



Engineers and Contractors Advance Tall Building Technology

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Hanns U. Baumann received his BSCE from the University of California, Berkeley in 1953, his MSCE from USC in 1963. He has helped inventors of more than thirty construction innovations to develop their inventions for the construction industry.

Summary

Inventors recognize the need of a team effort when they are attempting to commercialize their inventions. Engineers and contractors with a desire to improve methods of construction and maximize the efficient use of new technology are important members of the team. Another valuable team member is the project owner. Building officials with interest in and support of the development of new products for the construction industry are also contributors to a team's success.

KEYWORDS – Teamwork, Research Engineers, Design Engineers, Contractors, Building Officials, Product Development, BauGrids, Welded Reinforcement Grids (WRG)

1. Introduction

In order to be successful at the commercialization of an invention, the inventor must overcome many obstacles. I have worked with more than two dozen inventors, trying to help them commercialize their invention(s) for the construction industry markets. During this time, I have commercialized my invention of a new way to reinforce concrete, called BauGrid Welded Reinforcement Grids (WRG). What I have found is that successful inventors form a team that can help them overcome the many obstacles they will face.

2. How Obstacles Were Overcome By A Team Effort

One of the first teams I worked with was that of Carl Middendorf, founder of Prescon Corp. and inventor of the buttonhead pre-stress rod, who had to overcome lack of knowledge about the then new work done by Prof. T.Y. Lin in the design of post-tensioned concrete by design engineer's customers. So Carl's team put together a design guide for design engineers to use in designing concrete structures reinforced with Carl's Buttonhead pre-stress rod.

2. John Richards, Inventor of the Conspray Machine

The Conspray Machine was one of the first concrete pumps that was designed to pump near zero-slump concrete. John's obstacle was that he had to convert his invention drawings, then on paper, into a working prototype Conspray machine. A team was formed that offered to build concrete walls for a local developer using the yet to be built Conspray machine and yet to be demonstrated single-side forming techniques. The team was so successful that Morley Construction ordered five Conspray machines and for a while cornered the below-grade parking market in Southern CA.



Figure 1: Members of the Conspray machine development team

3. John Beggs, Inventor of Gascon Systems

The Gascon system is a lightweight polymer mortar that can be mixed and spray-applied using just a simple trailer-mounted plastic mixer/sprayer. John formed a team that could offer a design/demonstrate and train service to the customers needing hurricane and earthquake resistant low-cost housing globally. This team effort resulted in the construction of more than 10,000 homes in Jamaica, Mexico and Iran.

4. John Leemhuis, Inventor of AirFloor Systems

John formed a team to convert his hollow floor system from an on-ground system to a structural floor system. The team first needed to develop the omni-directional floor system and then test it to show that it could serve as both a structural floor and a return air plenum. At the John Muir Dormitory at UC San Diego, it was shown that the AirFloor System reduced energy requirements by more than 30% when certain conditions applied



Fig. 4: Millennium Tower, California's tallest concrete structure (60-stories)

6. The BauGrid Welded Reinforcement Grid (WRG) Invention by Hanns U. Baumann, S.E.

More than 2,000 tons of BauGrid WRG are being supplied to California's tallest concrete building, the Millennium Tower in San Francisco. Also in San Francisco is the 39-story Paramount Building, the world's tallest precast building in a region of highest seismicity. In Long Beach are the world's tallest tunnel-formed concrete buildings, the two 24-story Ocean Villa project. All these structures used BauGrid WRG.

Instrumental in the development was the work of Prof. Murat Saatcioglu, who developed a manufacturing quality assurance procedure. The work of Boyd Kelly at RPS, Tracy, CA, in the methods for rapidly assembling and installing the rebar cages with BauGrid WRG, and the BauSpliceGrids. The work of Webcor Builders, in the use of self-climbing forms to rapidly construct earthquake and blast-resistant shearcores of tall buildings. The teamwork of DeSimone Consulting

Structural Engineers and other consulting structural engineering offices. And project owners, such as Millennium Partners, played a major role in the development of WRG. Of great importance in the early development of the BauGrid WRG was the support of ICC and especially John Nosse, P.E. and Brian Gerber, S.E., in the Southern California office of the ICC Evaluation Service, Professor Vitelmo Bertero and Eduardo Miranda at U.C. Berkeley, and Prof. Jose Restrepo at U.C. San Diego, Robert Englekirk, S.E..

7. Conclusion Inventors soon recognize the need of a team effort when they are attempting to commercialize their inventions. Engineers and contractors with a desire to improve methods of construction and maximize the efficient use of new technology are important members of the team. Also of great importance is having the project owner as a valuable team member. The building officials and their interest and support in the development of new products for the construction industry are also valuable contributors to a team's success.