

# DIRECT FROM MIDREX

2ND QUARTER 2026

## MIDREX® DIRECT REDUCTION PLANTS 2025 OPERATIONS SUMMARY

**DEVELOPING A NOVEL  
ELECTRIC HEATER FOR  
THE MIDREX H2 PROCESS**

**NEWS & VIEWS**  
Midrex Honored at  
2026 MICA Awards

**NEWS & VIEWS**  
Nigel's 5th Charity  
Walk

**NEWS & VIEWS**  
Midrex secures  
contract with Big  
River Steel (BRS)

**NEWS & VIEWS**  
Midrex announces  
first CHRO



## COMMENTARY

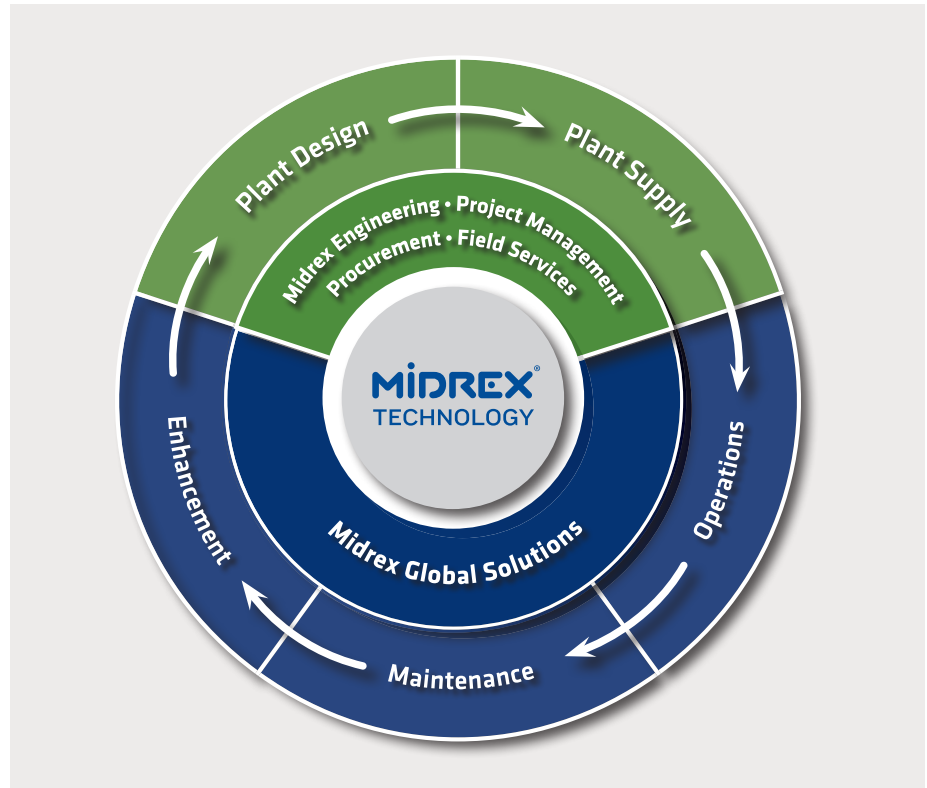
## WHY RELIABILITY STARTS LONG BEFORE STARTUP



By Chris Hayes  
Vice President - Operations

In any direct reduction plant, reliability is ultimately measured in operation. Uptime, consistency, and the ability to perform as expected day after day are the measurements. But the conditions that make reliable performance possible are established long before a plant ever starts up.

Reliability is not something that can be added at the end of a project. It is built into the plant from the very beginning. The foundation for reliable operation is set during the earliest stages of design. Decisions made at that point, often before construction begins, determine how the plant will perform over its entire lifecycle. Equipment selection, system configuration, and process design all play a role, but just as



important is the philosophy behind those decisions.

A design focused solely on meeting initial performance targets is not enough. It must also account for how the plant will operate over time, under varying conditions, and with the realities of day-to-day operation. This includes considering how systems respond to fluctuations, how easily they can be maintained, and how operators will interact with them.

Operational flexibility is a key part of that equation. Plants are rarely operated under ideal, steady-state conditions. Feedstock quality can vary. Energy inputs can change. Market demands may require adjustments in production. A reliable plant is one that can adapt to these changes without compromising performance.

Designing for flexibility means building in the ability to adjust, respond, and stabilize operations when conditions shift. It also means avoiding unnecessary complexity that can make systems harder

to operate and maintain. The goal is not just performance under ideal conditions, but consistent performance under real-world conditions.

Maintenance considerations are equally important and must be addressed early in the project. How equipment is arranged, how accessible it is, and how easily it can be serviced all have a direct impact on long-term reliability. These are not issues that can be fully resolved once a plant is built. They must be part of the initial design.

Planning for maintenance from the outset helps reduce downtime, improve safety, and ensure that routine work can be carried out efficiently. It also supports better long-term performance by enabling teams to maintain equipment in the conditions required for reliable operation.

Experience plays a critical role in bringing these elements together. Over time, clear patterns emerge showing



## COMMENTARY

“At Midrex, reliability is not treated as a final objective. It is a design principle, applied from the earliest stages of every project and carried through execution into operation.”

what supports stable operation, what introduces risk, and what makes systems easier or harder to manage. Applying those lessons early in a project helps avoid issues that might otherwise only become apparent after startup.

This approach is reflected in how MIDREX® Plants perform in operation. In 2025, at least eight MIDREX Modules established new annual production records, and at least seven set new monthly production records. In addition, 12 modules came within 10% of their record annual production, and 10 modules operated for more than 8,000 hours during the year.

These outcomes are not the result of a single decision or phase of execution. They reflect a consistent approach to design, planning, and implementation, supported by teams that understand what reliable operation requires.



As the industry continues to evolve, particularly with the introduction of new technologies and lower-carbon pathways, the importance of this approach will only increase. New variables will need to be managed, but the expectation for reliability will remain unchanged.

Meeting that expectation depends on decisions made well before startup. At Midrex, reliability is not treated as a final objective. It is a design principle, applied from the earliest stages of every project and carried through execution into operation. That is what enables MIDREX Plants to perform not just at startup, but throughout their lifecycle.



This issue of *Direct From Midrex* features an article on the development of a novel electric heater for the MIDREX H2 Process, along with Midrex's 2025 Operations Summary which highlights several plant achievements. The News & Views section spotlights recent Midrex charity initiatives, a landmark new contract with Big River Steel (BRS), and newly announced leadership appointments.

# Developing a Novel Electric Heater for the MIDREX H2 Process

By PAUL KAZALSKI and DR. PEI YOONG KOH



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## INTRODUCTION

Ongoing efforts to decarbonize the steel industry have focused on replacing fossil-fuel-based processes with carbon-free alternatives. One of the most promising pathways is to replace natural gas with green hydrogen and renewable electricity to power conventional direct reduction (DR) plants.

To that end, Midrex Technologies, Inc. has developed MIDREX H2™, an evolution of the MIDREX® Process capable of producing direct-reduced iron (DRI) at full industrial scale (1.6–2.5 million tpy), while avoiding carbon dioxide emissions. MIDREX H2 replaces the standard reformer with specialized electric heaters that supply energy to recycled process gas supplemented with over-the-fence green hydrogen (*Figure 1*). This

eliminates natural gas consumption in two ways: hydrogen serves as the primary reductant in place of co-reformed natural gas, and electric heaters replace the reformer's burners, which previously supplied the thermal energy for co-reforming and raising the bustle gas temperature.

The design and construction of these electric heaters is the culmination of a cross-disciplinary development effort. Although electric heaters are established technology in industrial applications ranging from petrochemicals to power generation<sup>1</sup>, their use as a substitute for methane co-reformers in a MIDREX® Plant is novel. Midrex partnered with Tutco Sureheat to develop the design and then validate it through the following rigorous test program:

- Continuous operation of a single-element prototype with high gas outlet temperature and carbonaceous compositions.
- Multiple power interruptions of the single-element design to simulate plant upset conditions.
- Development of a pilot-scale prototype providing heating to a gas mixture that matches the expected conditions of a MIDREX H2 plant.

During testing and subsequent ex-situ analyses (SEM-EDX, XRD, and visual inspection), particular attention was paid to the physical properties of the heater wire, which was shown to retain its tensile strength, electrical resistivity, and resistance to metal dusting even after prolonged exposure to MIDREX H2 conditions. These analyses thus validated the electric heater design as a viable replacement for the conventional reformer, confirming the feasibility of the MIDREX H2 flowsheet.

### OBJECTIVES

The primary purpose of the testing program was to prove the readiness of the novel electric heater technology inside a MIDREX H2 plant. This included five key objectives:

- Demonstrate the electric heaters can supply sufficient energy: for every ton of DRI, the heaters must supply 507 Mcal to the reducing gas.
- Optimize heater geometry for efficiency, cost-effectiveness, and longevity.
- Prove the robustness of the electrical circuit in a demanding environment.
- Monitor the heating element's electromechanical properties over time.
- Observe any chemical degradation of the element wire caused by chemicals such as hydrogen sulfide and carbon monoxide.

Table 1 summarizes the three operating cases that the electric heaters must service. The Carbon Case uses a small amount of natural gas to introduce carbon into the DRI product; the Hydrogen Case uses 100% green hydrogen; and the Nitrogen Case is used for hot commissioning and plant idling.

### SINGLE-WIRE LONGEVITY TESTING

The first step toward a commercial heater was to test a single wire element under typical MIDREX H2 operating conditions. The wire was required to heat a mixture of carbon monoxide, carbon dioxide, hydrogen, water vapor, methane,

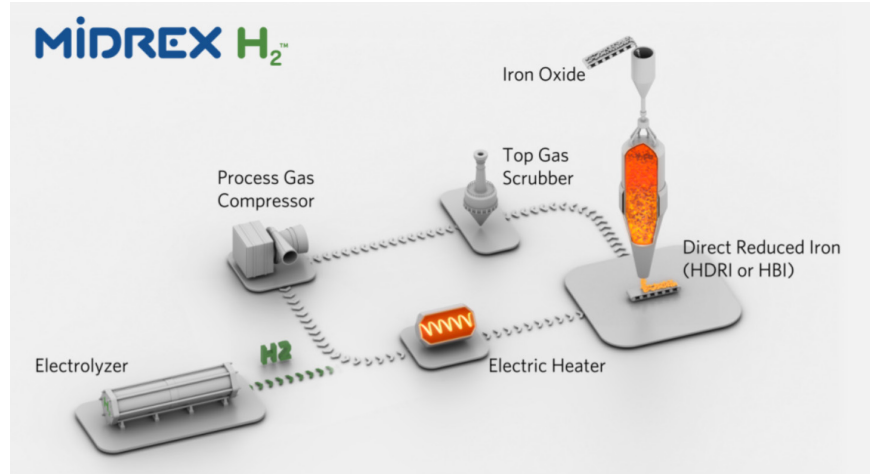


FIGURE 1. Diagram of the MIDREX H2 flowsheet.

	Carbon Case	Hydrogen Case	Nitrogen Case
Flow (1000 Nm <sup>3</sup> /hr)	450-550	550-650	100-250
Pressure (bar g)	< 3	< 3	< 2
Temperature into heater (°C)	75-225	75-225	50-100
Temperature out heater (°C)	> 900	> 850	50-900
H <sub>2</sub> (mol%)	>70	>75	0
H <sub>2</sub> O, CO, CH <sub>4</sub> , CO <sub>2</sub> , N <sub>2</sub> (mol %)	Balance	Balance	Balance (N <sub>2</sub> > 95)

TABLE I. Summary of the operating cases anticipated in a MIDREX H2 unit.

and nitrogen continuously to 1,000°C for 500 hours. The program evaluated the robustness of the electrical circuit, the element's ability to endure carbon deposition, the absence of strength creep, and the consistency of operation over the full test duration.

Carbon deposition was a particular area of focus. Solid carbon can form in the presence of a catalyst if the following reactions are thermodynamically favorable:

- The Boudouard reaction ( $2\text{CO} \leftrightarrow \text{C} + \text{CO}_2$ ).
- The reverse water-gas shift reaction ( $\text{H}_2 + \text{CO}_2 \leftrightarrow \text{CO} + \text{H}_2\text{O}$ ).
- Methane decomposition ( $\text{CH}_4 \leftrightarrow \text{C} + 2\text{H}_2$ ).

Carbon formation is not necessarily a problem, but an electric heater can be compromised if solid carbon accumulation restricts process gas flow within the element, or if carbon chemically reacts with the wire material—a phenomenon known as metal dusting.

The Electric Heater Test Facility (ETF), constructed at The Midrex Technologies Research and Technology Development Center, comprised a recirculating loop that continuously preheated, heated, and cooled the process stream

to minimize make-up gas consumption. Fresh, preheated dry feed gas was introduced via a manifold connected to cylinders of pure gases, each with its own mass flow controller. Vaporized water was introduced through a liquid flowmeter and humidifier, and hydrogen sulfide was supplied from a 500 ppm H<sub>2</sub>S cylinder balanced with nitrogen. Downstream of the electric heater, a water-cooled heat exchanger returned the gas to initial conditions, with a portion vented to a flare and the remainder recycled (Figure 2).

The heater element was equipped with upstream and downstream pressure taps to record differential pressure in real time, temperature probes at both ends to calculate the change in gas enthalpy, and three optical temperature monitors designed by Tutco Sureheat to track wire temperature across its length. Electrical power was controlled by Tutco's control panel, which included a silicon-controlled rectifier (SCR) and overload protection with shutoff interlocks.

Throughout the 500-hour test, the wire temperature, wire resistance, and gas outlet temperature remained stable, indicating that the heater element delivered reliable energy to the gas stream. Post-test tensile strength analysis showed comparable strength to a virgin wire. SEM-EDS analysis revealed that, although some carbon formed at certain sections of the wire, there was no evidence of metal dusting at any point along the element. SEM microscopy could not detect voids in the grain structure even at 20,000× magnification. All evidence confirmed that the wire withstood the expected MIDREX H<sub>2</sub> operating conditions without failure.

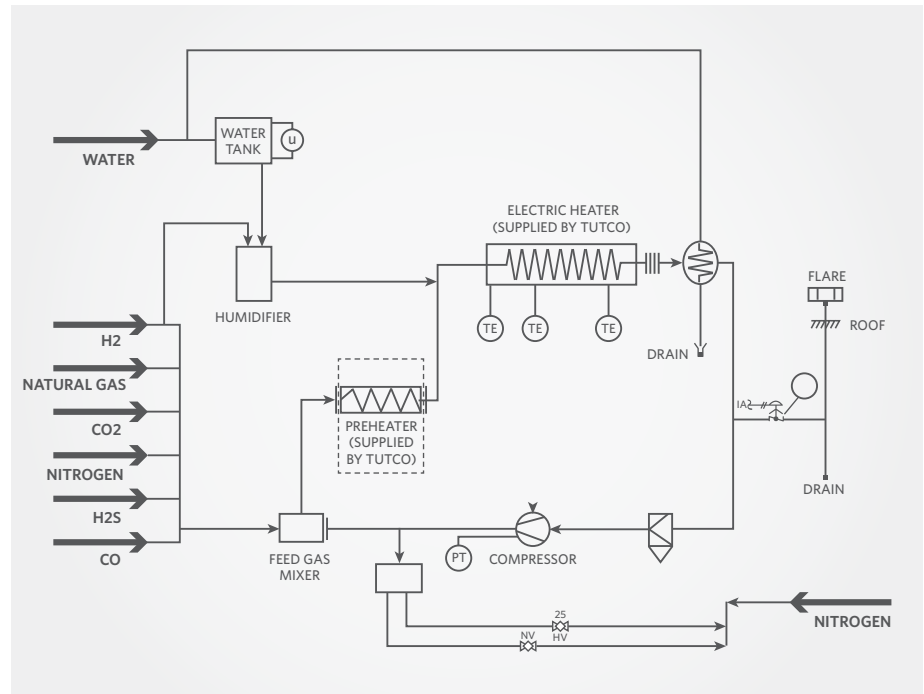
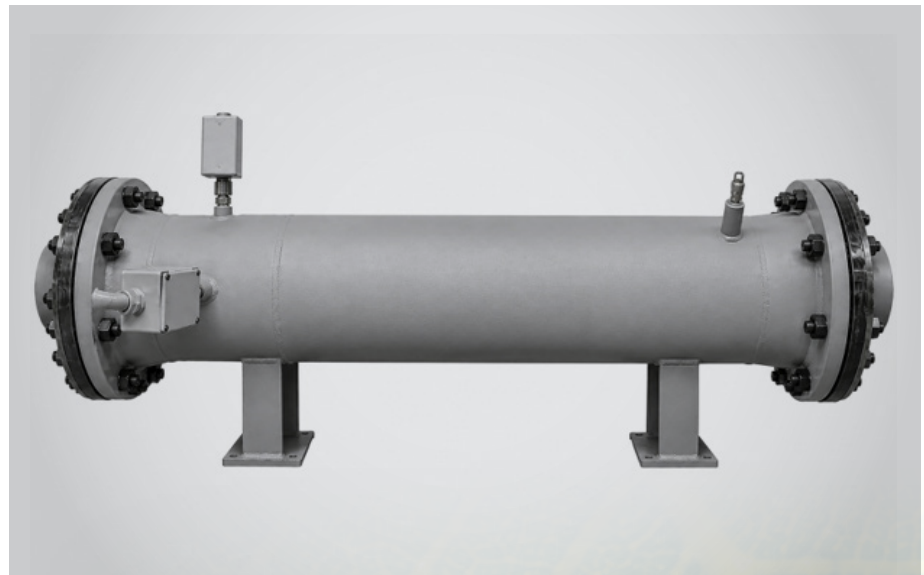


FIGURE 2. Block diagram of the Electric Heater Test Facility (ETF).



Pictured: Model of single-element bench-scale electric heater used in the ETF.

### SINGLE-WIRE CYCLING TEST

The next test program evaluated whether the heater element could withstand upset conditions (plant trips) without damage. A typical DRI plant may only experience a few trips per year, so surviving fifty full-to-zero-load cycles would represent a lifetime's worth of shut-downs.

The ETF was repurposed for this test. Rather than maintaining continuous full-load operation, the energy supply was abruptly disconnected while process gas continued to flow, causing the wire temperature to drop by hundreds of degrees per minute. Each cycle ramped the gas temperature at 10°C per minute to a peak of 1,000°C, stabilized for two minutes, then rapidly cooled to 200°C, potentially weakening the element via thermal shock. The full cycle took about one hour and twenty minutes (Figure 3).

Wire performance appeared unchanged after fifty cycles. The regularity of power, current, and voltage across cycles confirmed that the wire's resistive properties remained intact. SEM-EDS imaging showed no evidence of metal dusting or other chemical attack, and tensile strength testing yielded results comparable to those of a virgin wire. All evidence showed that the heater element can withstand repeated trips without deterioration (Figure 4).

### PROTOTYPE LONGEVITY TEST

Having demonstrated that a single element could survive both extended continuous operation and repeated thermal cycling, the next phase was to construct and test a multi-element prototype under full-load plant conditions. The prototype comprised twelve heater elements in parallel and was too large for the ETF, requiring a purpose-built Heater Pilot Facility (HPF) operating on the same recirculating principle but at a larger scale (Figure 5, top of next page).

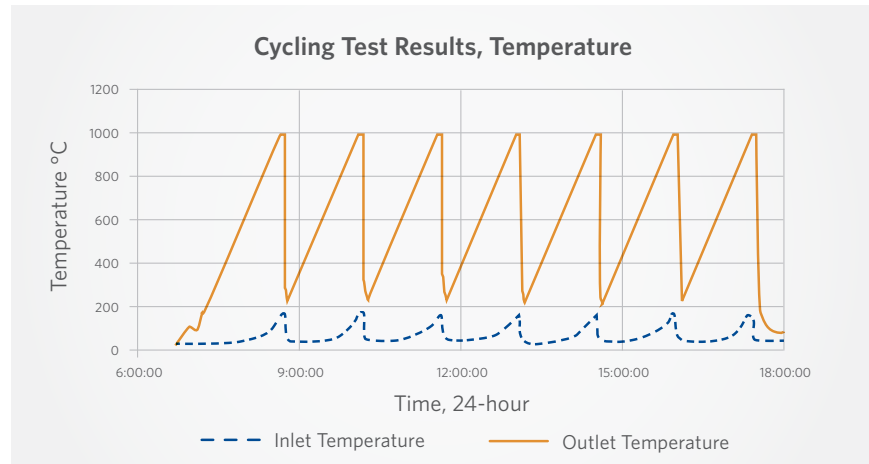


FIGURE 3. Trends of inlet and outlet gas temperature over some period of time.

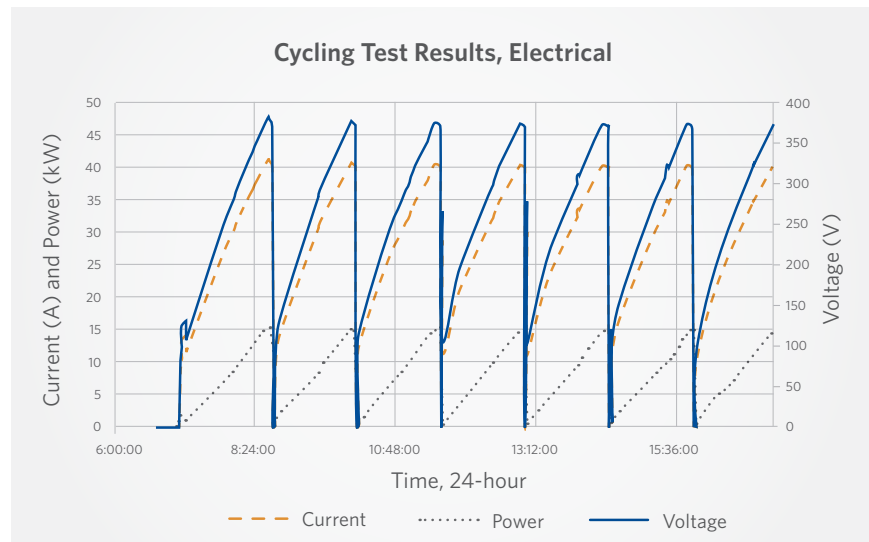


FIGURE 4. Trends of electrical data (current, voltage, power) collected over 12-hour period during cycling test.



Pictured: Model image of a multi-element prototype of the electric heater used at the MPF.

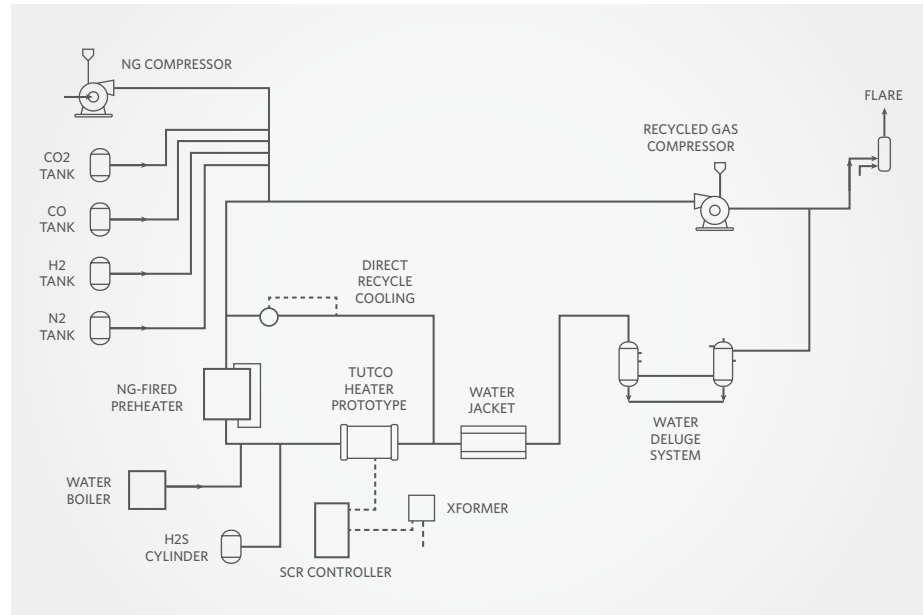
The scope was twofold:

- Simulate the inlet gas conditions (composition, flow rates, pressure, and temperature) of reducing gas in a MIDREX H2 unit,
- Safely provide continuous cooling for reducing gas exiting the electric heater (>1000°C).

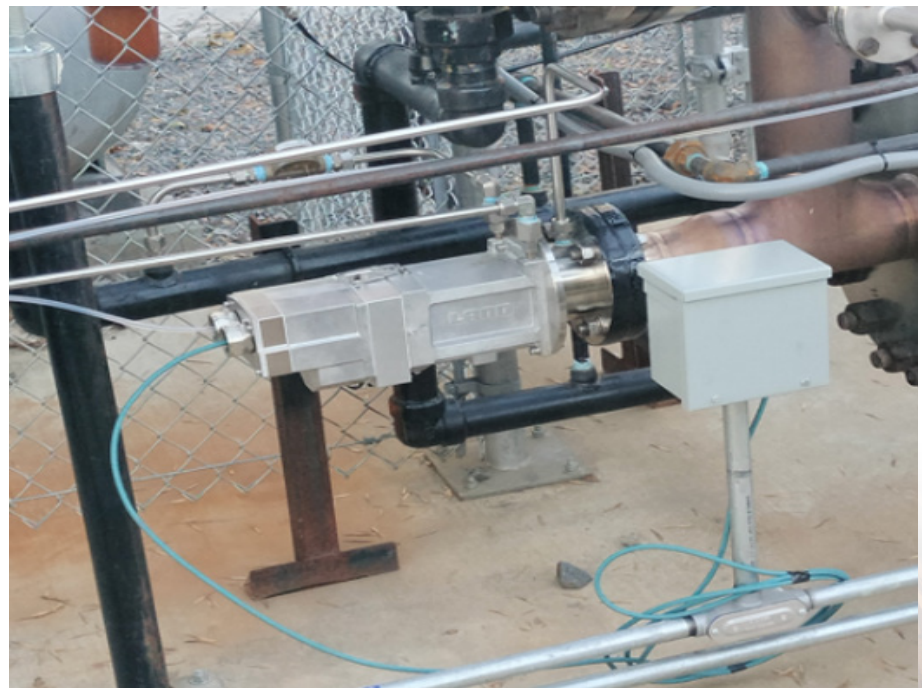
The scale-up also required a more sophisticated power supply. The 12-element prototype's SCR, supplied by Tutco Sureheat, controlled energy delivery and individually distributed power across three power leads. A step-up transformer converted the facility's standard 480 VAC supply to the higher voltages expected in commercial design, while independent power monitors and an electrical disconnect ensured safe and reliable operation.

It was important that Midrex obtained accurate wire temperature data during operation of the Electric Heater Prototype, particularly when the heater was operating at full capacity. In order to do this, the piping of the HPF was designed such that a camera could have a clear view of the outlet of the heater elements (*Figure 6*). Ametek LAND's infrared thermal imaging camera detects the radiation emitted by hot solid objects (< 500 °C) and can convert that detected radiation into temperature if the emissivity of the material is known. The data from the thermal camera was recorded in real time and stored onto the HPF's data server. Using this information, it was possible to adjust process conditions in the HPF and observe its effect on wire temperature. It was also possible to measure the temperature of individual wire elements in order to minimize temperature maldistribution. Using the thermal camera's data, it was possible

for Midrex to optimize its design to ensure that the wires don't overheat and that the temperature profile is even, which will prolong the life of the heater.



**FIGURE 5.** Block diagram of the Heater Pilot Facility (HPF).



**FIGURE 6.** Ametek LAND's infrared thermal imaging camera installed at the HPF.

Testing at the HPF included dedicated runs for the Nitrogen Case, the Hydrogen Case, and the Carbon Case. The focal point was a two-week longevity test under the Carbon Case. Temperature probes upstream and downstream of the heater measured the change in gas enthalpy. A differential pressure tap provided real-time pressure change data, which could indicate carbon accumulation across the twelve elements. The SCR controller recorded and adjusted power, voltage, and current in real time to deliver steady outlet gas temperatures (Figure 7).

Post-test examinations included a full physical inspection of all twelve elements, module supports, fittings, and the prototype body itself, with before-and-after measurements to check for displacement that might indicate eventual failure. Electrical resistance was measured before and after testing. Sections of wire were sent to Kobe Steel Limited's laboratories in Japan for SEM-EDS microscopy, grain size analysis, and line analysis.

The results confirmed that multiple heater elements in parallel can operate at full load across all three operating cases without signs of deterioration. Physical measurements and electrical resistance remained consistent, and microscopy revealed no metal dusting or significant phase transformation. These results prove that the heater design functions as intended as a module.

## CONCLUSION

The MIDREX H2 process depends on the continuous, reliable operation of these novel electric heaters. Midrex Technologies' multi-year test campaign has systematically addressed the foreseeable risks. Each successive program—from single-wire longevity to thermal cycling to multi-

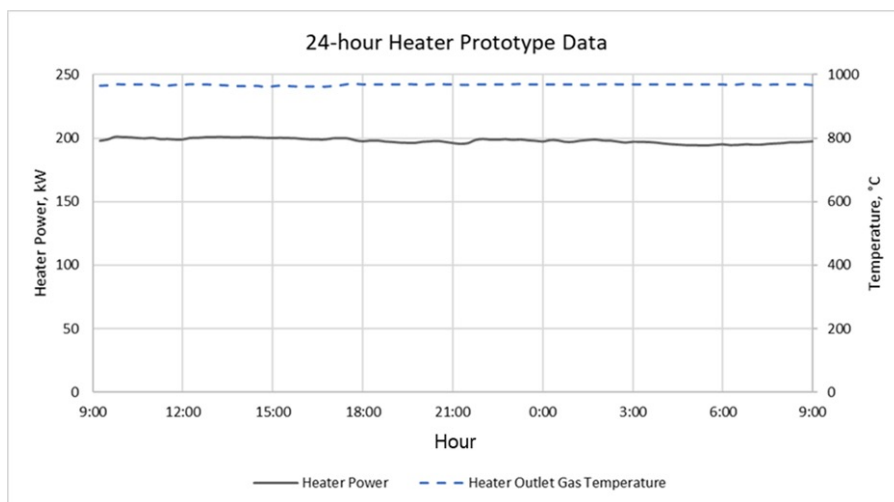


FIGURE 7. Electrical power and outlet gas temperature of the prototype over a 24-hour period.

element prototype testing—built on lessons from the previous stage and increased in complexity, allowing steady maturation of the technology. With the successful completion of the Prototype Longevity Test, Midrex Technologies has de-risked the electric heater as a carbon-free replacement for the conventional reformer and demonstrated the feasibility of the MIDREX H2 flowsheet.

## ACKNOWLEDGMENTS

Midrex would like to acknowledge the efforts of Tutco Sureheat for designing and constructing the bench-scale and pilot-scale electric heaters and their control panels. We also thank the University of New Hampshire and Kobe Steel Limited's Materials Research Laboratory for performing microscopy and strength testing of the heater wires after each test program.

## References:

1. Fischer, K. "Design Considerations for Electric Process Heaters," July 2025. Accessed at: <https://www.eastman.com/content/dam/eastman/corporate/en/literature/s/sfehtf19990.pdf>
2. Perry, R. H. & Green, D. W. (Eds.), *Perry's Chemical Engineers' Handbook (7th ed.)* (1999; McGraw-Hill). Table 2-194, pp. 2-162 and 2-163.

# MIDREX® Direct Reduction Plants 2025 OPERATIONS SUMMARY

**M**IDREX® Plants produced 82.170 million metric tons (Mt) of direct reduced iron (DRI) in 2025, representing a significant increase of 7.78% compared to the 76.239 Mt produced in 2024. This marks another milestone in the continued growth of MIDREX® technologie(s) which has consistently demonstrated reliability and global leadership in DRI production.

The total production for 2025 was derived from 40.733 Mt confirmed by MIDREX Plants located outside Iran, Russia, and Venezuela, along with an estimated 41.437 Mt from plants in those countries. These estimates are based on data reported by the World Steel Association (worldsteel).

Production of hot DRI (HDRI) exceeded 12.8 Mt in 2025. This material was primarily consumed in nearby steelmaking facilities, where it contributed to lower energy consumption per ton of steel produced and enhanced overall productivity.

Cumulatively, MIDREX Plants have now produced more than 1.558 billion tons of all forms of DRI, including cold DRI

(CDRI), hot DRI (HDRI), and hot briquetted iron (HBI), through the end of 2025.

Operational performance remained strong globally. At least eight MIDREX Modules established new annual production records, while at least seven achieved new monthly production records. Additionally, twelve modules operated within 10% of their record annual output, and ten modules exceeded 8,000 operating hours during the year.

The Venezuelan plants (COMSIGUA, Ferrominera Orinoco, Sidor, and Venprecar) operated during 2025 at reduced capacities, but most of their production details were not available. No detailed production information has been received from the plants in Iran and Russia. The following plants did not operate in 2025 due to commercial or market conditions: ArcelorMittal South Africa, Delta Steel in Nigeria, ESISCO in Egypt, Lion DRI in Malaysia, NSCL National Steel Complex Ltd (formerly Tuwairqi Steel Mills) in Pakistan, and TT Iron Steel Company Ltd. (formerly AM Point Lisas) in Trinidad and Tobago.

*\* A MIDREX Plant can include one or more modules*

## 2025 PLANT HIGHLIGHTS

### ALGERIAN QATARI STEEL (AQS)

In its fourth full year of operation, AQS continued ramping up production to meet its steel shop's requirements. AQS set new annual records for production, productivity, electricity consumption, and operational time, and also broke its monthly production record in May 2025. AQS recorded the highest carbon value among all HDRI plants, reaching 2.79%.

### ANTARA STEEL MILLS

The first MIDREX HBI module, which began operation in August 1984, operated at 13% above its annual rated capacity. The module achieved the highest total iron content among all MIDREX Plants, averaging 92.5% total Fe throughout the year. It also recorded the highest metallization level among all HBI plants, reaching 95.38%. All production was shipped by sea to third party customers.

### ARCELORMITTAL ACINDAR

AM ACINDAR's module operated below maximum capacity throughout the year due to local market conditions in Argentina. Even so, AM ACINDAR has achieved the highest cumulative production from a 5.5 meter MIDREX Shaft Furnace to date. The plant also set a new annual metallization record of 95.38% in 2025.

### ARCELORMITTAL CANADA

Both modules operated at more than 43% and 56% of their rated capacity, respectively. The combined production from both modules was over 90% of their 2018 production record. The average total iron content in Module 2 was the second highest among all MIDREX Plants, reaching 91.80%.

### ARCELORMITTAL HAMBURG

The longest serving MIDREX Module (initial startup 1971) operated at reduced capacity due to market conditions.

### ARCELORMITTAL LÁZARO CARDENAS

AMLC 6.5-meter reduction furnace has produced the most by a single module to date. The plant operated above rated capacity and used almost exclusively oxide pellets made in its adjacent pellet plant during 2025.



Algerian Qatari Steel (AQS)



Antara Steel Mills



ArcelorMittal Acindar



ArcelorMittal Canada



ArcelorMittal Lazaro Cardenas



ArcelorMittal Hamburg

### ARCELORMITTAL SOUTH AFRICA (SALDANHA WORKS)

This COREX® export gas-based MxCol® Plant was idled in January 2020, and has remained shut down throughout 2025.

### ARCELORMITTAL TEXAS HBI

The ArcelorMittal Texas 2.0 Mt/y HBI module set the world monthly HBI production record in September 2025. Production in 2025 was more than 90% of the production record achieved in 2023. A clear and continuous improvement in natural gas consumption efficiency has been evident since the facility's start up in 2016.

### ARCELORMITTAL/NIPPON STEEL INDIA

AMNS III and IV operated above their rated capacities. Modules IV and V also operated for more than 8,000 hours. Module IV set multiple records in 2025, including production, productivity, electricity consumption and operational time. It additionally set a new monthly production record in October 2025. More than 90% of the output from the four HDRI/HBI modules was produced as HDRI. Modules I and VI produced CDRI exclusively. Modules V and VI operated using top gas fuel to VPSA for CO<sub>2</sub> removal, and COREX gas was used to fuel the reformer burners.

### CLEVELAND-CLIFFS

In its fifth anniversary year, the plant achieved the highest HBI carbon content among all HBI plants. The 1.6 Mt/y plant located in Toledo, Ohio, USA, produces HBI primarily for consumption by Cleveland Cliffs' steel companies in the region.

### COMSIGUA

COMSIGUA operated for only a few months at limited capacity.

### DELTA STEEL

The two modules in Nigeria did not operate in 2025.



*ArcelorMittal Texas HBI*



*ArcelorMittal/Nippon Steel India*



*Cleveland-Cliffs*



*COMSIGUA*

## DRIC

Both of DRIC's modules in Dammam, Saudi Arabia, operated above their rated capacities, achieving a new combined annual production record in 2025. Module 2 set new records in annual production, productivity, and electricity consumption. It also established a new monthly production record in January 2025. Additionally, Module 2 recorded the second highest operational time among all MIDREX® Plants in 2025. Module 1 also achieved a new electricity consumption record.

## ESISCO

After shutting down in early March 2020, Beshay Steel's MIDREX Plant remained shut down throughout 2025.

## EZDK

Production was above rated capacity by all three modules and were only 1% below their multi-plant production record set in 2023. Module 1 set new annual records in production, electricity consumption, and operational time, reaching the highest among all MIDREX Plants in 2025. In its 25th anniversary year, Module 3 also set a new annual production record and operated for more than 8,300 hours during the year.

## FMO

Thirty-five years after its restart as a MIDREX® Plant, Ferrominera Orinoco's HBI module in Puerto Ordaz, Venezuela, operated at low capacity in 2025.

## HADEED

The four MIDREX Modules at Hadeed in Saudi Arabia were within 8% of their total multi-module annual production record set in 2013. All modules operated above their design capacities. Module C recorded the third highest operational time among all MIDREX Plants, with annual production only 3% below its record set in 2006. It also operated the reformer with the highest efficiency among all MIDREX Plants, based on production per volume of catalyst. Module E continues to hold the record for the highest cumulative production from a 7.0 meter MIDREX® Shaft Furnace. Hadeed also owns an HYL plant (Module D).



DRIC



EZDK



FMO (Ferrominera Orinoco)



Hadeed Modules



### JINDAL STEEL SOHAR

Jindal Steel Sohar established a new annual productivity record. The plant also broke its monthly production record in October 2025. When measured by production per reduction furnace volume, the plant ranked as the most efficient MIDREX Plant in 2025. With additional bin capacity, 98% of production was consumed as HDRI in the directly connected steel shop. The single-module facility in Sohar, Oman, is designed to produce primarily HDRI, with HBI as a secondary product stream.

### JSPL (ANGUL)

The first MxCol plant, which uses synthesis gas from coal gasifiers to produce both HDRI and CDRI for the adjacent steel shop, set new annual records in production, metallization, and electricity consumption. The plant also broke its monthly production record in May 2025. HDRI accounted for 70% of the total production. The plant continued to use supplemental coke oven gas (COG) throughout the year.

### JSW STEEL (DOLVI)

JSW Steel's module, which produces CDRI, operated above its design capacity. Approximately 10% of the plant's total energy input came from COG injected into the shaft furnace, helping to reduce natural gas consumption. The plant operated above 8,000 hours in 2025.

### JSW STEEL (TORANAGALLU)

JSW Steel's HDRI/CDRI module in Toranagallu, Karnataka, India, which uses COREX export gas as energy input, operated close to 8,000 hours in 2025, with availability largely constrained by the supply of COREX export gas. Of the module's total production, 53% was delivered to the steel shop as HDRI, with the balance being CDRI. This facility is the second of its kind worldwide, the first being ArcelorMittal's COREX/MIDREX® plant in Saldanha, South Africa, which is currently shut down.

### LION DRI

The Lion DRI module, located near Kuala Lumpur, Malaysia, remained shut down throughout 2025 due to competition from foreign steel products.



*Jindal Steel Sohar*



*JSPL (Angul)*



*JSW Steel (Dolvi)*



*JSW Steel (Toranagallu)*

## LISCO

The combined 2025 production of the three modules came very close to the 2024 record, falling short by less than 1.2%. Modules 1 and 3 operated above their design capacities. Module 1 produced CDRI to supply the LISCO steel shop and set a new operational time record in 2025. Module 3 set several new annual records in 2025, including productivity, natural gas consumption and electricity consumption.

## NSCL (FORMERLY TUWAIQI STEEL MILLS, LTD)

The 1.28 Mt/y combination plant, located near Karachi, Pakistan, did not operate in 2025.

## NU-IRON

Nucor's module in Trinidad and Tobago achieved the highest DRI metallization of 96.22% and carbon of 2.74% in 2025 of all MIDREX Plants.

## QATAR STEEL

Module 1 has produced since beginning operations in 1978, the highest cumulative production achieved by a 5.0 meter shaft furnace. In 2025, the average carbon content was the second highest among all MIDREX CDRI plants. Module 2 is supplying the adjacent steel mill and producing both CDRI and HBI for export. Both Module 1 and Module 2 operated above their annual rated capacities.

## SIDOR

Only Sidor's Module 2B has been reported to have produced DRI in 2025. The other three modules remained shut down.

## SULB

SULB's 1.5 Mt/y combination plant in Bahrain, capable of simultaneous HDRI and CDRI production, set a new annual production record in 2025. The plant also achieved a new annual record in natural gas consumption, as well as a record in electricity consumption. SULB recorded the highest metallization value among all HDRI plants. Of the total 2025 production, 80% was delivered as HDRI to the adjacent steel shop, while 20% was supplied as CDRI. The remaining material was exported by sea.



LISCO



Nu-Iron Unlimited



Qatar Steel Module 2



SULB

### TENARIS SIDERCA

Tenaris Siderca's CDRI module in Argentina operated throughout the year to meet the DRI demand of its steel shop, with its customary shutdown during the colder months of June–August due to natural gas pricing. The module's average DRI metallization for 2025 was the second highest among all MIDREX Plants.

### TOSYALI ALGERIE

Both modules achieved a new combined annual production record in 2025. Tosyali's 2.5 Mt/y HDRI/CDRI Module DRI I, has reached the highest cumulative production from a 7.5 meter MIDREX Shaft Furnace, since its startup in 2018. The plant also set a new electricity consumption record in 2025. Over 70% of its production was delivered to the adjacent steel shop as HDRI. Tosyali Module DRI II, which started up in August 2024, broke multiple records in 2025, including: annual production, productivity, metallization, electricity consumption and operational time. The plant also achieved the highest monthly production among all MIDREX Plants in May 2025. Module DRI II now holds the highest annual and monthly production, as well as the highest annual and monthly productivity, of all MIDREX Plants worldwide. Together with Algerian Qatari Steel (AQS), these represent the largest capacity MIDREX Modules built to date.

### TT IRON STEEL COMPANY LTD. (FORMERLY ARCELORMITTAL POINT LISAS)

All three MIDREX Modules remained shut down throughout the year.

### VENPRECAR

VENPRECAR operated at minimum capacity during the year.



*Tenaris Siderca*



*Tosyali Module I and II*



*TT Iron Steel Company Ltd.*



The full news articles are available on [www.midrex.com](http://www.midrex.com)

## → Midrex Honored at 2026 MICA Awards



On Wednesday, May 20, K.C. Woody accepted the Foreign-Owned Firm—Large Company award on behalf of Midrex at the 2026 Mayor's International Community Awards (MICA). Presented annually by the City of Charlotte Mayor's Office in collaboration with the Charlotte International Cabinet (CIC), the awards recognize foreign-owned firms and individuals in the Charlotte region for their exceptional service, philanthropy, and contributions to the growth of Charlotte's international community. In his remarks, K.C. highlighted Midrex's Gives Back mission and acknowledged the dedicated teammates whose efforts make recognitions like this possible.





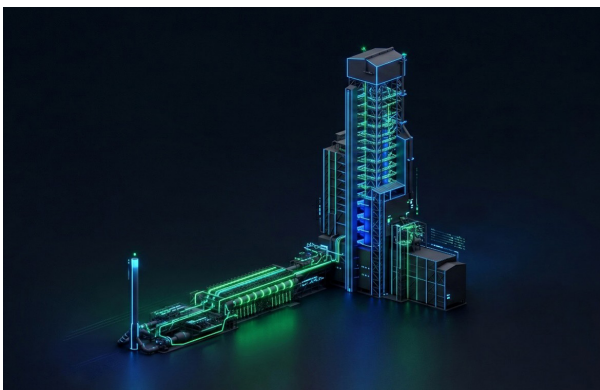
The full news articles are available on [www.midrex.com](http://www.midrex.com)

## → Nigel's 5th Charity Walk

**N**igel Phillips of the MUK office in London embarked on the latest chapter of his annual "Midrex Long Walks" campaign this May, marking his fifth charity walk. This year, Nigel took on a 30-mile stretch of the Greenwich Meridian Trail, completing the journey in approximately 12 hours. His walk supported MUK's charitable partners, Future Dreams, which focuses on breast cancer research, and West Kent Mind, which provides mental health support and services. Beginning at the King George V Memorial in Peacehaven, Nigel's route led him north through the historic town of Lewes and several smaller villages before concluding in Haywards Heath. His dedication and endurance reflect the spirit of the Midrex Gives Back mission, inspiring positive change with every step.



## → Midrex Selected for U. S. Steel's First-of-its-Kind DRI Facility at Big River Steel Works®



*Big River Steel MIDREX Plant Model*

**M**idrex recently secured a contract with Big River Steel (BRS) for the development of a new 2.5

million ton per year HDRI/HBI production facility in Osceola, Arkansas. Set to be the largest MIDREX® Plant in North America, this project marks a significant milestone for both Midrex and the North American steel industry.

BRS is owned by U. S. Steel, which is a wholly owned subsidiary of Nippon Steel. Under this contract, Midrex and BRS will establish the first U.S. DRI facility of its kind fully integrated with electric arc furnace (EAF) steelmaking and a domestic DR-grade pellet supply chain. The plant will primarily produce HDRI for direct use in onsite EAFs, along with HBI for both internal use and export to Japan. The project reflects strong momentum and commitment from all parties involved, building on Midrex's previous collaboration with BRS and reinforcing its leadership in the global DRI industry.

## → Midrex Announces First Chief Human Resources Officer (CHRO)



**TRISHA TRAUTMAN**  
Chief Human Resources Officer  
(CHRO),

Midrex recently announced the appointment of Trisha Trautman as its first Chief Human Resources Officer (CHRO), a role created to strengthen the company's People-Growth-Technology (PGT) strategy and further position its People & Culture function as a key business partner. As a member of the Executive Committee reporting to the President & CEO, Trisha will lead global People & Culture initiatives, supporting organizational growth, talent development and long-term capability building.

She brings more than 20 years of human resources leadership experience, most recently serving as Chief People Officer at RQM+, where she led HR strategy across the United States and Europe and supported major transformation, acquisition, and integration efforts.

Midrex looks forward to the leadership and expertise she will bring in advancing its People & Culture strategy and supporting the company's continued growth.

Lauren Lorraine: Editor

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