

Paula Vettel

This authority in formulations and regulatory issues develops high-performance lubricants from renewable resources.

By Rachel Fowler
Managing Editor



Paula Vettel
The Quick File:

Dr. Paula Vettel is technical director, formulations and regulatory, at Novvi LLC. She received her bachelor's of arts degree in chemistry from Northwestern University in Evanston, Ill. She has a doctorate in organic chemistry from the University of Illinois at Urbana-Champaign. Vettel has 11 years of experience with Amoco Petroleum Additives in the research and development of engine oil additives and formulation development and 16 years of research experience with D.A. Stuart Co. in automotive and industrial gear oils, hydraulic fluids, straight oils, forging compounds and mining hydraulic fluids. She is the author of several articles and presentations on the development of limited-slip additives and bench testing.

Vettel has been with Novvi LLC in Emeryville, Calif., for more than eight years, developing new industrial and automotive lubricants using renewable synthetic base oils. She is an expert in the area of specifications such as Ecolabel and Vessel General Permit for environmentally acceptable lubricants.

Vettel is an active member of STLE and is a former chair of the STLE Northern California Section. In addition to presentations at the STLE annual meetings, she is an STLE course instructor, vice chair of the ASTM D02.12 Subcommittee on Environmental Standards for Lubricants and a long-time member of D02.N Subcommittee on Hydraulic Fluids. She also is a member of SAE International and the American Chemical Society.

TLT: Who is Novvi, and what are renewable hydrocarbon base oils?

Vettel: Novvi LLC is a young, innovative joint venture created to develop, produce, market and distribute high-performance oils and lubricants from renewable sources. We take a very unique monomer called farnesene and oligomerize it with linear alpha olefins to make a high-performance low-toxicity Group III+ base oil called NovaSpec that can be used in place of mineral oil in any lubricant application. Farnesene is a C₁₅H₂₄ tetraolefin that is produced on a

large scale by fermentation of sugar using yeast that have been genetically optimized for hydrocarbon production.

TLT: What are your current responsibilities?

Vettel: I am the technical director for formulations and regulatory. I am responsible for developing formulations using our base oil to show Novvi customers how they can use our base oil to make their own innovative products to delight their customers. We specialize in new technology for environmentally acceptable lubricants. My team for-

mulates new lubricants and provides technical support for our base oil and finished lubricants. We obtain approvals for Novvi hydraulic fluid and received National Sanitation Foundation White Book HX-1 listing for our base oils.

I also manage all the regulatory approval activities for Novvi. This involves working with our only representative on test programs and dossier preparation. There are many countries (U.S., European Union, Asia-Pacific) that require registration of new substances before import can begin. We have approvals everywhere to support Novvi global sales.

TLT: How does the interest in renewable resources affect your work?

Vettel: It makes our projects very exciting! We have many opportunities around the world to work with customers to develop fresh products for environmental applications. All of this is possible because only our base oil can meet both the environmental specifications while maintaining the high performance that customers expect from mineral oil and synthetic hydrocarbon lubricants. Our NovaSpec EL34 is ultimately biodegradable with low toxicity, which enables use



The Novvi lab team (left to right): Willbe Ho, Addison Beckemeyer, STLE-member David Matucha, Lynn Rice, Paula Vettel and Jason Rosalli. Not pictured: Liwenny Ho. The team formulates new lubricants and provides technical support for the base oil and finished lubricants.

in Ecolabel and Vessel General Permit applications. It is the only hydrocarbon base oil on the Ecolabel Lubricant Substances Classification List. Our NovaSpec 450 was created to

We have a responsibility to use renewable resources to support sustainable life on our planet.

enable low-viscosity low-volatility engine oils. Now these engine oils also can have renewable content that is carbon neutral according to Life Cycle Analysis.

TLT: What do you see as your role in influencing the general direction of industrial basestocks and additives?

Vettel: At Novvi, we challenge the lubricant industry to go beyond traditional sources of base oil to formulate environmentally acceptable lubricants. Ecolabel has had very limited success getting approved products into general use in the market because of performance limitations and cost. There is no compromise with our lubricants. It is a drop-in in every application including re-refining. Performance is the most important consideration for customers. Without great performance, environmentally acceptable lubricants will al-

ways be relegated to niche, not mainstream applications. There are so many different industries that use lubricants in environmentally delicate applications. All of them should be using high-performance lubricants that are gentle on the environment. We all have a responsibility to do our part to use renewable resources to support sustainable life on our planet.

TLT: What challenges you in your responsibilities?

Vettel: Since our base oil can be used in any type of lubricant, we are challenged to formulate many new lubricants and understand each application including specifications and field requirements. In particular, we need to keep on

top of new industry developments and changes, especially Ecolabel 2018 and API GF-6. Low-viscosity engine oils are the upcoming trend, and Novvi base oils easily make 0W-20, 0W-16 and even 0W-12 and 0W-8 engine oils. The advent of electric vehicles means heat transfer fluids will become valuable. Novvi base oils have excellent heat-transfer properties. OEM requirements for hydraulic fluids are undergoing a lot of changes, which also means more test work for us.

I also create and maintain all Novvi SDS, so I need to be aware of GHS requirements and updates. Working with regulatory authorities to get approvals requires a great deal of patience (and money!).

TLT: What lubricant organizations do you belong to, and what industry events do you attend?

Vettel: Novvi belongs to many industry groups:

- Novvi is a corporate member of STLE. We attend and present at every annual meeting. We are active members of the STLE Northern California Section. I rotated through the leadership positions there.
- Novvi is an Independent Lubricant Manufacturers Association (ILMA) supplier member. We enjoy attending the fall meeting and taking advantage of the excellent networking opportunities. Novvi is joining the Union of the European Lubricants Industry (UEIL), similar to ILMA.
- Novvi belongs to the American Petroleum Industry (API) Lubricant Group and the BOI/VGRA Task Force. I attend the meetings held during ASTM week and participate in teleconferences. Our consultant, Steve Haffner, retired from Infineum, keeps us in the loop on all developments.
- I belong to the ASTM D02 Committee, and I am the vice chair for Subcommittee 12 Environmental Standards for Lubricants. I have attended the Subcommittee N Hydraulic Fluid meetings for a long time.
- I belong to the SAE TC-1 Engine Oils and TC-3 Gear and Transmission Fluids.
- I attend special industry



Paula Vettel working in the lab.

meetings such as the Ecolabel Ad-Hoc Working Group that was convened to advise the EU Environmental Commission and the Joint Research Council on how to update the Ecolabel specification for 2018.

- I spoke in March at the F&L Asia conference in Singapore presenting an Ecolabel update and information on Novvi lubricant field testing.

TLT: What is your background in the lubricants business?

Vettel: My doctorate is in organic chemistry, so I was recruited by Amoco Petroleum Additives Co. (APAC) to synthesize new additives for lubricants. I made new dispersants and friction modifiers for passenger car and heavy-duty engine oils. We had a full en-

gine test lab in Naperville, Ill., and it was exciting to see my invention actually running in engines. I was fascinated with how all of the additives in engine oils come together to protect equipment. I transferred into formulations development to learn more about product development and field testing of new formulations. I learned all about ASTM and API specifications. I was very fortunate to have incredible mentors and colleagues at APAC who guided my professional and personal development and made sure I had the right experiences to progress as a formulator.

When APAC was sold in 1992, I decided to stay in the Chicago area. I was hired at D.A. Stuart Co. to lead a team supporting Sturaco friction modifiers and automotive gear oils. As a synthetic chemist, I also was given responsibility for manufacturing and developing sulfurized addi-

tives and esters/amides for metalworking fluids. Later I took on hydraulic fluid formulations and support of our greases and industrial oils product lines. I even dabbled in forging compounds!

I had many adventures at D.A. Stuart with plant support, customer travel, being an LRI meeting presenter and forging field trials. I began attending ASTM D02 meetings for automotive gear oils and hydraulic fluids.

I learned the value of attending local and national STLE meetings and made many friends and important business connections. Again, I was very fortunate to have wonderful colleagues at D.A. Stuart who helped me learn new aspects of the lubricant business and supported me through tough times. When D.A. Stuart was sold to Houghton, I began a new adventure with David Lindsay and John Howell forming Primagy Consultants and GHS Resources. It was very difficult to start a new business during a recession, but our friends in the lubricant industry were very welcoming and supportive. The GHS Resource business is thriving now under John Howell.

TLT: Why did you move to California to work for Novvi?

Vettel: I was looking for a new opportunity. Amyris was building its Lubricant Group and needed someone with broad lubricant development experience and contacts. I never thought I would commute from Illinois to California for eight years, but I would not have changed a thing. 🌍

You can reach Paula Vettel at vettel@novvi.com.