

## 电新&公用&ESG Power Equipment & New Energy & Utilities & ESG

微逆: 经济性+安规趋紧驱动渗透率提升, 微逆“一超三强”格局或被打破

Microinverters : Economy + tightening safety regulations drive penetration, "one big player and three medium players" pattern may be broken

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热点速评 Flash Analysis

(Please see APPENDIX 1 for English summary)

目前微逆呈现“一超三强”的格局, 中长期看存在格局恶化的可能。目前 Enphase 微逆市占率全球领先, 约占七成的市场份额, 国内厂商禾迈、昱能、德业的出货增长迅速。当前市场主要担心微逆行业竞争格局的恶化。我们观察到, 随着微逆的渗透率不断提高, 微逆的市场空间迅速增长, 不少 PCS 的玩家在尝试切入微逆赛道, 固德威等 PCS 玩家透露会在今年下半年推出微逆的产品, 中长期来看微逆“一超三强”的格局或被打破。目前华为已进入关断器、优化器的领域, 随着微逆市场空间的增长, 不排除未来逆变器巨头阳光、华为切入微逆赛道的可能。

欧洲、亚非拉等国家的安全关断政策有望逐步推出; 在安全性和经济性的驱动下, 微逆在组件级控制逆变器 (MLPE) 的渗透率有望进一步提高。微型逆变器的应用市场主要在境外, 其中北美、欧洲是微型逆变器目前最主要的两大市场, 主要是受欧美、澳洲等国家和地区分布式光伏发电市场发展较早以及对直流高压风险的强制性规定的影响。我们认为, 欧洲、亚非拉等国家的安全关断政策有望逐步推出, 在安全性和经济性的驱动下, 微逆在海外 MLPE 的渗透率有望进一步提高。安全性方面, “组串加功率优化器/关断器”方案仍采用直流高压, 存在安全隐患, 直流高压会在系统中引发不间断的电弧火花, 增加系统火灾风险; 而微逆的并联入网在安全性上有了更大提升。在海外价格容忍度较高的市场, 微逆的高安全性使其相对于“组串加优化器/关断器”方案备受青睐。经济性方面, “组串+优化器”方案在大功率应用有成本优势, 但在中小功率的户用/工商业应用层面, 微逆更具经济性。

随着国内建筑光伏安全性规范的出台和 BIPV 的增长, 国内微逆的需求有望在 2025 年爆发。2022 年 3 月住建部印发的《“十四五”建筑节能与绿色建筑发展规划》中提出, 到 2025 年全国新增建筑太阳能光伏装机容量达到 50GW 以上, BIPV 市场有望快速增长。目前福建, 安徽, 浙江等地已经出台了建筑光伏系统防火规范, 大体内容和美国的安规类似, 但没有推到国标的高度。我们预计目前距国标的出台还有 2 年左右的时间。如果国标性质的安全规范已下发, 以后做建筑光伏只能选择“组串加功率优化器/关断器”, 或者微逆的方案。从技术方案对比, 微逆在安全性、发电量、运维难度的优势明显。我们预计随着 BIPV 的快速增长, 国内国标性质的安全规范有望在中期出台, 国内微逆的需求有望在 2025 年爆发。

**总结:** 我们认为随着欧洲、亚非拉等国家的组件级关断的安全法规的推出, 未来微逆的渗透率有望进一步提升。但考虑到微逆的高盈利性或吸引国内几家 PCS 玩家切入微逆赛道, 当前微逆高毛利率的现状或难以为继, 中长期看微逆的竞争格局有恶化的可能, 我们对微逆行业保持谨慎的态度。

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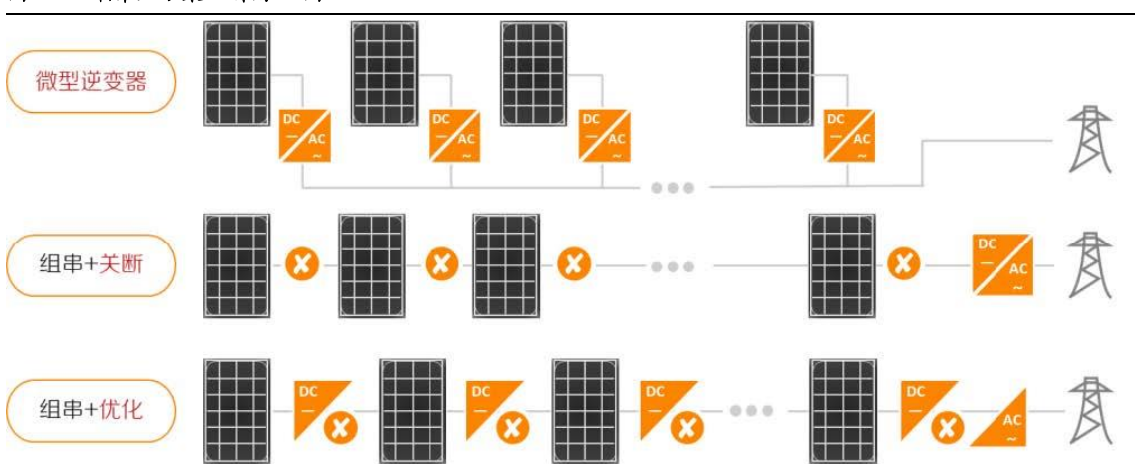
**风险:** 下游需求不及预期、政策不及预期。

图 1: 三种解决方案功能对比

功能	组串+关断器	组串+优化器	微逆
逆变功能	具备	具备	具备
组件级关断	具备	具备	具备
解决火灾风险	不具备	不具备	具备
最大功率点追踪	不具备	具备	具备
组件级运维	不具备	具备	具备
代表企业	Tigo	SolarEdge	Enphase、禾迈、昱能

资料来源: 昱能科技招股书, HTI

图 2: 三种解决方案工作原理图



资料来源: 昱能科技演示材料, HTI

**APPENDIX 1****Summary**

Competitive landscape: At present, there is a pattern of "one big player and three medium players" in microinverters, and there is a possibility of a deterioration of the landscape in the medium to long term.

Overseas market: Safety regulations in Europe, Asia, Africa and Latin America are expected to be introduced gradually; driven by safety and economy, the penetration of microinverters in MLPE is expected to increase further.

Domestic market: With the introduction of domestic building PV safety codes and the growth of BIPV, domestic demand for microinverters is expected to burst in 2025.

In summary: With the introduction of safety regulations in Europe, Asia, Africa and Latin America, the penetration of microinverters is expected to further increase in the future. However, considering the high profitability of microinverters will attract several domestic PCS players to cut into the microinverter track, the current status quo of high gross margin of microinverters may not be sustainable, and the competitive pattern of microinverters may deteriorate in the medium and long term, we maintain a cautious attitude towards the microinverter industry.

Investment recommendations: Hoymiles (688032), Yuneng Technology (688348), Deye (605117)

Risk: Downstream demand is not as expected, policy is not as expected.

## 附录 APPENDIX

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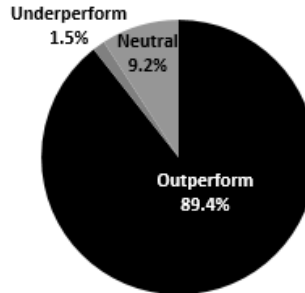
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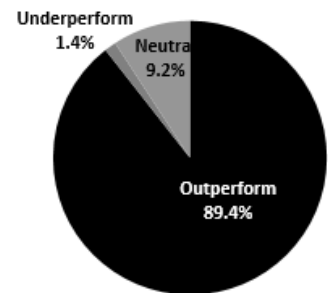
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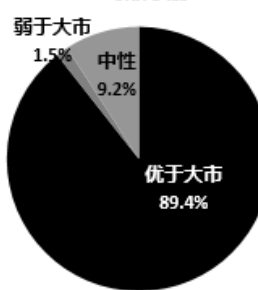
Most Recent Full Quarter



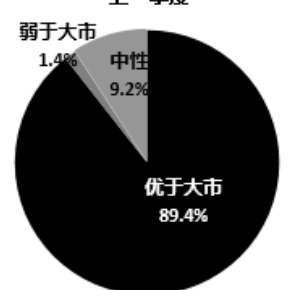
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