, 2016

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Prof. Edward P. Morse
Deputy Director, The Center for Precision Metrology
108A Duke Centennial Hall
University of North Carolina, Charlotte
9201 University City Blvd.
Charlotte, NC 28223

Dear Prof. Morse,

During your recent visit to QVI, you discussed with Mike Metzger the possibility that UNCC might offer a certificate program in metrology. I would like to offer QVI's encouragement and support for starting such a program.

Our business – designing and building equipment for precision metrology – depends on an experienced staff of engineers, technicians and machine tool builders well-versed in the principles of dimensional measurement. While many colleges and universities, including those in the Rochester area, offer fine programs in mechanical, optical and electrical engineering, there is no degree or significant course work offered in the field of metrology.

Today, QVI has over 450 employees worldwide, two-thirds of whom are involved hands-on in designing, building and servicing our metrology products. We would most certainly have an interest to offer some of our staff the opportunity to earn such a certificate, and would recognize the certificate as a worthy credential in our hiring process.

Best regards,

Edward T. Polidor
President

P 585 544-0450

F 585 544-0131

W www.qvii.com

E info@qvii.com

8501 INDIAN AVENUE, ROCHESTER, NEW YORK 14621



July 18, 2016

To Whom it May Concern,

It is with great enthusiasm that I write this letter in support of the effort to have UNC Charlotte offer a certificate program in metrology. Our manufacturing facility produces large power generation equipment, including gas turbines, steam turbines, and generators, that are used all over the world. Located at 101 Siemens Avenue in Charlotte, our plant has been in operation since 1969. We currently have approximately 1,600 employees working in a factory that has roughly 1.2 million square feet of manufacturing and office space. It is recognized by our leadership team that deepening our site collective knowledge in state of the art metrology methodologies is a critical facet to the advancement of our large scale manufacturing technology. We see the proposed metrology certificate program as a terrific opportunity for practicing engineers to gain additional knowledge specifically in the field of metrology.

Siemens has proudly invested in the University of North Carolina Charlotte in past years, and we appreciate the willingness of local schools such as UNCC to embrace true partnerships in workforce development and training. You continue to help us with research and a talent pool today, to ensure our sustained success. A metrology certificate program will further equip local talent with the skills we need. As such, we look forward to both our current employees and potential employees having the opportunity to earn this certificate. We are proud advocates for U.S. manufacturing and believe this certificate program will also encourage other producers, as well as servicers of manufacturers, to take advantage of our area and add to this robust community.

Regards,

A handwritten signature in black ink, appearing to read "Kevin Poet".

Kevin Poet
Head of Operations, Siemens Charlotte Energy Hub

Siemens Energy Inc.
Siemens Charlotte Energy Hub

101 Siemens Avenue
Charlotte, NC 28273
Tel: (704) 551-5100
www.siemens.com

July 21, 2016

Prof. Edward P Morse
Deputy Director, The Center for Precision Metrology
University of North Carolina, Charlotte
9201 University City Blvd
Charlotte NC 28223

Dear Prof. Morse,

Caterpillar would like to offer its support and encouragement for your proposed online graduate level certification programs in Metrology.

As a company rooted in engineering, Caterpillar understands that our business greatly benefits from a highly skilled workforce. We see your proposed metrology focused certification program as a training and development opportunity to greatly augment or improve the knowledge and skills of employees in the manufacturing industry. With very few training or certification courses available in the field of metrology, your proposed program will provide a much needed resource for our technical staff to obtain a career enhancing certification.

Assuming that the course curriculum meets acceptable standards, we would consider utilizing your program as a potential career development credential for employees. We look forward to hearing from you more on this program and other opportunities where our employees can benefit from advanced training in the Metrology discipline.

Regards,



Dr. Craig Habeger
Engineering Manager 3,
Manufacturing Technology