



Opportunity Assessment and Approach for Thick Film Heaters

Case Study

Client	Leading technology group engaged in precious and special metals business
Industry	Electrical components
Products	Thick film heaters

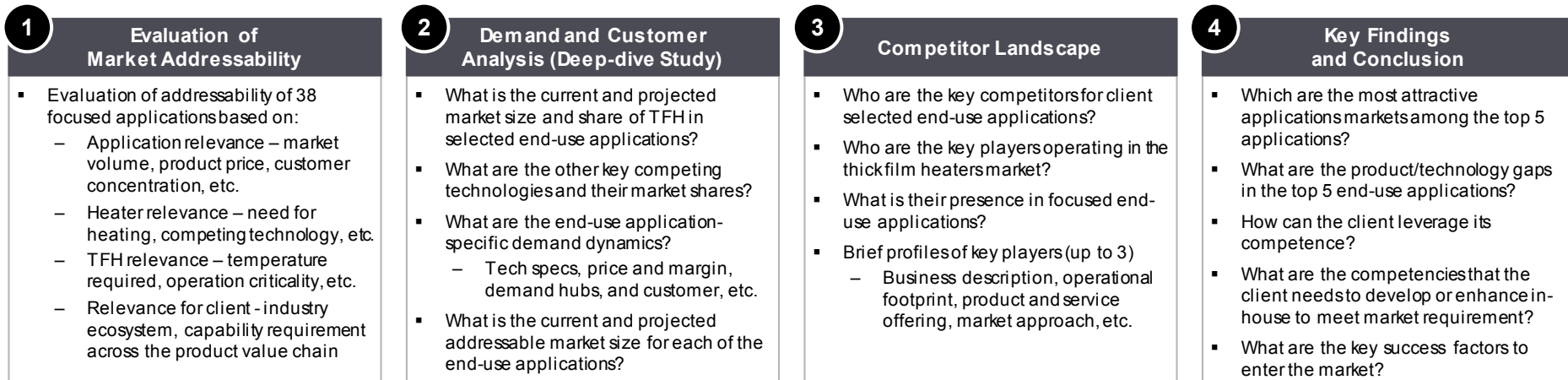
Context

- The client wanted to conduct a study to evaluate opportunities in the thick film heaters (TFH) market and potential of companies in positioning themselves as a thick film heater supplier instead of a materials supplier.

Key Business Questions

- What is the growth opportunity for suppliers of thick film heaters? Which are the key application areas of these heaters shortlisted for deep-dive market assessment?
- What are the market dynamics and potential of selected applications?
- What is the market potential for the client as a thick film heater supplier in selected applications?

Engagement Scope



Research Methodology

Secondary Research

- Conducted desk research to understand the use of thick film heaters in 38 applications and their technical specs, such as substrate, operating temperature, etc.
- Referred to paid databases such as MarkLines, Factiva, and Bloomberg

Primary Research

- 60+ telephonic interviews with TFH manufacturers and 5 consultations with domain experts having 10+ experience in the industry

Sample Analysis

1 Evaluation of Market Addressability

Phase 1 - Results
Final list of the top five end-use applications are from the automotive heat application area, with EV batteries being the most.

Co. No.	Particulars	Addressed	TFH	Temperature	Substrate	Operating Temperature	Power	Area
1	Company A	EV Battery	Yes	Yes	Yes	Yes	Yes	Yes
2	Company B	EV Battery	Yes	Yes	Yes	Yes	Yes	Yes
3	Company C	EV Battery	Yes	Yes	Yes	Yes	Yes	Yes
4	Company D	EV Battery	Yes	Yes	Yes	Yes	Yes	Yes
5	Company E	EV Battery	Yes	Yes	Yes	Yes	Yes	Yes

Defrosters / Defoggers: Heater Information
Conduction heat, largest, wire and thick film heater are the heating solutions currently in use in the market.

Current technology on market:
 • Air intake pre-heating (ICM) is common in heavy-duty trucks.
 • Thick film heaters are used in automotive defrosters.
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Market Outlook:
 • Growth in EV battery heaters.
 • Growth in automotive defrosters.
 • Growth in industrial heaters.
 • Growth in power heaters.

2 Demand and Customer Analysis (Deep-dive Study)

EV Battery Heater: Market Overview (1/2)
This market for EV batteries is estimated at 100 units with a penetration rate of 10% which is projected to grow to 10% in 2023.

EV Battery Heater: Needs and Trends for Thick Film Heaters (2/2)
This thick film heater has potential for high adoption due to better economics of price and suitability in complex battery designs.

3 Competitor Landscape

Competitor Landscape: Thick Film Technology Focus
Total companies are adopting TFH to the EV battery segment until 2023 for heat heating is still in the testing stage.

Company Name	TFH Features	Type of Product	Material	Power	Substrate	Operating Temp. Range	Area
Company A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company B	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company C	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company D	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company E	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Competitor Landscape: Positioning in Relevant Markets
Company A, Company B, Company C and Company D are the key companies operating in the four prioritized application segments.

Company	Company A	Company B	Company C	Company D
Company A	Yes	Yes	Yes	Yes
Company B	Yes	Yes	Yes	Yes
Company C	Yes	Yes	Yes	Yes
Company D	Yes	Yes	Yes	Yes

4 Key Findings and Conclusion

Thick Film Heater: Market Development, 2017 - 2023
Current barriers:

Barrier	Current Barrier	Optimistic Scenario
Cost	XX%	XX%
Performance	XX%	XX%
Reliability	XX%	XX%
Integration	XX%	XX%

End-use Application Prioritization
Current barrier:

Base Line Scenario: EV Battery, EV Defroster, EV Power Heater, EV Industrial Heater.

Optimistic Scenario: EV Battery, EV Defroster, EV Power Heater, EV Industrial Heater.

Benefits to Client

- The study results were used by the BU to evaluate the feasibility and potential in forward integrating into the thickfilm heater business.
- Market findings were used to develop a 5-year business plan and strategy for the BU.
- The study was further used by the team to pitch the business idea to its board for approval of its plans.

Thank you

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