FUELING The FUTURE

Hydrogen is safe, viable, affordable, environmentally friendly –

and immensely promising as a clean and sustainable energy and power source

Separating facts from fiction:

Myth #1: Hydrogen gas is hazardous to store and use.

Fact: *Due to its nontoxicity and low volatility, it can be safer than conventional fuels.*

H_2 disperses rapidly if leaked, thus reducing the risk of accidental ignition and explosion.

Myth #2: Hydrogen-fueled vehicles are not a practical long-range solution.

Fact: *Hydrogen has high energy density to deliver a comparable driving range to traditional fuels.*

Driving range is a critical consideration for any fuel technology; hydrogen more than holds its own.

Myth #3: Hydrogen is not environmentally friendly or sustainable.

Fact: *There are numerous ways to generate hydrogen – and most are better for the environment versus fossil fuels.*

Most hydrogen production processes reduce or eliminate CO_2 emissions.

Myth #4: Hydrogen is simply too expensive.

Fact: *The price of green hydrogen continues to plummet.*

By the end of 2024, hydrogen-powered buses will be cheaper to operate versus electric or internal combustion models.

5 Best Practices for Designing Hydrogen Fluid Systems:

1. Consider the End User

Specific use challenges are involved. For example, a hydrogen fuel cell vehicle will be refueled at a hydrogen station where a user will transport a high-pressure gas via a convenient dispenser. Make sure your design mitigates safety concerns.

2. Minimize Potential Leak Points

Hydrogen molecules are extremely small and can easily escape through the tiniest crevice in a fluid system. The ways and means seals, materials, pipes, and tubing are applied in a traditional oil-and-gas design simply aren't capable of safe hydrogen containment. Minimize the number of overall connections. Apply proper tube-bending techniques in strategic locations versus employing additional fittings.

3. Use Only High-Quality Stainless Steel

Small hydrogen molecules could contribute to hydrogen embrittlement, a unique form of corrosion that greatly reduces a metal's ductility and its resistance to fracture and fatigue. Costly downtime and major safety risks would result. But by selecting the ideal material like high-quality 316 stainless steel tubing, you can avoid such an issue and realize lengthy service life.

4. Optimize Tube Fittings

Components that have worked well in oil-and-gas applications may not be a good choice for hydrogen work. Try Swagelok FK-series fittings to maintain ideal pressure ratings up to 1050 bar and are available in stainless steel.

5. Consult with Experts

It's simple: When in doubt, choose a clean energy supplier with proven and trusted hydrogen-specific knowledge, design/engineering know-how, and product recommendations that will positively impact your Bottom Line.

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