



# Environmental, Social, and Governance Report





# Table of Contents

<b>Letter from the CEO</b>	<b>02</b>
<b>About Us</b>	<b>03</b>
<b>At a Glance</b>	<b>04</b>
<b>Environmental Initiatives</b>	
Introduction	<b>05</b>
Environmental Spotlight	<b>06</b>
Environmental Spotlight ctd.	<b>07</b>
<b>Social Initiatives</b>	
Core Values	<b>08</b>
Safety Initiatives Ctd.	<b>09</b>
Safety: Initiatives Ctd.	<b>10</b>
<b>Governance Initiatives</b>	<b>11</b>



# Letter From the CEO

Dr. Jeremy Frank, CEO + Co-Founder

**On behalf of KCF Technologies, we would like to express our gratitude for our customers' tremendous support of our Environmental, Social, and Governance (ESG) activities.**

Since being founded in 2000, KCF Technologies has continuously worked to provide value to help people and enrich society through our technology, services, and hardware. The starting point of such efforts is our desire to eliminate waste and promote the convergence of people and technology. The underlying belief for the concept of "Elevating People" puts people at the center of our thinking and our conviction to elevate the potential of individuals in society.



The unprecedented number of skilled labor retiring, a workforce shortage, and a demand for output in industry has reaffirmed the importance of contributing to society. Concerns about global environment issues and their effects on society drive our humanity-focused values to eliminate waste, safety risk, and industrial asset failure.

## OUR HISTORY

KCF Technologies is formed by three Penn State Researchers.

**2007**

1st generation of SMARTdiagnostics® is developed.

**2013**

V3 Vibration Sensor is launched.

**2020**

**2000**

Program developed for secure, ruggedized, low-energy wireless tech for military vehicles.

**2011**

SENTRYsolutions™ is launched.

**2017**

20 Years of KCF Tech and Still Going.

“KCF Technologies is making **extensive efforts to attain its environmental and safety goals** by pursuing its true essence of eliminating waste, injuries, and industrial asset failures.”

**DR. JEREMY FRANK**  
CEO and Co-Founder  
KCF Technologies

**2024**

**The Most Comprehensive Machine Health Platform**

Including: The IoT HUB, Piezo Sensing, Integrations with CMMS & PLCs, Desk, Mobile, AI, ML, and many more innovations!

# Right Data. Right Analysis. Right Action.

## It's What We Do.

### WHO WE ARE

KCF Technologies exists to drive sustainability, safety, and competitiveness for our partners and their communities by solving the world's machine health problems. Our team empowers industry to eradicate downtime, waste, and injuries with KCF's Comprehensive Machine Health Platform.

**135,000+**  
Assets Monitored

**20+**  
Years in Business

**\$4B**  
in Customer Savings

More Than  
**600** Unique  
Locations

**>83,000**  
Downtime Hours Prevented

**6** Continents  
Across  
the Globe

### How We Make it Happen:

Through three key pillars, we're in the business of providing the right data, facilitating the right analysis, and enabling you and your team to take the right action.



#### 1. Right Data:

Our solution combines online analytics and up-to-minute monitoring, offering continuous 24/7 surveillance. With insights delivered 50x faster than other platforms, KCF identifies and delivers process-related insights others miss, effectively eradicating downtime for our machine health partners.



#### 2. Right Analysis:

KCF Technologies processes a volume of 1.2+ billion vibration datasets per month, enabling best-in-class machine learning models, delivering exceptional predictive maintenance analysis and analytics directly through SMARTdiagnostics software and validated by our high touch engineering team.



#### 3. Right Action:

Our seamless integration of analytics with the SMARTdiagnostics workflow streamlines the consumption of model insights—simplifying maintenance prioritization and empowering users to actively drive machine learning capabilities for enhanced decision-making.

# KCF technologies at a Glance

\*Data as of January 2024

GLOBAL  
PORTFOLIO:

# 150+

MANUFACTURING  
COMPANIES



# \$4B+

CUSTOMER SAVINGS

“KCF works in conjunction with our customers to eliminate waste, downtime, and injuries by engaging today’s workforce through technology. In order to quantify and measure this impact over time, we work to convert everything from complex optimization projects to simple downtime avoidance into “dollars saved.” This metric drives our collective teams to remember the work we’re doing is having a real impact in the communities we serve. Those dollars can be reinvested into the business and the workers so they can continue to thrive.”

# 4.1B

DATA POINTS  
COLLECTED

Over our 20+ years in business, we have accumulated 4.1B data points. This is accomplished through partnerships with a variety of industrial and manufacturing sectors, including automotive, food and beverage, forest products, power generation, oil and gas, and more.

# 60B+

MACHINE HEALTH  
MEASUREMENTS

Our continuous, real-time machine health platform has processed over 60B+ machine health measurements from a diverse range of assets from basic rotating equipment, like fans, pumps and motors, to complex intermittent equipment, like robots.

# >83K

DOWNTIME HOURS  
SAVED

Our partnerships with manufacturers and industry have prevented over 59,000 hours of downtime and helped optimize essential manufacturing processes.

**LOU ROMANO**  
President  
KCF Technologies



# Intro:

## Environmental Initiatives

**In light of modern challenges in society,** the pursuit of “Elimination of Waste,” “Elimination of Injuries,” and “Elimination of Asset Failures” are three values KCF Technologies addresses to provide positive environmental impact—both today and in the future.

**To expand on these beliefs,** we work comprehensively to address challenges in the manufacturing and industrial sectors. We strive to be more than a company with an ESG policy—we are a company devoted to ESG.

**In the area of environment,** the impact is evident in everything we do. Based on the foundation of problem solving, the outcome of every problem solved is waste elimination. Waste degrades the environment. Whether you’re looking at energy relative to climate change or preventing machine failures that cause disruptive impacts on the environment, it is these wasteful impacts relative to machine inefficiency that cause CO2 emissions.

**For example,** our work, monitoring systems helps create clean water for factories we serve, effectively minimizing water and energy use to improve the functionality of the system. These systems are required for society to function—to heat and cool homes, keep food on tables, and paper goods stocked. KCF is making machines work the way they are designed, all while avoiding negative consequences that have a detrimental effect on the environment.



Another simple way to summarize these efforts are the **\$4+ Billion we have saved manufacturing and industry.**

**These savings directly correlate to waste reduction.** Extending the life of assets in industry from 5-10 years eliminates the need for replacements being built, and shipped, as well as the disposal of the failed assets.

# Environmental Spotlight

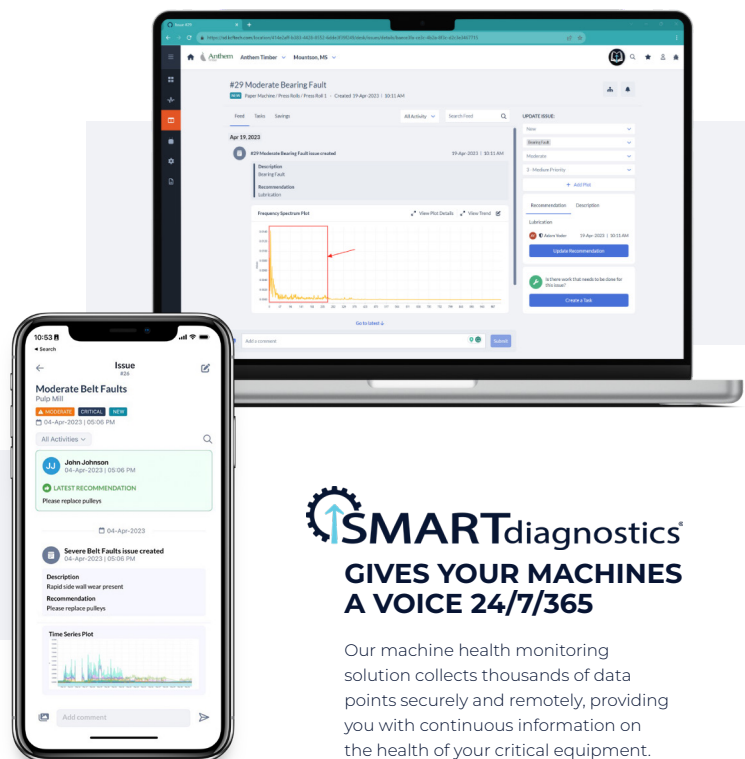
**Power distribution is a chronic problem in modern manufacturing.** The most common issue KCF finds related to power distribution is that aging plant infrastructure and inadequate route-based monitoring programs leave manufacturers at risk of power consumption waste. The ability to monitor power distribution 24/7/365 enables a facility to eliminate unnecessary waste, identify anomalous consumption patterns, and pinpoint failure points in the event of an outage.

**Looking at averages that KCF has calculated from industry expertise,** the average utility cost is \$67 per MWh. In utilizing the KCF system, we can help a plant save 15 MWh each day—that's a savings of over \$365,000 annually. Additionally, there is a large amount of power wasted. Wasted power is commonly found when a substation is drawing, for example, 350 amps over a weekend that had planned downtime. If KCF Technologies' system is used, the plant can experience a 28% reduction in power consumption by identifying and reducing the draw when it is not needed.

The average house in the United States uses 10.5 MWh in a full year. By saving 15MWh each day, KCF saves the equivalent of 521 homes off the grid for an entire year!

**However,** there are several inherent challenges related to monitoring power distribution that can make achieving these savings a challenge without using real-time monitoring. The first is that both energy consumption patterns and signs of component wear and failure are essentially invisible to the naked eye.

**Another is ensuring machinery is off during downtime is impractical without a distributed network of sensors,** especially in larger plants. Lastly, time-based protocols are not sensitive to changes in energy consumption. With condition-based monitoring, you can track asset energy usage in real time.



**SMARTdiagnostics<sup>®</sup>**  
**GIVES YOUR MACHINES**  
**A VOICE 24/7/365**

Our machine health monitoring solution collects thousands of data points securely and remotely, providing you with continuous information on the health of your critical equipment.



# Environmental Spotlight ctd.



**In the past**, power consumption was not traditionally monitored, which resulted in excessive wasted energy from assets running needlessly. This leaves the plant at risk of prolonged downtime failures.

**THE ALTERNATIVE:** Using KCF's wireless monitoring system that allows for real-time data collection and data-backed decisions. Wireless sensors get installed on substations while software allows for 24/7 monitoring—setting warning and alarm thresholds, email and text notifications when those thresholds are passed, and the creation of custom dashboards to facilitate the digestion of the data.

**The real-time data KCF provides can be combined with custom warning and alarm ranges**, giving customers notifications when power is being drawn on, and it shouldn't be.



## 1. Hardware



## 2. Software



## 3. Service

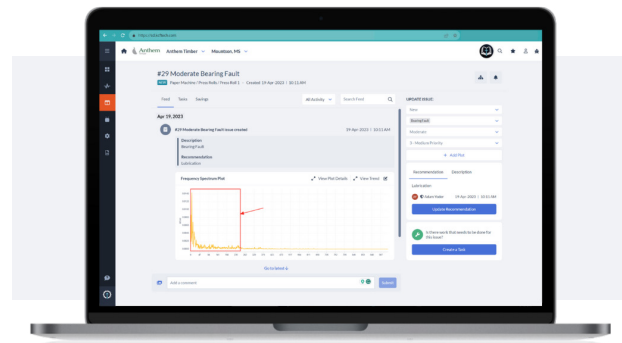
## Our ESG Initiative

At KCF Technologies, we work side-by-side with customers to streamline operations, improve safety and sustainability, and deliver enhanced products and solutions. Our unique three-part approach was built to tackle this through rugged hardware, **SMARTdiagnostics®** software, and **SENTRYsolutions™** experts.

# 3.6x

### More Asset Coverage

With the only comprehensive platform to ingest Oil, MCSA, Pressure, Vibration, Legacy IEPE sensors, and Ultrasound into one software platform.





# Social Initiatives: Health, Safety, Social Opportunity

**One of our core values at KCF is responsibility**—for yourself and the community. During a major workforce shortage, putting technology in the hands of the people is pivotal to creating jobs that are safer, more efficient, and elevated from more dangerous jobs of the past.

**A major root cause of the worker shortage in industry is that front line workers have been relegated as opposed to elevated in their roles.** Democratization of technology is directly related to increased diversity, improved equality in minority groups, and encouraging the next generation to join the industrial and manufacturing sectors.

**Driving positive impact on social dynamic,** and attracting diverse talent by putting technology in the hands of those configuring systems, and maintaining, operating, and caring for machinery resonates with those voting with their feet and walking away from opportunities in industry.

**TECHNOLOGY IS POWER** that supports people and has the ability to enhance the quality of individual's daily lives. Through our technology, KCF seeks to help manufacturers achieve this power to transform society.



**Building technology that elevates people to solve problems goes further with social responsibility as it pertains to health and safety.** The single biggest cause of workplace injuries is people performing reactive work, which happens when machines fail. KCF's purpose is to proactively solve machine health problems to eliminate these dangerous incidents entirely and remove people from needlessly dangerous situations.

**One industry that has had remarkable success using our technology to eliminate workplace injuries and death is the Oil and Gas sector.** The Upstream extraction and hydraulic fracking spaces have historically been notorious for workplace injuries due to the nature of the high-pressure process. Using KCF Technologies' machine health platform over a three-year period, they were able to reduce their recordable injury rate 10-fold, from 1.5 to <0.5.

**Technology coupled with organizational commitment to change and training, led to a best-in-class safety environment.**

# Social Initiatives: Safety ctd.

**Across sectors, there is an opportunity to improve processes that strive to eliminate unnecessary safety and environmental risks.**

## **REGENERATIVE THERMAL OXIDIZER (RTOs):**

Thermal oxidizers are used to destroy air pollutants and volatile organic compounds from industrial air streams. Not only are there environmental risks associated with RTOs but also hefty fines from the EPA that establish requirements to protect public health and the environment from air pollution. KCF prevents downtime on RTO systems, eliminating lost production and mitigating the risk of regulatory fines and legal ramifications.

**AVERAGE SAVINGS  
PER RTO INCIDENT:**

**\$56,410**

**37**  
**YEARS OF RTO  
EXPERIENCE**  
(In Data)

## **GEORGIA-PACIFIC CASE STUDY:**

By integrating the over 62,000 sensors and adopting KCF Technology's remote monitoring tools, while utilizing the Georgia-Pacific CSC (Collaboration and Support Center), they gained a proactive approach to identifying issues and receiving crucial notifications. With the addition of AI machine health insights, decision makers on the ground were empowered to make better informed choices. This shift from reactive to proactive maintenance allowed them to plan safe work practices and avoid critical failures and downtime, making their operations more efficient than ever. By partnering with KCF, they were able to achieve a remarkable 50% reduction in unplanned events.



## **OIL + GAS:**

Hydraulic Fracturing is a highly dangerous environment with chronic equipment problems. Prior to remote monitoring, employees at Hydraulic Fracturing sites put themselves in harm's way to get a reading.

One dangerous area is high-pressure iron piping. Iron piping can develop cracks causing extremely violent, high-pressure sand and water to be sprayed around the site, and metal piping parts to be blasted through the air. KCF embarked on a deep-dive study of high-pressure iron to solve this safety and machine health issue.



# Social Initiatives: Safety ctd.

KCF found that the main culprit was chronic misoperation of the high-pressure fracturing pumps. The modular design of the site plumbing, along with inadequate booster pumps feeding the high-pressure pumps, meant that the high-pressure pumps were routinely cavitating or experiencing poor suction conditions. This causes extreme pressure pulsations on the discharge side, damaging the high-pressure iron.

In solving this chronic vibration problem, KCF has studied every machine part that the sand and water mixture touches. From mixing at the upstream blender, to the high-pressure treating lines going into the wellhead, and considered how each component could be optimized to improve machine health and job efficiency. Most importantly, KCF has reduced the extreme safety hazards that workers in this industry can be exposed to when equipment fails.

**The Oil and Gas industry has saved hundreds of millions of dollars since KCF has gotten involved.** The average Hydraulic Fracturing fleet implementing KCF **SMARTdiagnostics®** has experienced over a 5X ROI, and their pump life has increased by more than 30%. What are some of the things that have made this possible?

**CONTINUOUS MONITORING:** Hydraulic Fracturing pumps are loud, violent machines, and all the action is happening deep inside them, on the other side of several inches of solid steel. Standing next to the pump isn't an option when it comes to safety, making it an even more difficult space to monitor. By using smart wireless sensors that

continuously monitor pressure, vibration, and temperature, these machines can be safely monitored remotely, immediately warning operators when a fault condition begins to develop.

**EQUIPMENT REDESIGN:** From blender design to the low-pressure distribution manifold to pump valves to high-pressure iron layout, KCF has advised our customers on how to bring the right equipment to the job to set themselves up for success.

**OPERATOR TRAINING:** KCF SENTRYsolutions™ engineers have spent countless hours in Hydraulic Fracturing vans watching machine health data with pump operators, participating in equipment teardowns, and training operators to recognize the vibration and pressure signatures that indicate various internal

**\$1.27B**  
**OIL + GAS**  
CUSTOMER SAVINGS

**OIL + GAS  
DOWNTIME  
HOURS SAVED:**  
**10,318**

pump faults or poor operating conditions. KCF then works with the customer to establish simple procedures to work through the problem and keep pumping with minimal downtime and maximum safety. In the case of a failure, go right to the source of the problem and fix it quickly on the next planned downtime.

# Governance Initiatives



**Supporting governance**, making problems conspicuous by illuminating solvable problems in an organization and identifying areas to lower corporate risk, makes our partners' operations more resilient.

**Illuminating problem areas helps identify where action can be taken to increase productivity, lower environmental impact, and increase safety.** Corporate risk mitigation is assumed by identifying machines that have the potential for catastrophic failure, avoid fires, evade environmental leaks and contamination, and reduce injury instances.

**When KCF Technologies' machine health platform is corporately adopted**, it creates the opportunity for companies to hold themselves more accountable.

**We act as trusted advisors to our manufacturing partners.** As experts in machine health, we work with customers to ensure processes are in place to meet and exceed asset health and machine uptime metrics.

**Manufacturers have many regulations they are required to uphold to maintain worker safety.** We help our customers meet standards and government regulations by ensuring equipment required for operations stays online and is operating in an efficient manner.

