

The **V-MAG**[®]

multipurpose neodyme magnet

*The perfect product in an
ever-changing environment*



**Over 4 million
V-Mag's installed**



Problem Solving for Extreme Environments





CASE STUDY

Client Profile

The Company provides its local customers with competitively priced, quality electric service. It serves members throughout 12 counties including Grundy, Harrison, Mercer and portions of Linn, Livingston, Daviess, Gentry, Putnam and Sullivan in Missouri and Wayne, Ringgold and Decatur counties in Iowa. The Company serves 6,720 meters and has over 2,100 miles of overhead distribution line and over 85 miles of underground line.

Project Description, Challenges, & Considerations

The project required the installation of an omni-directional antenna to supply 15 households in a rural Missouri with high speed internet. The challenges included ensuring the total cost of the installation offers a payback time of 18 months - and a positive cash flow for an additional 18 months based on current subscription amounts and technology.

ADDITIONAL CONSIDERATIONS INCLUDED:

- Ensuring the safety of the installation team working at high altitudes
- Favoring the use of existing tall structures in the area including city-owned water towers
- Preventing interference with the availability of safe drinking water to the residents
- Developing resilient, flexible solutions to contend with Midwest weather conditions ranging from extreme humidity, high winds, thunderstorms, and potential ice buildup



Approach Comparisons

Chosen ENGISO V-MAG® 340 Option

Securing to city owned water tower through magnetic application of antenna mount – *Extensive safety, speed, cost, payback, and installation benefits achieved*

Alternative Options

Utilizing or installing in-ground systems – *Cost prohibitive due to the remote locations of subscribers*

Erecting a new tower on city property – *Cost prohibitive due to the small number of subscribers contributing towards the business case*

Welding to the steel surface of the water tower – *Cost prohibitive, dangerous, laborious, and slow implementation*

PRODUCT SOLUTION UTILIZED:

- ENGISO V-MAG® 340

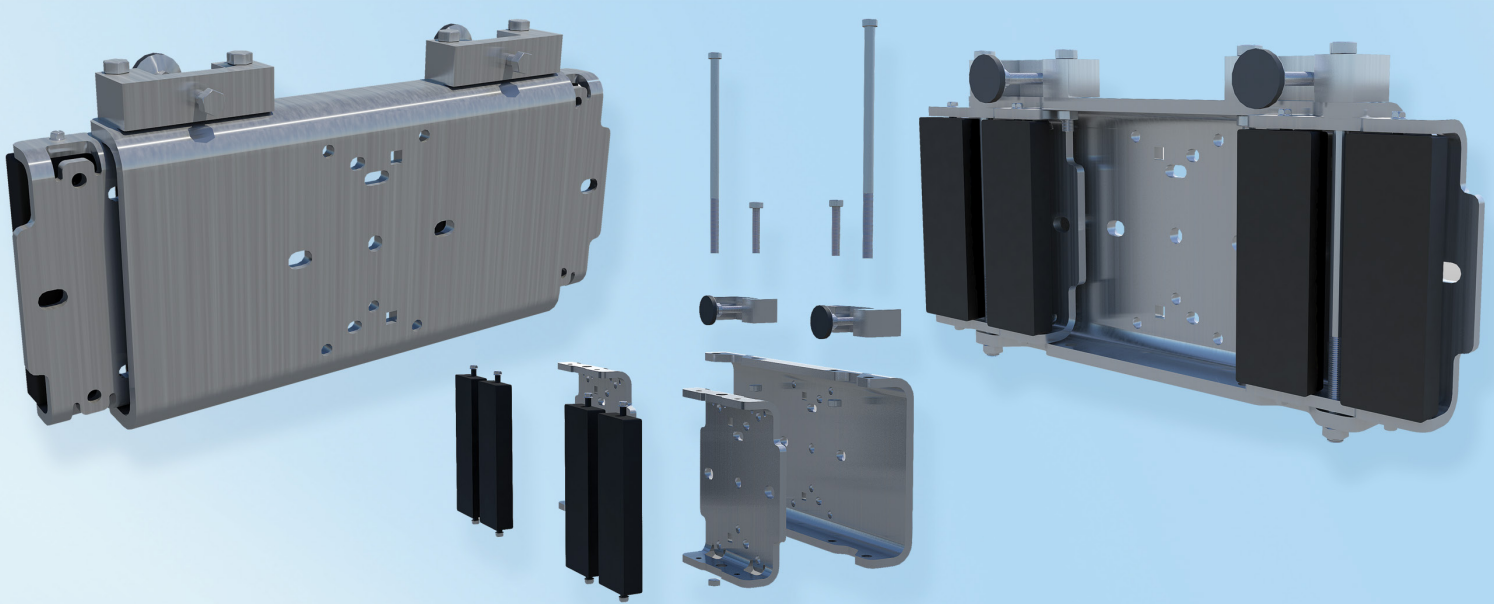
PRODUCT SOLUTIONS DEVELOPED

(as a result of lessons learned):

- ENGISO V-MAG® TBR 1500 – V-MAG® Universal Bracket with a pull force of 1500 lbs.
 - ENGISO V-MAG® TBR 1500 W – V-MAG® Universal Bracket with a pull for of 1500 lbs. for extreme wind shear
 - ENGISO V-MAG® TBR 3000 – V-MAG® Universal Bracket with a pull force of 3000 lbs. for extreme wind shear
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“The ENGISO V-MAG® 340 magnets have been installed for 18 months and they have survived windy, stormy springs – long, hot, and dry summers - and cold, icy, snowy, winters without moving an inch. I would highly recommend working with Engiso to devise a magnet solution that is affordable, easy, and durable.”

~ Terry White, Grundy Electric Cooperative



ENGISO V-MAG® TBR 3000

ADDITIONAL CONSIDERATIONS INCLUDED:

- Project sector mount and omni-directional antennas erected and secured to two separate water towers utilizing multiple ENGISO V-MAG® 340 for a permanent attachment to the steel water tower dome top
- Project cash flow and payback calculations exceeded performance management criteria
- Project withstood extreme environmental conditions including volatile storm seasons, +65 miles mph wind gusts, and direct lightning strikes – without moving an inch
- Re-painting of the water tower allows for temporary disconnect of the installation and subsequent re-installation utilizing the same components - significantly reducing total lifetime cost

LESSONS LEARNED:

- Required mounting bracket designs must be adaptable in order to capture curvature of tower dome
- Properly sourcing an engineered mounting system from one supplier like Engiso is easier than working with a fabricator on a unique design

USES OF THE ENGISO V-MAG INCLUDE:

- Condition Monitoring (CCTV)
- Wifi Extender
- Satellite Dish
- Radar System

Why Engiso?

Engiso is a Danish-founded engineered solutions company specializing in its V-MAG® series of high-powered neodymium magnets and industrial products for extreme environments. The company is comprised of advanced engineers, project managers, and consultants shaped by the demands of the Nordic offshore and onshore wind energy sectors. Engiso has consistently reduced costs, optimized worker health and safety, and generated sizable productivity gains for multinational corporations - with over 4 million installed worldwide.

Engiso's key product, the ENGISO V-MAG®, a data-driven, non-penetrating and cost-effective magnetic alternative to conventional welding. Due to Engiso's high-quality design using neodymium magnets, the magnetic force is not lost over time. The ENGISO V-MAG® is a high-quality premium product with quick installment time and superior corrosion resistant properties. Most importantly, it does not disrupt the communications signal when mounted on a tower and can be easily moved by transferable installation.

Engiso offers many types of manufactured solutions - transferable to wind power, telecommunications, maritime, oil and gas, and defense markets - that can be easily deployed into a current business, system or process. Engiso is based in Esbjerg, Denmark and Mukwonago, Wisconsin.



Esteemed Client List Include Amongst Other:



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