Application: 5457

Bhavana Depuru Guru

Page: General Information

Provide information about the company to be considered for the award. If you will be nominating an individual, specify the nominee's employer.

Name of Organization/Company

Trane Technologies

[redacted]

Additional Contacts

I do not wish to list additional contacts

Page: Entry Information

Entry Title

Bhavana Depuru Guru

Category

R11. Employee of the Year - Manufacturing Technology

Employee Nominee Submission Format

Written Answers

a. Briefly describe the nominated non-executive person's employer: the organization's history and past performance (up to 200 words). Required

Bhavana Depuru Guru is a Controls Technical Team Leader at Trane Technologies' Chiller Unit Controls division. Trane Technologies, a global climate innovator, specializes in sustainable solutions for heating, ventilation, air conditioning, and refrigeration systems. Trane's journey began in 1885 when James Trane founded a plumbing and pipe-fitting shop in La Crosse, Wisconsin. His son, Reuben Trane, expanded the business into heating products in 1916. Over the decades, Trane diversified into cooling solutions for both Commercial and Residential markets.

In 1984, Trane became part of American Standard Companies and was later acquired by Ingersoll Rand in 2008. By 2020, the climate business separated, forming Trane Technologies as a focused, pure-play company. Today, its portfolio includes the Commercial HVAC brand Trane, Residential HVAC brands Trane and American Standard Heating & Air Conditioning, and the truck-trailer refrigeration brand Thermo King. These brands are industry leaders in quality and sustainability, contributing to their significant market share, including Commercial Trane's water-cooled and air-cooled chillers, which hold 50% of the market share.

In 2024, Trane Technologies reported impressive revenues of $19.8 billion, a 12% year-over-year increase. The company remains a leader in innovation and environmental responsibility.

b. Outline the nominated non-executive employee's achievements since the beginning of 2023 that you wish to bring to the judges' attention (up to 250 words). Required

Since early 2023, Bhavana Depuru Guru has excelled as a Controls Technical Team Leader at Trane Technologies, driving innovation and sustainability. She played a vital role in developing the Adaptive Refrigerant Control (ARC) system for Centrifugal Chillers, achieving cost savings of $5,662 per Duplex unit. [redacted] creasing energy efficiency by 36% and expanding the chiller's operating map. Her contributions impressed Microsoft, leading to the purchase of 46 units worth $86 million.

Bhavana has significantly advanced Trane Technologies' Electrification of Heat initiatives to reduce fossil fuel dependence. She developed algorithms for the High Temperature Water Replacement Engineered to Order Chiller Heater, which produces 210°F hot water with a Coefficient of Performance (COP) of 3, making it three times more energy-efficient than conventional boilers. Additionally, she contributed to the CVHH platform, enabling 180°F water production using a two-chiller system: one for preheating and another for boosting temperature. This innovation has already drawn commitments from three customers targeting aggressive carbon emissions reductions.

Her groundbreaking work earned her three patents, showcasing her technical expertise and visionary approach. Bhavana's achievements in cost savings, energy efficiency, and sustainability mark her as a standout contributor to Trane Technologies, reinforcing the company's leadership in climate innovation.

c. Explain why the achievements you have highlighted are unique or significant. If possible compare the achievements to the performance of other employees or to other workers in your industry and/or to the nominee's past performance (up to 250 words). Required

Bhavana Depuru Guru's exceptional ability to manage and execute complex tasks efficiently and innovatively sets her apart in the industry. She excels in developing and testing algorithms in simulated environments, later validating them in lab settings with real equipment. This dual-phase testing ensures robust solutions. Additionally, she conducts extensive patent searches to verify the novelty of her work, securing three patents in six months—a remarkable achievement.

She also collaborates with building automation teams to develop system solutions. Many customers purchase multiple chillers with air handlers and wireless zone sensors, requiring efficient configurations for heat reuse. Bhavana creates environments where technicians can easily configure and monitor entire systems, driving customer satisfaction. Remarkably, she manages four to five such high-impact projects simultaneously.

Bhavana has also shaped Trane Technologies' strategic technical vision by collaborating with the Test Architecture lead to develop a Hardware-in-the-Loop (HIL) testing framework. While the company currently supports one system environment, her innovative architecture enables the testing of multiple systems, reducing dependence on lab equipment—a valuable resource. By accelerating testing and development, her contributions allow Trane to bring products to market more efficiently.

In summary, Bhavana's ability to juggle complex projects, secure patents, and drive strategic innovation exemplifies her extraordinary contributions, setting a high standard within her organization and the industry at large.

d. Reference any attachments of supporting materials throughout this nomination and how they provide evidence of the claims you have made in this nomination (up to 250 words). Optional

Bhavana Depuru Guru has significantly advanced climate technology through innovative control strategies and patents. Her Method for Control of Suction Heat Exchanger [US Patent 20240410628] optimizes superheat in refrigerant circuits for screw compressor-based Air/Water chiller applications, supporting refrigerants with low global warming potential (GWP) for mission critical data center customers to support Free cooling applications on Air cooled chillers.

Her contributions include patents such as Chiller Heater Water Temperature Coordination That Helps Avoid Downtime [US Patent 20424.0789USP1] and Electrification of Heat Booster Chiller Heater Optimal Management Without Heat Recovery Dual Bundle Condenser [US Patent 20420.0790USP1]. The latter addresses healthcare and non-profit hospital needs to replace fossil fuel boilers with chillers capable of producing 180°F hot water for Infection Control and medical sterilization. Bhavana's solution uses two chillers operating independently, achieving efficient performance without controller communication, while leveraging low GWP refrigerants for sustainability.

Additionally, her Liquid Level Control of Expansion Valves in Climate Control Systems [US Patent 110639.0449.8] features the Adaptive Refrigerant Control (ARC) algorithm, which modulates refrigerant electronic expansion valves (EXVs) to maintain precise liquid levels. This technology is used in Trane's flagship CenTraVac compressors, crucial for cooling server infrastructures in data centers.

Webpage Link

[REDACTED FOR PUBLICATION]

Would you like to add an additional supporting document?

Yes

Supporting Document 3

[redacted]

Would you like to add an additional supporting document?

By your submission of this entry to The Stevie Awards, you verify that you have read and agreed to abide by the regulations, terms and conditions of the competition (https://www.asia.stevieawards.com/rules-and-terms-conditions-competition).

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