



## **Pipe Spring LLC**

### **Features, Advantages and Benefits**

### **“Founded Because Integrity Matters”**

**Technology and Products for Pipeline Repair and Structural Augmentation\***  
*Thin Layer Steel Laminated Fabrications*

#### **Engineering Critical Assessments**

Engineering critical assessments have been completed for metal loss defects as well as pipe augmentation for pressure increases or design factor changes. The engineering critical assessment for long seam augmentation and other strain sensitive conditions is currently in progress.

#### **The Strength Member**

The Pipe Spring strength member is a thin layer of high toughness steel with isotropic and homogeneous material properties. There is no degradation of material properties during service, which allows for an advantageous design thickness. The hoop and axial strength are equivalent while thin layers promote excellent conformity to out-of-round conditions.

#### **The Adhesive System**

A modern adhesive delivery system eliminates any human error potential during mixing or application. No more messy paint cans! The optimized viscosity keeps the adhesive in place. The system utilizes a newly designed 1:1 ratio methacrylate adhesive system. This adhesive system is optimized for metal-to-metal adhesion and offers superior tensile and lap shear strength. It is vibration resistant and shock resistant for demanding or long-term cyclical service. A self-priming design optimized for metal-to-metal bonding handles poor surface conditions well.

#### **The Filler Material**

The Pipe Spring filler is an epoxy based system with high temperature characteristics. The cured product generates high compressive strength and high modulus. It allows for a rapid transfer of the load to the strength member and minimizes any delay in initial stress/strain response.

#### **The Full System**

The thin layer steel strength member combined with the toughened adhesive system creates a uniform laminated structure that maximizes impact properties. In addition to the toughness properties, the design provides intrinsic crack arrest paths within the laminate. This allows subsequent mechanical damage to be mitigated.

**\* US Patent Pending**

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