

CASE STUDY:

# Audi N50 Paint Finishing Plant

## Ingolstadt

**Project:** Audi N50  
Paint Finishing Plant

**Contractor:** M+W Central  
Europe GmbH

**Solution:** GRINNELL Grooved  
Mechanical Products  
& KWIKSTRUT Pipe Supports

**Systems & Materials:**  
Chilled Water – Carbon Steel  
CS up to DN500 / 20"

Cooling Water – Stainless Steel  
SS up to DN500 / 20"

Compressed Air – CS & SS  
up to DN300 / 12"

Hydrant Line – CS up to DN80 / 3"



### Profile

Early in 2014, plans were announced to develop a new paint plant – the new Lackiererei Decklack N50 – at Audi's Ingolstadt facility in Germany, the Audi Group's biggest production site. The new site, one of the second largest automobile factories in Europe, would be used to paint the first series of car bodies for the new Audi A4 model.

Later that year, GRINNELL Mechanical Products was required to specify and supply a complete HVAC mechanical solution to facilitate cooled water, chilled water and compressed air, as part of the building services of the new facility. The project was awarded on the strength of GRINNELL's integral proposal to supply a grooved coupling system with reduced fixed point forces, in combination with pipe support racks, pipe hangers and metal framing to overcome complex project challenges. GRINNELL grooved couplings eliminated the need for traditional techniques, such as welding at high elevation. By using grooved couplings we eliminated the need for expansion bellows which resulted in reduced anchor forces on the building structure.

### Scope of Works

Thorough preparation and a detailed technical proposal, including thermal expansion and pressure thrust, calculations added value in the early design stages. The experienced GRINNELL Mechanical Services (GMS) team presented CAD drawings to demonstrate the capabilities of its grooved pipework solutions for use in high rise structures and high end load situations. The GMS team continued to partner with an engineering and construction lead; providing skilled consultation throughout the project, from design to build.

To ensure that the installation phase remained trouble-free, training was delivered to on-site operators, using grooving tools to demonstrate safe and correct methods of pipe grooving. Installation work began in February 2015 and company personnel continued to visit the site to provide additional support, training, advice and reports, as well as to manage any unexpected issues as they arose, during the installation phase. The project was completed several months later.

The additional benefits to opting for grooved couplings and fittings over welded or flanged systems included faster installation time and safer operations. The absence of hot works eliminated special health and safety requirements and the need to isolate work areas due to fire risk, electric arc or fume generation that occur during welding.



# WHY GRINNELL Grooved Mechanical Products?

*"With detailed planning and preparation from the start we remained one step ahead of the competition and offered our customer an innovative, robust and cost-effective total grooved pipework solution for optimal efficiency."*

Marcel De Vries  
Johnson Controls



## Benefits

GRINNELL mechanical products were supplied throughout the building with specification to the piping bridge, piping ring line, cooling towers, rooftop piping, pipe risers and mechanical room. Prefabricated pipe support racks were connected to the primary building structure to support the DN500 / 20" Chilled Water ring line around the entire building. Flexible coupling configurations replaced the need for expansion bellows transforming linear pipe expansion into angular deflection. A variety of coupling sizes, ranging from 60.3mm to 508mm (2 to 20 inches) supported piping around the facility's 48m x 60m mechanical room, housing chillers, compressors, pumps and headers. KWIKSTRUT metal framing and brackets were specifically designed as part of the piping system and pipe support solution. In addition, bespoke colour requirements for compressed air piping were applied to satisfy the client's needs and specifications.

Marcel De Vries from Johnson Controls was responsible for project management. He comments, "The team did a thoroughly professional job from the design phase right through to final installation. We were able to provide a unique offering with an integral solution of GRINNELL piping systems and KWIKSTRUT pipe supports. With detailed planning and preparation from the start we remained one step ahead of the competition and offered our customer an innovative, robust and cost-effective total grooved pipework solution for optimal efficiency."

To herald the arrival of the new paint finishing plant, employees built a special RS 3 Sportback, which featured creative paintwork airbrushed onto the hood of the car to make it appear as if the engine is visible to the naked eye. Other trick paint finishes were applied to the exterior of the car to make reference to the new Lackiererei Decklack N50 site.



GRINNELL Mechanical Grooved HVAC System Installation



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Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. We are committed to helping our customers win and creating greater value for all of our stakeholders through strategic focus on our buildings and energy growth platforms.

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