

Kimbal Chronicle

Building Reliable Tools To Modernize **Distribution Grid**

2024-25

Founded in 2011, Kimbal (formerly Crystal) is an ISO 9001:2015 certified Indian organization offering an Integrated Advanced Metering Infrastructure Solution that bundles smart meters, RF-mesh communication Infrastructure, Head-End System, and Consumer Mobile App.

Our product portfolio further expands to:

Samaksha - An Artificial Intelligence-enabled meter reader

Tarang - A power harmonics analyzer

End-to-end Submetering Solution



Our Slogan

The Spirit Of Kimbal

Efficient Energy Everywhere

Our Mission

Our North Star On Every Business Day

To build trusted tools for efficient energy distribution.

Our Vision

The Ultimate Inspiration

Pioneer technological innovation towards optimized energy distribution.

Our Progress Story

2011

Established Sinhal Udyog



2012

Manufactured first Smart Meter for commercial purposes under Crystal Brand name

Crystal

2016

Partnered with Ericsson to deliver Smart Grid Pilot Project of 14k smart meters for APDCL.

14k

2018

A Watershed Year! We manufactured our first 100k smart meters and received the highly prestigious IS 16444 BIS License.

100k



2019

Awarded Assam Smart Grid Project for 134k smart meters.

134k

2021

Manufactured and Supplied more than 200k smart meters

200k

2022

Deployed 600k+ smart meters nationwide. Expanded our product portfolio to HTCT/PT and LTCT smart meters.

600k+

2023

The Year in Making!
Rebranded as Kimbal Technologies.
Introducing automation and Lean Six Sigma to shoot our annual production capacity to 2 Million+ smart meters and achieve ZERO Product Defect.

Your trusted smart metering deployment partner

State-of-the-art Infrastructure

Introducing automation and world class design engineering to achieve manufacturing process excellence while keeping our focus on enhancing product reliability, design capabilities, and innovation.

Taking Innovation one notch further

60+ top engineering talent are consistently at work in our innovation lab to build the most robust and reliable smart metering solutions to enable the energy distribution ecosystem.

Ahead of the Curve

Being the ONLY Indian enterprise building 75% of the critical AMI components in-house, we emerge as an accountable, trusted, and cost-effective OEM with field-proven success.

2 million +

smart meter
Supplied



Product defect rate of
Kushal U1



SLA Delivered

8 million+

smart meter deployment
(ongoing)



Approximate AMI
market share

18 AMI

projects running

14

Indian States and UT trust
our products and solutions

Kimbal's Nationwide Footprint

Assam

Uttar Pradesh

Bihar

Chattisgarh

Maharashtra

Jammu & Kashmir

Ladakh

Gujarat

Delhi NCR

*In 2024-25, our
footprint further
spread to:*

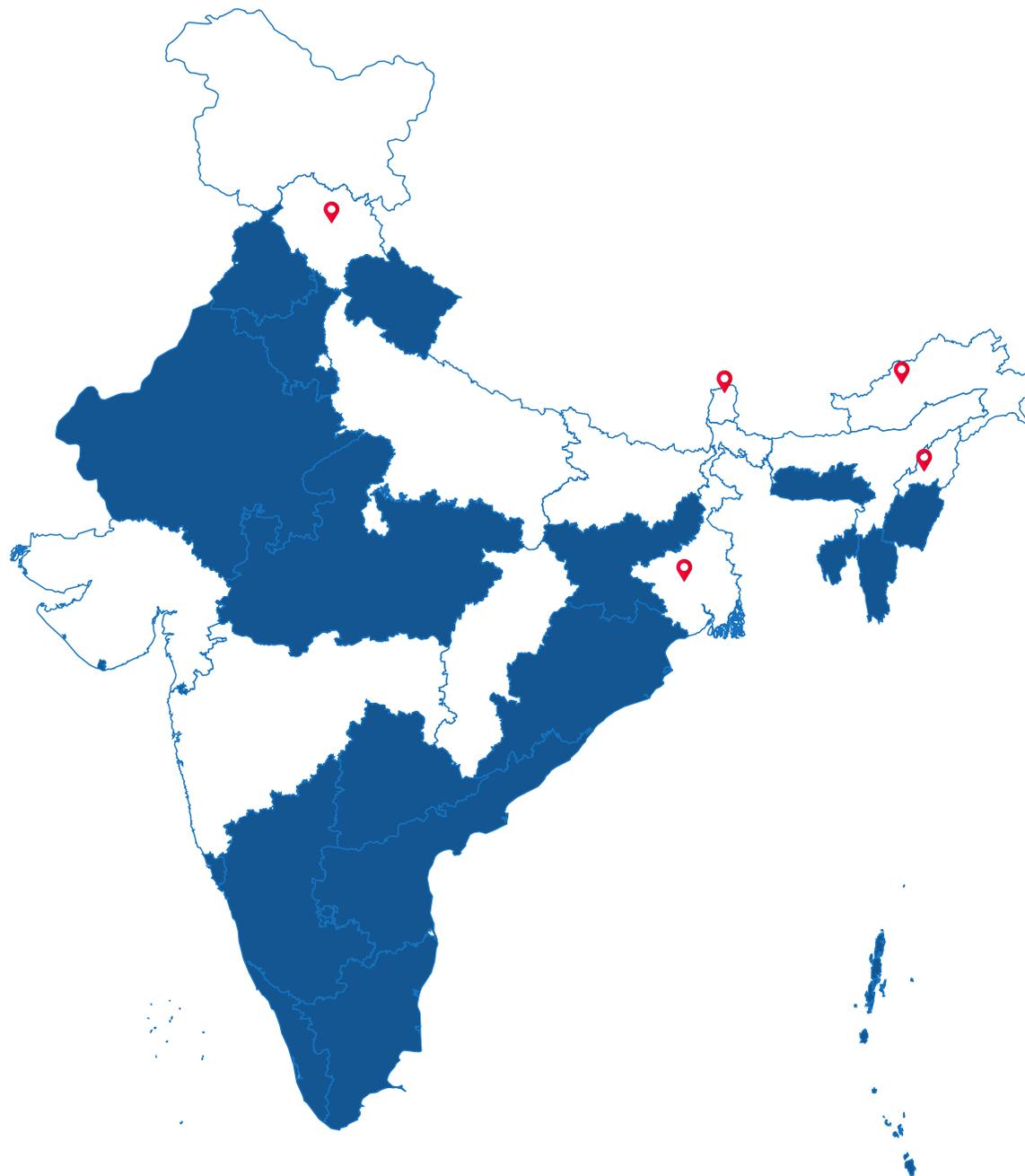
 Arunachal Pradesh

 West Bengal

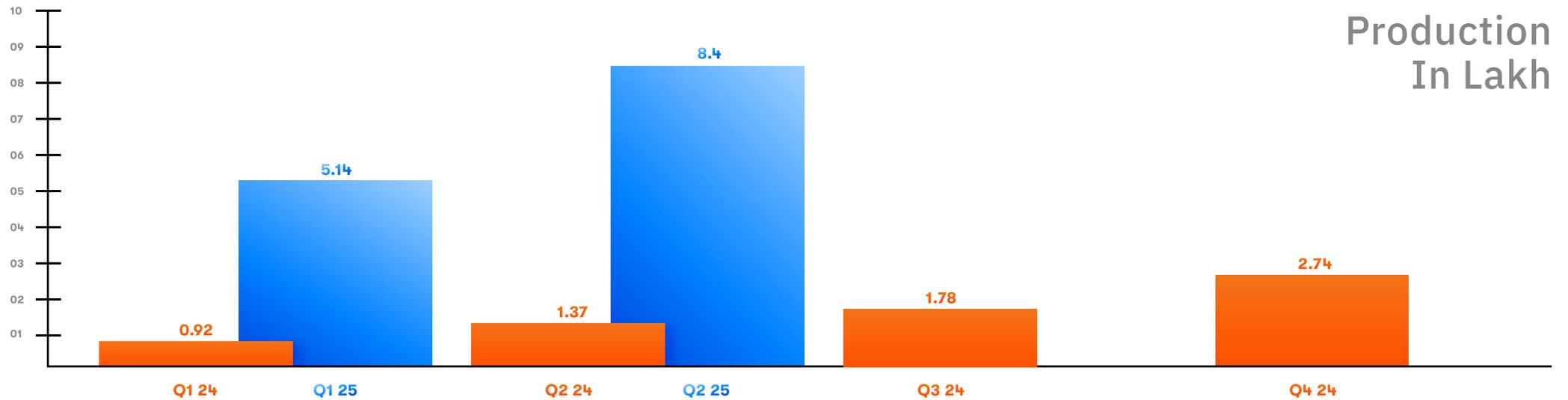
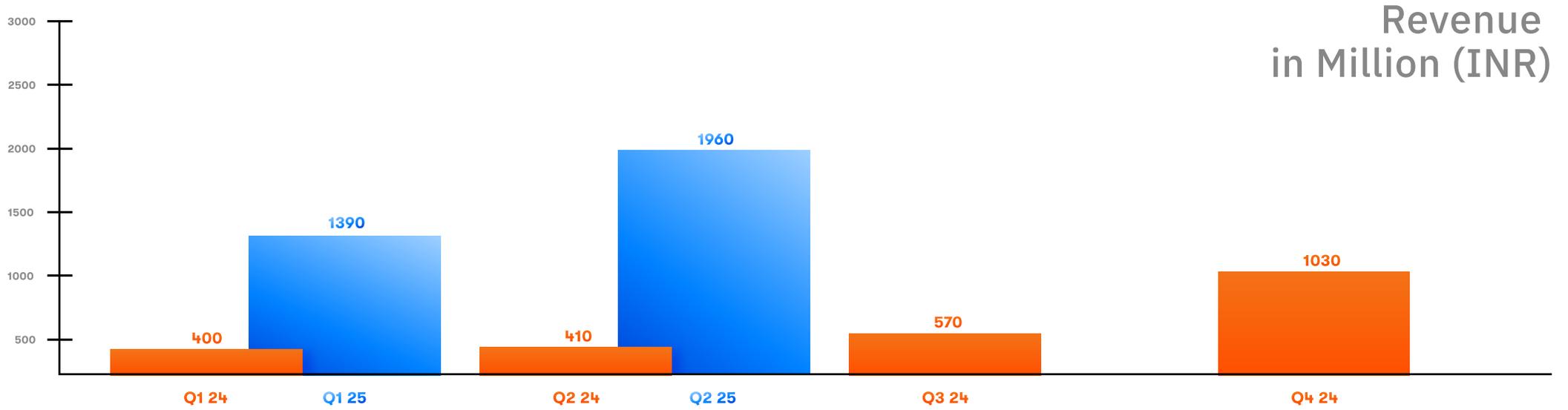
 Nagaland

 Sikkim

 Himachal Pradesh



Kimbal's Commitment to Growth



Make In India

Championing the Make-In-India initiative, we share this with much delight and pride that all our Products & Solutions are conceptualized, designed, and developed in Kimbal Innovation Lab, India.

We are expanding our manufacturing and design engineering capabilities to efficiently cater to the growing demand of Indian Utilities for reliable products and solutions that will enable them to operate with more control and confidence.

We are committed to continuous improvement towards excellence of our products, processes, and people.



Most trusted Indian OEM offering **75%** cost components of Advanced Metering Infrastructure

- Smart Meters
- RF-Mesh Communication Infrastructure
- Head-End System

To this day, we have successfully supplied **2 million+** Integrated AMI solution while delivering **99+%** SLA across critical Data Points: Billing Accuracy, Load Survey, Daily Profile, and RC/DC.

With **18** running AMI projects and **8 Million +** smart meter deployment ongoing, our customers cheer for us for our reliable products and commitment to delivery, eventually converting into repeat orders.

Key Benefits of AMI to Utilities

AUTOMATED

- Meter Reading
- Billing/Accounting/Collection
- Connection/disconnection
- Detection of dead meters
- Energy auditing
- Faster outage detection and restoration
- Load profiling
- Power quality measurement
- Identification of phase imbalance
- Triggers for faster/delayed capacity enhancement

REDUCED

- Time taken for Bill Generation
- Aggregate Technical & Commercial (AT&C) losses
- Human errors in meter reading and billing
- Manual visits and Use of Vehicle
- Peak power purchase cost
- Load on call centers, customer care centers, and billing centers
- Distribution transformer (DT) failure rate
- Under/over utilization of equipment
- Carbon Footprint

8 Reasons Our Customers Prefer Our Integrated AMI Solution

001



Reliable
Products

002



Unconditional
Support

003



Speedier Work
Completion

004



Unbeatable
Quality

005



Complete
Accountability

006



Swift Decision
Making

007



Quicker problem
identification and
resolution

008



Cost
Competitiveness
(Above all)

Kimbal as the most trusted Indian OEM to AMISPs

Challenges of AMI Service Providers

- To find cost-efficient solution provider to improve their chances of winning the bids in India's tender-driven environment.
- To find a trusted service provider with field-proven merits to meet the strict timelines for project delivery.
- To maintain an optimal inventory of smart meters, considering its rising demand along with limited supply of semiconductors.

AMI projects in India are cost and time sensitive. Any delay in the availability of smart meters may lead to a consequent delay in project completion.

- Reliable products (Smart meters) that last for at least 2+8 years, as required in the TOTEX model.
- Reliable technology provider to sustain the communication infrastructure and other technical specifications for at least 2+8 years, as required in the TOTEX model.

How are we helping?

- Our design engineering, technology, and manufacturing processes are highly improvised and matured enabling us to deliver **cost-competitive**, scalable and reliable AMI components.
- Our success rate of on time-delivery is optimum with less than 0.6% product defect rate.
- Our manufacturing capacity stands at 3.5 Million+ smart meters annually, to expand to 10 Million+ smart meters by January 2025.
- Product Reliability is at the core of all we do.
- Our RF-Mesh-based communication infrastructure and HES has delivered 99%+ SLA across all the 4 critical data points - Billing Accuracy, Load Survey, Data Profile, RC/DC.

We leverage emerging technologies and design & engineering capabilities to build cost-competitive reliable and scalable solutions for the energy distribution ecosystem.



Kushal in Sanskrit translates to ‘Better Than All’. Our new range of smart meters truly justifies its name. The Kushal range of smart meters will be a game changer for the industry. The compact and unique automated assembly lines, the modular firmware, and the ingrained concept of reliability truly sets it apart. While we produce robust and reliable products, we also remain conscious of the energy footprint we create. Our complete production process is Lead-conscious and Plastic-positive.

Disclaimer:

Product renders and images are for representational purposes.

Vayu is a self-forming and self-healing RF mesh communication infrastructure, field-proven to remotely and securely collect data from utility meters. Conceptualized, designed, and developed in SUPL Innovation Lab, India.

Smart Meters Designed For Reliability

1 Plug-n-Play

We have made deploying RF mesh communication infrastructure absolutely easy and quick for you. Save yourself the hassle, time, and effort.

2 Trusted for Reliability

At any time, Vayu is drawing data from +5L smart meters dotted across India, ceaselessly for +60 months collectively. Indeed delivering an assurance of sustained high quality.

3

Unfluctuating Performance

+99% SLA maintained. Providing persistent performance while ensuring you offer a hassle-free service to your customers.

4

Security is critical to us

The nodes of Vayu have multi-layered encryption to keep them safe from possible breaches. We adhere to a 128-bit AES encryption process to ascertain the entire system is on top of its security.

5

When it's not counted, Vayu counts that, too

Our RF mesh is efficiently equipped to detect drop packets for individual meters. Every time a data collection is missed, you can be sure to get an alert.

Our HES is a highly scalable and agile product that efficiently and securely streams energy data from millions of smart meters to utilities nationwide.

Top Features:

- **Superior Performance. Resource efficient**

Unlike the most popular Head-End-Systems, our HES uses evidently low cloud infrastructure to deliver persistent high performance.

- **Supports different models of smart meters simultaneously**

Our Head-End-System can be readily and quickly configured to support different brands of smart meters used in an advanced metering infrastructure. It is highly dynamic, adaptable, and performance-driven.

- **Flexible to your selection of communication infrastructure**

You may prefer cellular service or RF-Mesh to support your AMI; our HES is equally compatible with all communication infrastructures. You get constant and continuous high-quality service, irrespective.

- **Customize the software to your precise requirements**

For our clients, we have successfully delivered customization in terms of unique data parameters required, retry time duration, and count. Our HES is highly agile, with broad potential for technology sustainability and scalability.

- **Reconcile the missed meter reading**

Missed readings are a huge cost center for utilities. Our HES is field-proven to execute effective gap reconciliation with high accuracy and check unwanted losses in revenue.

- **Safety is a priority**

Data safety and security of your system and network are critical to us. To ensure maximum safety, we use a private network only. Our HES is SSL

To extend the spectrum of our services provided to you, SUPL Innovation Lab has designed a highly customizable consumer mobile application to offer personalized experience to your customers in real time.

Top Features:

- **Easy Integration**

The app can integrate to your systems seamlessly and start to relay data to your consumers right after.

- **Make your consumer energy aware**

Your consumers can use the app to stay updated on their energy consumption in the real time. An aware consumer is a happy consumer.

- **Seamless Communication**

Deliver the promise of efficient two-way communication to your consumer through our app. Your consumer can now connect with you in a click.

- **Customizable-on-demand**

Our consumer mobile app is highly agile and dynamic with an extensive scope to include or exclude features. You Keep it lightweight, fitting to your precise requirements.



Artificial Intelligence-Enabled Meter Reader

Samaksha is an API Engine that readily integrates with billing apps to generate electricity bill in three simple steps:

Using is easy

Step 1 Open App → Step 2 Click Picture → Step 3 Generate Bill

Implementing is easier

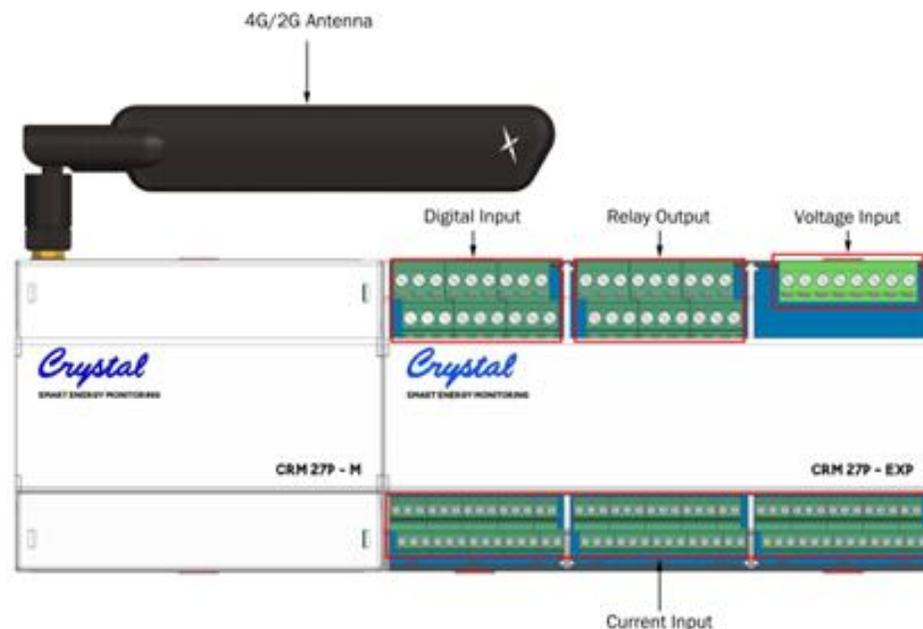
Until **August 2024**, Samaksha made **170 Million +** readings with **95.5%** Accuracy

A robust solution capable of detecting the quality of supply, like harmonics in voltage instantly, while helping in significantly reducing the risk of further damage or the possibility of a complete shutdown.

Our DIN rail-mounted panel energy meter is a robust, cost-effective solution that measures key electricity parameters like voltage, current, power, and other such individual harmonics to read the power quality effectively.

Made in India, this world-class product can use a Rogowski coil to measure power quality parameters in weather conditions as extreme as 70-degree Centigrade. That makes Tarang a widely usable product in countries with extreme weather conditions.

It has the capacity to measure 27 single-phase channels or 9 three-phase channels, Power Analyzers by Sinhal Udyog come with 8 digital inputs and 4 digital outputs, adding the advantage to use DIDOs as special monitoring and control in the system to make the solution more robust & efficient.



We are a trusted end-to-end sub-metering solution provider to some of the top business hubs, housing societies, and commercial spaces.

Our sub-metering solution includes:

- Pre-paid Smart Meters
- RF-Mesh Communication Infrastructure
- Head-End System
- MDM
- Consumer Mobile Application



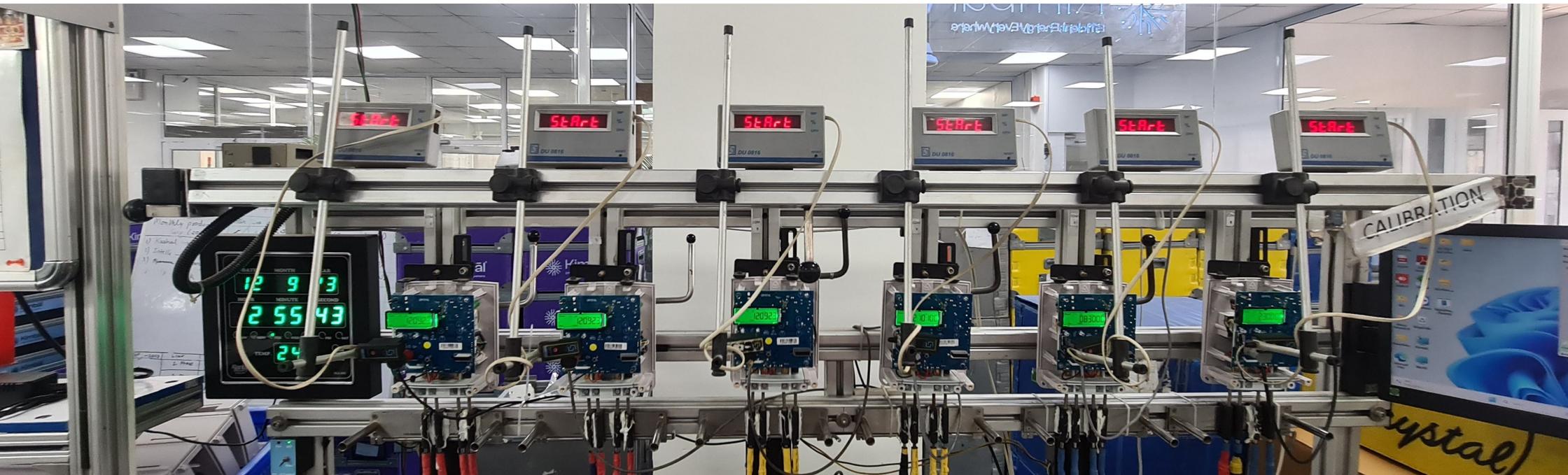
Highlight

- Our state-of-the-art manufacturing unit is spread over a 250,000 sq. feet area.
- The warehouse facility for finished goods and packaging covers an additional 90,000 sq. feet.
- Our unique manufacturing process design employs special-purpose machines (SPM) to fully automate the testing, calibration, and verification processes
- We are a highly secure establishment duly equipped to prevent unwanted injury and other possible health hazards.
- We render proper orientation, training, mentoring, and supervision to our workforce to ascertain they are well-qualified to deliver their duties efficiently and safely at all times.

6 Pillars to Conducting Everyday Business at Kimbal

To meet and exceed the industry quality benchmarks, our daily business operations stand on these SIX pillars

- **Product:** Offer top quality, duly tested, field-proven products. Provide customization whenever possible
- **Quality:** Improve our QMS by continually monitoring, auditing, improving, and optimizing our processes
- **Conformity:** Sincerely conform to the Ethics/Compliance Management System and always act as per the laws and regulations
- **Efficiency:** Rapidly adopt and adapt to the latest technology and globally recognized work methodologies to optimize the production process
- **Talent Management:** Render proper orientation, training, mentoring, and supervision to our workforce to ascertain they are well-qualified to deliver their duties efficiently and safely at all times
- **Customer Success:** Each of us must remain professional, truthful, and humble in delivering the commitments made.



Safety Measures

The safety of our people, product, and premise is our top priority

People

- Trained to perform duties safely and responsibly
- Dressed for safety
- Periodic Fire-drill
- Healthy meals and refreshments served
- Hygienic fully-equipped, and well-supplied toilets
- Appropriate lighting and ventilation

Product

- BIS Approve
- ESD-Safe production floor
- Flame-resistant terminal block
- High voltage immunity up to 4kV
- High voltage discharge immunity up to 35kV
- Surge and Impulse immunity of up to 10kV
- Accelerated life-cycle testing

Premise

- Fire Extinguisher
- Smoke Alarm
- Fire-exit plan
- A safe and robust storage system
- Safe stairways and pathway
- Adequate signage
- Efficient garbage removal system
- Even and uncluttered shop floor



Capability Maturity Model Integration (Maturity Level 3)



ISO 9001:2015



ISO 27001:2013



OHSAS 18001:2007



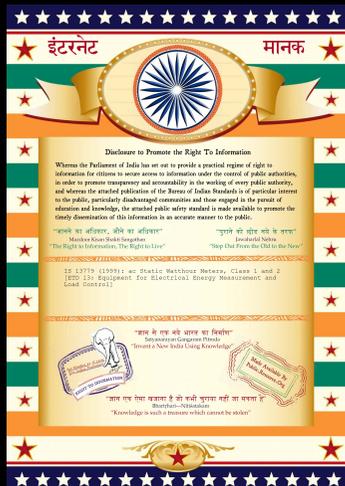
ISO/IEC 17025:2017



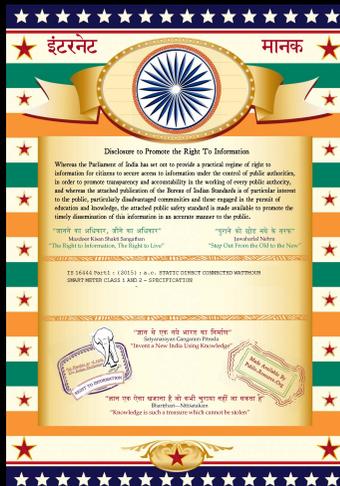
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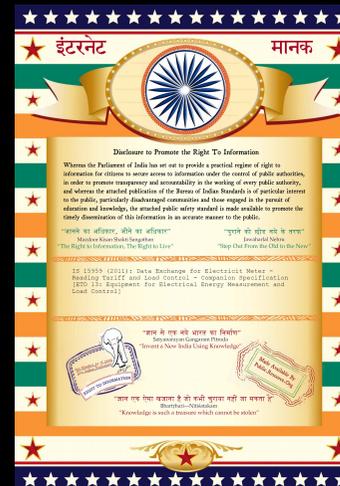
NABL Accreditation



IS:13779



IS:16444



IS:15959 DLMS



Great Place to Work-Certified™

We care for our energy footprint and take adequate measures to keep a check on them

1. Reusable PP corrugated boxes are used for packing plastic components of smart meters-
2. Limited diesel consumption
3. All records are maintained digitally with the least use of paper
4. Strict adherence to ROHS Compliance. The entire production process is lead-conscious and plastic-positive
5. Implemented heat insulation system and reduced the overall temperature of the production unit by 10 degree





Ganesh Sinhal -
Chairman &
Managing Director



Ayush Sinhal -
Chief
Executive Office



Deepak Pandey -
Chief
Operations Officer



Sunil Ishpuniani -
Finance
& Strategy



Pranav Arora -
Finance
& Strategy



Sanjeev Kumar -
Chief
Technology Officer



Anirudh Sinhal -
New Product
Development & Automation



Neeraj Gupta -
Product
Owner



Pragya Pallavi -
Marketing, Brand &
Thought Leadership



Pradeep Bhutani -
Product
Owner



Anshul Bansal -
Digital



Jaya Suri -
People
& Culture



Manoj Kamra -
People
& Culture



Atul Sharma -
Sourcing



Gurpreet Oberoi -
Sales
& Marketing



Taranjeet Singh -
Supply Chain
Management



Sanjay Kumar -
Quality



Kavinder Kohli -
Customer
Success

Our Mentors

We are supported by battle-hardened industry veterans, who are proven-achievers with exceptional imagination and experience to inspire a futuristic vision for Kimbal.



Sunil Wadhwa -
Finance
& Strategy



Surendra Jhalora -
New Product
Development & Automation



Prospective Customer





Our association with Sinhal Udyog Private Limited (.SUPL) is more than 7 years long. We were trying to break into the AMI market and associated with SUPL as one of our OEMs. Definitely one of the best strategic moves made by us. Their unwavering commitment to timely delivery, meeting all service level agreements, and providing reliable smart meters and robust communication infrastructure helped us establish ourselves as a trusted AMISP in India. Together with SUPL, we delivered the fastest-ever AMI implementation for APDCL in 2020. Their speedier work completion and unmatched cost competitiveness have consistently exceeded our expectations. Of course, it helped us win many bids and strengthened our top line. It is an organization that plays to win for their customers and themselves-highly recommended !



It is to certify that **M/s Sinhal Udyog**, Kh No. 82/1/4, Mundka, Udyog Nagar, New Delhi which had been awarded the work for **implementation of Artificial Intelligence based Meter reading solution in APDCL** against ERP PO No. 4400003381, letter ref- APDCL/1PDS/e- suvidha/2020/12 dated 28.11.2020 is providing technology since 1st Jan 2021. Till July'21 more than 1 (One) crore images have been processed by AI with an SLA of more than 95.5%. It has resulted in higher customer satisfaction, reduction in AT&C losses and higher revenue realisation.



Certified that Sinhal Udyog (Crystal) as an OEM is an intelligent choice precisely because they bring to the table a complete AMI solution package. Their smart meters are, beyond any doubt, of high quality. With that, their RF-Mesh communication module and HES are also robust and high-performing. Of course, big hands to them for their ability to consistently deliver the products ahead of schedule every single time which is very helpful to us in significantly expediting our projects and meeting our deadlines with ease. Kudos to them for offering their end-to-end solution at such competitive prices. Their prices, performance, and proactive approach give them an unbeatable competitive advantage. As a trusted OEM and AMI solution provider, they are an invaluable partner to us. We wish them remarkable success.

Purbanchal Enterprises

In 2021, we suffered an unprecedented situation. Our smart meter OEM could not deliver the products on time. That meant a delay in project delivery, which would lead to a loss of reputation and might incur penalties too. Besides, there are not many quality smart meter OEMs in the market. It was a pretty precarious situation for us when we approached Kimbal to onboard. And they stood to the occasion like a total savior. They played a crucial role in helping us fulfill our orders on time, ensuring that our customers' needs were duly met. Not only did they meet all service level agreements, but they also provided us with products and solutions that are one of the best in the industry. Their speedier work completion and cost competitiveness were also noteworthy, enabling us to easily navigate a challenging situation. We sincerely appreciate Kimbal's unflinching support and commitment to quality. Long way to go for this organization of highly enthusiastic and dedicated professionals.

- 1** | Build and deploy a massive RF-Mesh-based IoT Network
- 2** | Establish vendor development program to incubate new capable vendor
- 3** | Focus on enhancing product reliability, design capabilities, and innovation
- 4** | Continue to build a focused and responsible talent-dense team
- 5** | Scale-up our HES towards cost-efficiency and enhanced fault tolerance

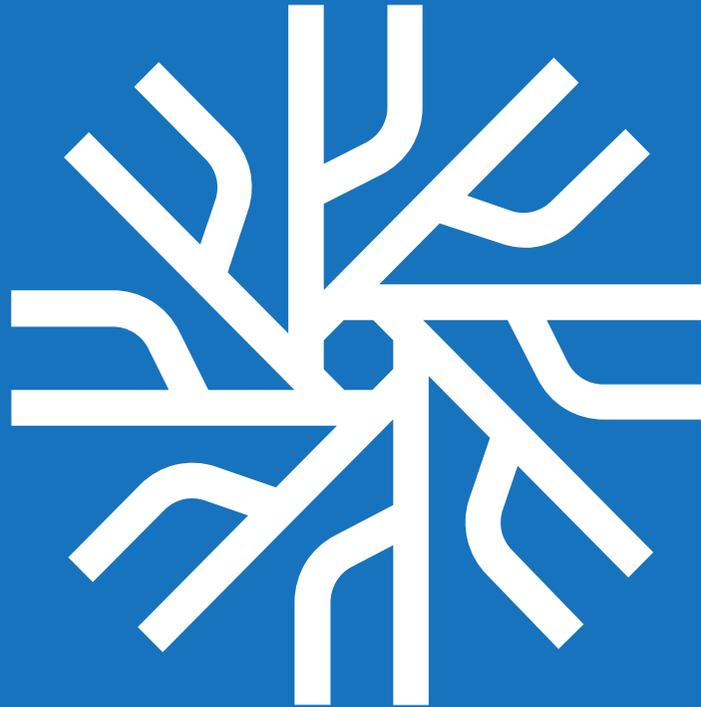


We appreciate your interest in taking time to learn more about us.

Your suggestions and feedback are most welcome at happytohelp@kimbāl.io

Namaste!

kimbal.io



Kimbal Technologies

Building Reliable Tools To Modernize **Distribution Grid**