the alliance
always aligned with clients in mind

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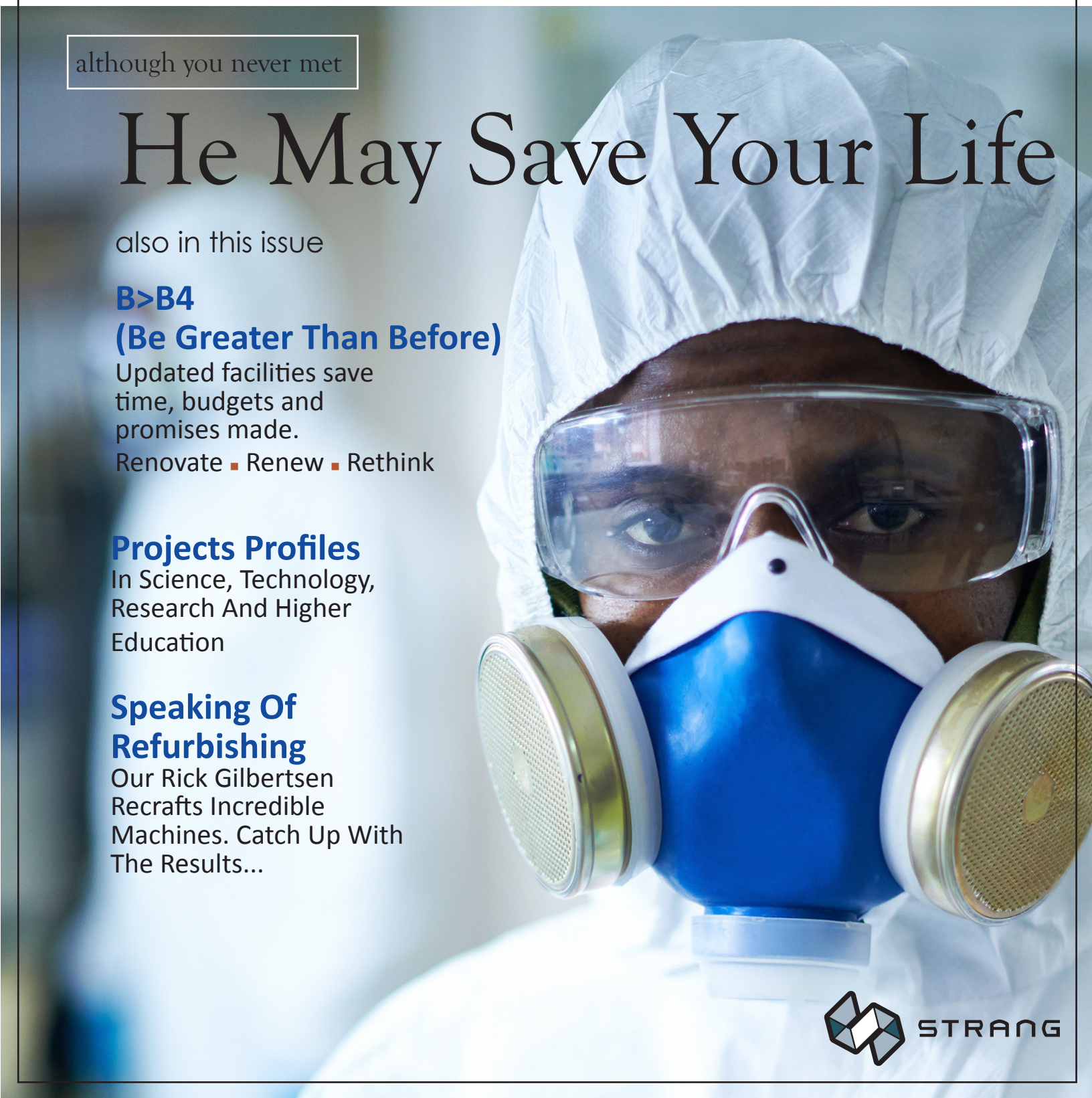
Issue NINE



although you never met

He May Save Your Life

also in this issue

B>B4
(Be Greater Than Before)
Updated facilities save time, budgets and promises made.
Renovate ▪ Renew ▪ Rethink

Projects Profiles
In Science, Technology, Research And Higher Education

Speaking Of Refurbishing
Our Rick Gilbertsen Recrafts Incredible Machines. Catch Up With The Results...

STRANG

The View From Here

Hi There, And Welcome Back To This Issue Of The alliance.

Our cover headline is no melodrama. Here at Strang, we design research and technology laboratories and advanced medical manufacturing facilities – meeting exacting federal standards and specifications – for a select group of global organizations within private industry, higher education and government.

Inside such spaces, our clients ply their scientific knowledge to diagnose disease, explore therapeutic options, discover new medicines and evaluate genetics and DNA testing protocol, to mention a few. Our clients are healthcare innovators, exploring new horizons in liquid biopsies and wearable diagnostic technology. And, some of our clients work beyond healthcare, providing scientific investigations into the chemical, agrochemical and food industries.

Our mission is straightforward: to design discovery spaces that empower, enlighten and engage clients to perform at their scientific best. We are proud of our ever-so-modest role in that process.

Also in this issue

- As architects and engineers, our responsibilities include stewardship of clients' resources, i.e. human, financial and environmental. That's why sometimes, we consider "rebooting" your existing space before building anew. Learn why a facility renovation could be the best answer.
- Meet our colleague, Rick Gilbertsen. When this senior architect is not leading some of our largest projects, Rick winds down by revving it up. You see, Rick restores classic motorcycles. Take a look at two of his recent projects.

INSIDE

The alliance eZine

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Critically clean(rooms)

4. In designing cleanrooms, the simplest of spaces must be designed with critical attention to detail.

Making old labs new

8. A closer look at what goes into renovating labs and some examples of our renovation projects.

Re-Cycling with Rick

14. Rick Gilbertsen is a master architect. But wait until you see what he can do with old motorcycles.

From Our Family To Yours

Wishing You A Safe And Happy Thanksgiving

IB EXECUTIVE CHOICE AWARD
2015 WINNER

InBusiness Magazine readers named Strang the top commercial architectural firm in Madison.

STRANG

CLEANROOMS

Lifesaving Research Happens Here

At first glance, most cleanrooms appear simple in design. They lack the complex aesthetic features of other types of architecture and are often square, white rooms with an unassuming quality.

But when those cleanrooms are used to develop products that advance the healthcare of humankind, it's clear why even the simplest of spaces must be designed with critical attention to detail.

Less is certainly more for these labs. The complexities are in the systems that keep the rooms clean – the fans and vents, the ceiling heights and the finishes on walls and floors. Designing a quality cleanroom requires not only experience, but a thorough understanding of the industry standards and regulations that guide the work supported by the clean room.

Four Categories Of Cleanrooms:
Research ▪ Development ▪ Production
Quality Control

look closer

Strang architects and engineers have designed cleanrooms in a variety of industries, including pharmaceutical, medical device production and bio-technology. Whether used for research, product development, production or quality control, a clear understanding of the equipment and processes within and around the room are critical to proper performance.

The market sometimes dictates what – and when – a cleanroom is built. When a rapidly growing pharmaceutical outsourcing company won FDA approval for a new drug, Strang designed a new 25,000-square-foot plant in a very short time frame. While the project was fast-tracked, meticulous attention to the appropriate details throughout design allowed the project to meet the rigorous drug manufacturing regulations and open as scheduled. In cleanrooms, the tiniest airborne particles and other contaminants can wreak havoc on sensitive machines, throw off lab results or jeopardize the quality of pharmaceuticals. There is a very small margin of error for cleanliness. It's vital for designers to have a thorough understanding of industry standards and how to meet them.

Cleanliness Is Measured In Paricles of Microns

ISO International Organization for Standardization

The International Standards Organization (ISO) classifies room cleanliness on a scale of 1 to 9 based on the size and quantity of particulate within the space. The lower the number, the cleaner the room. Each lower ISO classification reduces the number of particulates allowed by a factor of 10. So while an ISO Class 8 room allows 3.5 million particles per cubic meter at 0.5 microns, a Class 3 room limits the count to just 35 particles of the same size.

look closer

Strang's Cleanroom Experience:

Pharmaceutical
Biotechnology
Medical Devices
Surgical Suites
BioPharmaceutical

The way to bring rooms up to these standards is to constantly filter the air, moving it through high quality or High-Efficiency Particulate Arresting (HEPA) filters. In an ISO 8 cleanroom, all the air in the room may need to be filtered 10-40 times per hour. The industry refers to this as an air change rate or air changes per hour (ACH). But that number can become much higher, depending on many factors including the classification goal, process, room configuration, and supply & return locations.

Sophisticated air-handling systems push air through the filters in order to minimize the particulate count. The key is to find the most efficient fan to move the air. The harder the fan has to work to move the air, the more energy it consumes and heat it generates. It is common for cleanrooms to also have moderately tight temperature and humidity requirements, adding to the complexity of the mechanical systems. Maintaining the environmental

Strang's Clean Team

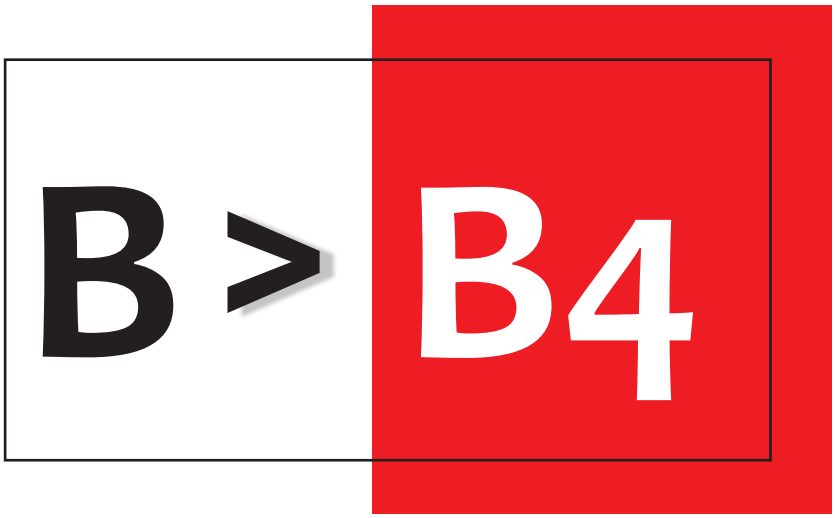
Wayne Whiting	**Dan** Hale	**Dan** Schmitz	**Scott** Wheaton
			
architectural	project manager	mechanical	electrical

conditions within a cleanroom commonly entails cooling and re-heating the air. Good cleanroom design can have a significant impact on the operating costs.

The size, shape and proportions of the room are also important. This is where Strang's integrated design approach adds real value to the process. Architects and engineers work closely together to ensure all the variables are considered throughout the design process. A large room needs more powerful fans to move larger quantities of air.

In cleanrooms with ISO 4 classifications, the air flow must be uni-directional, blowing the air straight down into return vents on the lower portions of the walls. However, in larger rooms, the air needs to move horizontally to reach return vents on the perimeter of the room, making floor returns necessary.

Of course, each cleanroom is as different as the process it supports, making the variables and design considerations limitless. So, while most cleanrooms still appear to be the most basic of spaces, the design is never as simple as it appears.



Renovations Designed to Empower Science, Research and CFOs

A Select Group Of Science and Technology Clients, Each With Exacting Standards, Calls Upon Strang To Design Their New Facilities. However, Sometimes Clients Are Best Served With "New, Old Space" >>>

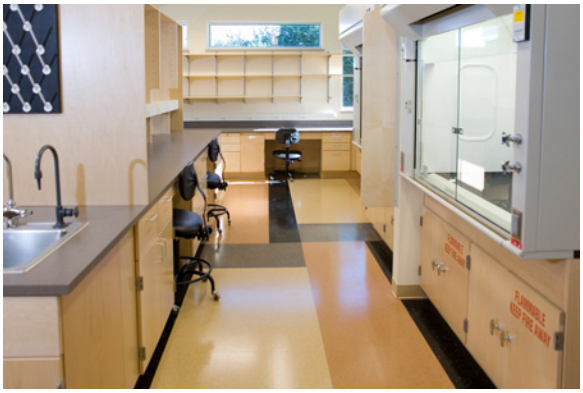
In the world of science and technology, facilities have very unique architectural and engineering needs. So when laboratory space needs to be upgraded, it leads to some very unique decisions – the first being whether to renovate, add-on, or build a new facility.

Let's start by looking at the various reasons for considering upgraded space. In some cases, it simply may be that company or organization is out-growing the building it occupies. This may be considered a "good problem" because there is an opportunity to grow the business.

In other cases, the space is the right size, but aging. Old labs may have mechanical, electrical, or plumbing (MEP) systems that are in need of repair or replacement. Even if the MEP systems are working properly, they may not be up to date with modern technology. The inefficiencies of old equipment, fans and mechanical systems may not only be costing the organization money, but they may be out of spec and impact the quality of the products being produced.

Keeping up with technology means having state-of-the-art lab equipment. This may require higher floor-to-floor heights or more efficient MEP systems. Market fluctuations also drive space needs. Companies that have invested in tiny labs for specific products may find they need wide-open floor spaces.

In all these cases, the question eventually arises: should we



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Health Emotions Research Institute

University of Wisconsin - Madison

The two-story 42,740-square-foot addition includes a vivarium, a magnetic resonance imaging (MRI) suite, labs, exploratory classrooms, subject test rooms, sleep study rooms, interview, observation, exam and conference rooms with support spaces.

Cell Lab (Confidential Client)

Confidential Client - Images Similar To Project

North America

Cell lab facility expanded to add 6,800 square feet. Expansion handles ISO-certified clean-room growth and qualification of cell lines; quarantined segregation of early development projects; increased bioassay capacity and segregation of projects; and BL2/3 isolation for working viral-based products.

B > B4

build new or renovate? That's typically when architects and engineers are called in to develop a solution. This takes a very thorough assessment to assure the best course of action.

One option to consider is to build a new lab space. One big advantage is having the best possible lab flow, so that processes are working at maximum efficiency in putting product on the market. Another advantage is having a structure that is integrated with the lab module.

Yet, not all organizations can afford to build a new facility. The reasons go beyond the cost of the land and the building. Time is a major consideration. Constructing a new building generally takes months longer than renovating current space. That means the product is not on the market soon enough, an extremely important factor in industries with very tight margins.

Renovating lab space is almost

STRANG

always more cost-effective for a company. That's not to say it's easy or simple or cheap. In fact, it could be quite expensive to replace entire MEP systems or construct upgrades while a building is occupied. The facility assessment will help determine potential cost impacts.

When renovating an existing building, architects and engineers must be more creative. It's like re-arranging the pieces of a puzzle to put together a new picture.

Architects will investigate the complexity of the project and look for solutions that will phase-in the work around existing processes. Avoiding disruption or downtime in a renovation project is critical. Sometimes there are constraints that limit options –but those constraints help designers make decisions faster.

B > B4

University Geoscience Lab

North Dakota State University, Fargo

The 1,890-square-foot renovation to the 1st floor of Geoscience includes the Quaternary Entomology Laboratory, which is used to study climate change.

Medical Device Lab
(Confidential Client)

Confidential Client - Images Similar To Project

North America

A 48,000-gross-square-foot addition to a manufacturing facility of silicone and thermoplastic products for medical devices for ophthalmic, fluid delivery and IV therapy systems. The addition expands the site's capacity by adding three ISO Class 7 clean-rooms, warehouse space and other support spaces.

B > B4

The biggest challenge in giving a facelift to an existing exterior of a laboratory building is controlling the vapor and air pressure leaks. New construction is designed with proper seals. But when existing walls are not replaced or windows converted, it's very difficult to keep exterior air and moisture pressures at bay when portions of the laboratory facility may be under negative pressure.

Mechanical systems are another critical part of any science facility renovation. Studying code compliance and working out energy efficiencies, while adding new MEP systems to existing systems takes experience and teamwork.

When these types of facilities utilize 10-12 times more energy than a typical office building, design solutions that address energy reductions are critical to the bottom line. This is where integrated design discipline is critical to a renovation project's success.

When the engineers, architects, interior designers and planners are all working together, they are able to see the cause and effect of the renovation process before it happens. They can plan the phasing logistics for the least possible impact on the business and its operational expenses. If done well, there will be appreciable capital cost savings in a renovated building, and a shorter construction time-frame.

In the final assessment, it's why most science facility owners decide to renovate their current facilities instead of constructing new buildings.

Renderings by Ballinger

B > B4

University of Wisconsin - Madison
Daniels Chemistry Building

University of Wisconsin - Madison

A 188,000 square-foot addition and 57,000 square-foot renovation to the facility will include the construction of a 10-story tower. New and remodeled space will house lecture halls, classrooms, offices and instructional labs for undergraduate general, organic, inorganic, physical and analytical chemistry.

RECRAFTING MAGNIFICENT MACHINES

a photo essay

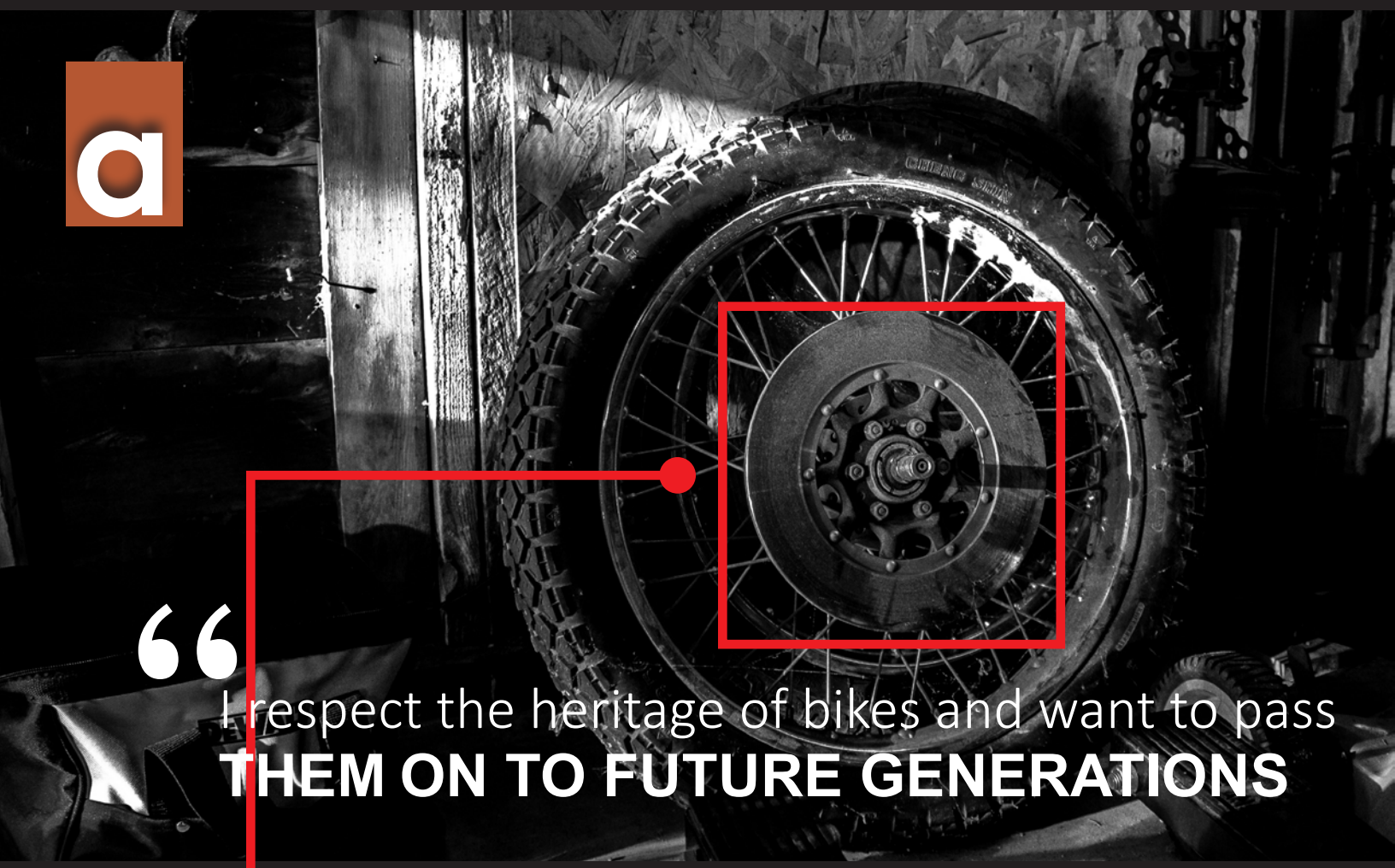
Rick Gilbertsen, AIA

Vice President
Senior Project Director

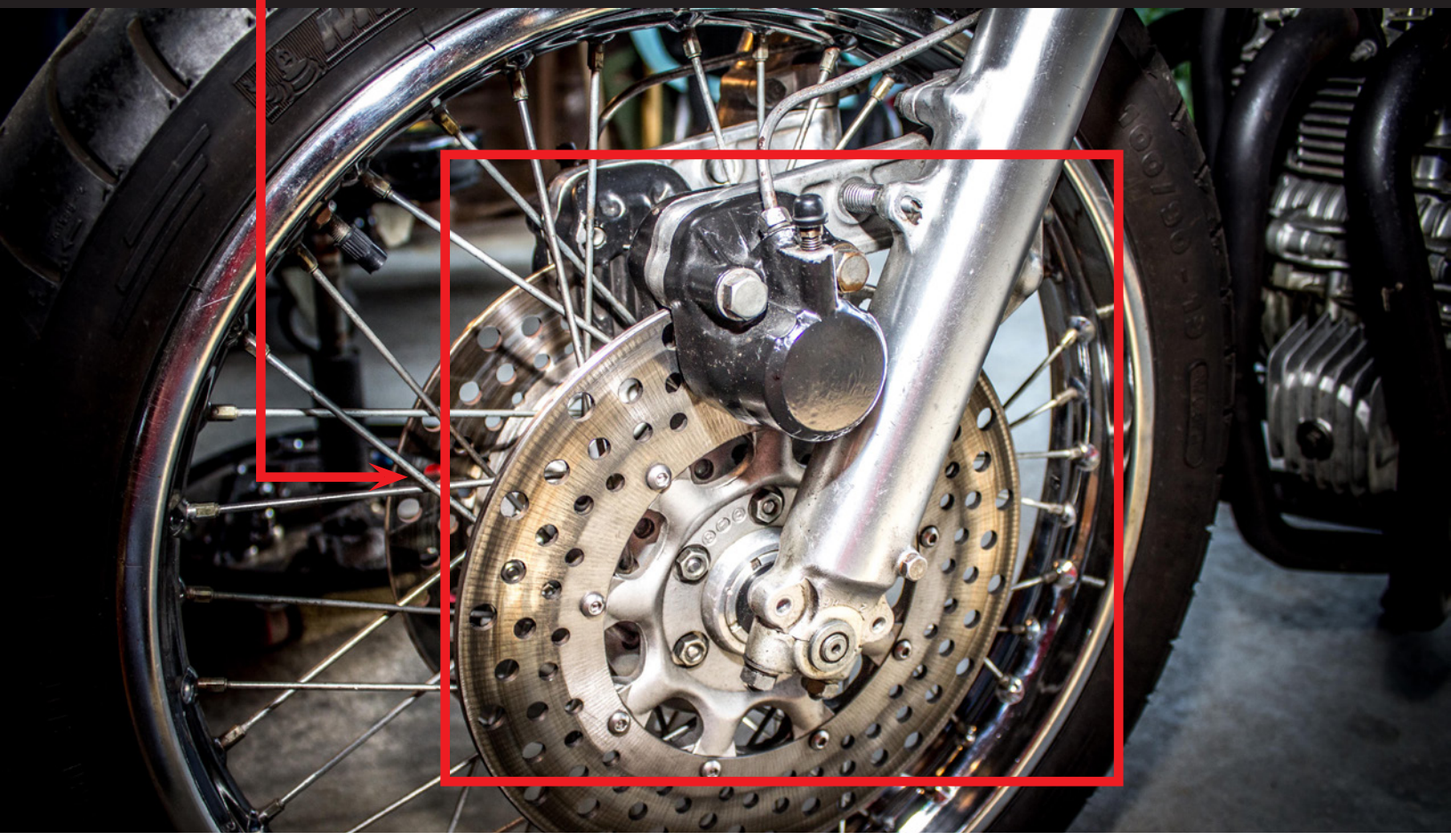
Rick has more than 25 years experience in project management and design. He spent much time in recent years with a confidential science and technology client in locations across the U.S.

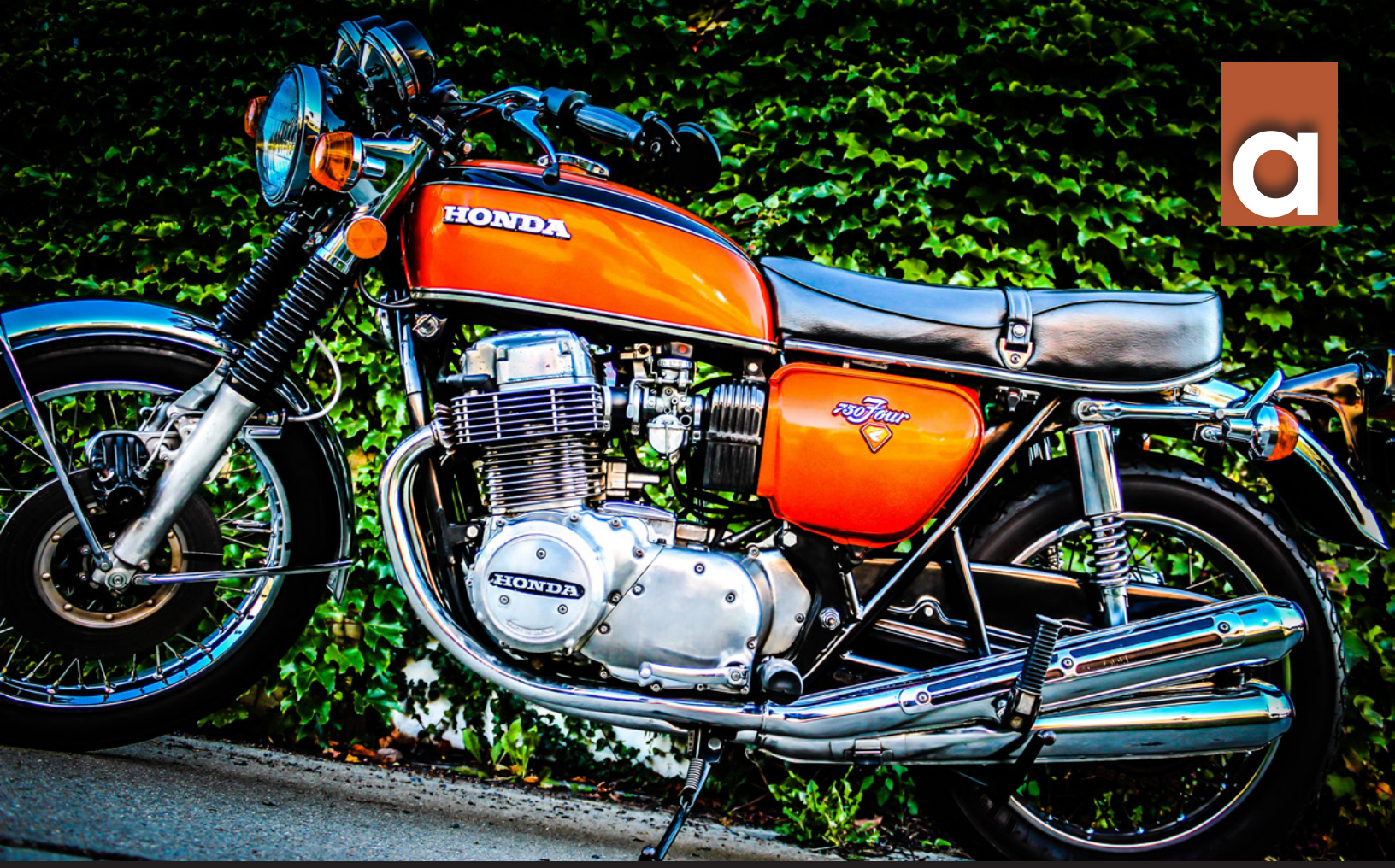
Rick earned his Bachelor's Degree from the University of Wisconsin- Platteville and a Master's Degree in Architecture from the University of Wisconsin - Milwaukee.

He fell in love with cycles at age 12 after his first ride on a dirt bike. In the years since, he's bought and sold more than 20 motorcycles. Some were two-stroke trail riders; others were high performance bikes. These days he usually has a couple of vintage cycles- in various stages of restoration- along with his Harley Davidson.



“I respect the heritage of bikes and want to pass **THEM ON TO FUTURE GENERATIONS**

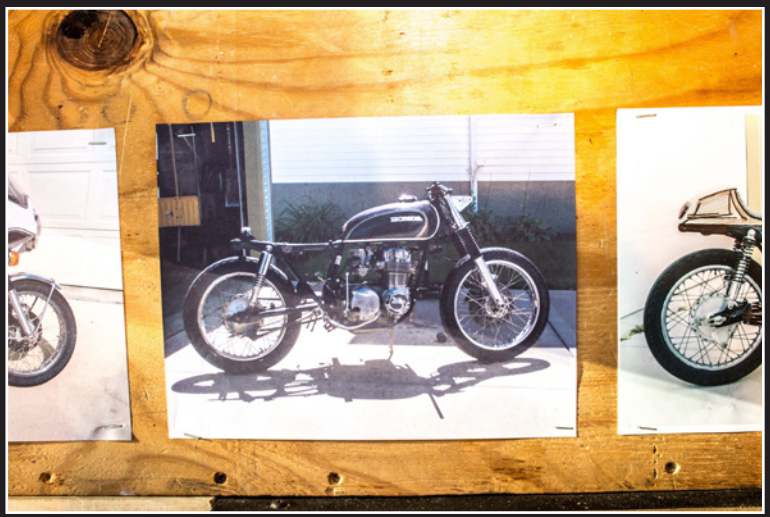



HONDA
750 Four
HONDA


“The Honda CB 550 was so beyond repair all I could do WAS TOTALLY REBUILD IT.

a


PJ1
COATINGS
LACK
BLACK FINISHES
Sea Foam
MOTOR TREATMENT
Kolene
Chain
BOESHIELD
T-9
PYROIL
Multi-Purpose
SILICONE
LUBRICANT
B'LASTER
MADE IN THE
BREAKS
LOOSE FASTER
Fabulous
B'LASTER
PB
POWERFUL
PENETRATING
CATALYST



STRANG

“Motorcycles Are The Perfect Melding Of Art And Engineering **THE BEAUTY IS IN THE DETAILS**

Rick Gilbertsen

NOTEBOOK

Welcome To Strang!

Join us in welcoming four new faces to our family. From left to right: Jens Hanson, BIM Technician, Connie Nankee, Senior Interior Designer, Scott Fanello, Director of Building Information Modeling, and Austen Conrad, Senior Architectural Designer. Each brings a wealth of experience and expertise to our team. Welcome to Strang.

Groundbreaking: Hamel Music Center

Officials of the Mead-Witter School of Music broke ground Oct. 28 on the Hamel Music Center at the University of Wisconsin-Madison campus. From left to right: Project Director Mark Bastian, Jacob Ziomek, Tim Crum, Curt Norton, President Larry Barton, Andy Geurts and Mike Libby.

NOTEBOOK

Professional Development

Two members of our engineering team are sharpening their skills through continuing education. Katie Lowery recently completed a class in Direct Digital Control (DDC) Systems at the University of Wisconsin – Madison College of Engineering; Nathan Zach travels to North Carolina this week for an energy savings seminar hosted by Carrier.

From Best Practices To Next Practices

www.strang-inc.com

Written, designed and produced by Strang's Creative Collaboratory

Questions or comments, please contact Randy Banks at RBanks@strang-inc.com

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