



Fabrication: The Unique Factor in the Fuel Cycle

A Global Review and Analysis of the Fuel Fabrication Markets

UxC is pleased to present the 2023 *Fabrication Market Outlook* (FMO), which is the 17th edition in this annual report series. The 2023 edition presents an updated review of the global nuclear fuel fabrication industry and markets with a special analysis of recent market highlights and key trends. The new FMO also builds upon the significant enhancements made in past editions as part of our continuing efforts to increase understanding in the global nuclear fuel fabrication marketplace.

UxC's team of experts have prepared this comprehensive and up-to-date report addressing the commercial, economic, institutional, and technical aspects of this sector. Fabrication's high technical content, strict regulatory oversight, and the restriction of fuel assemblies to specific reactors require a unique approach to its market analysis.



To those with little knowledge of fuel fabrication and its markets, this report provides a solid background of how these markets function. To those knowledgeable in the fundamentals, the FMO offers analyses of a variety of aspects based on decades of participation. To those actively involved in the industry, the report provides updated analysis for developing, implementing, and improving nuclear fuel programs.

What's New in the 2023 FMO?

The 2023 FMO report builds on the content and format from previous reports, and all discussions and analyses have been updated to reflect the events of the past year. This year's essay reviews all the major developments shaping the global fabrication markets these days, including shifts in demand, the evolving situation in Europe's VVER market, the latest status of new fuel designs, efforts to deploy Accident Tolerant Fuels (ATFs), High Burnup Fuels (HBFs), and LEU+ fuel, among other big trends.

We have again conducted a survey of international utility attitudes toward the fabrication market on many topics to feed the 2023 FMO. Supplier insights have been enhanced by interviews of the major fabrication vendors.

FMO demand projections are based on the *UxC Requirements Model*, which takes UxC's proprietary forecasts for nuclear power growth and calculates demand on a reactor-level basis. The model has been refined to produce more accurate fuel demand forecasts through 2040.

The FMO report is focused on fuel for light water reactors (LWRs), i.e.,

boiling water reactors (BWRs) and pressurized water reactors (PWRs), including Russian VVER designs. The report also includes updated discussion of fabrication for pressurized heavy water reactors (PHWRs), advanced gas cooled reactors (AGR) in the UK, and light water cooled, graphite moderated reactors in Russia (e.g. RBMKs). We also analyze the emerging fuel market for small modular reactors (SMRs) and other advanced reactor concepts.

In addition to extended supply and demand data to 2040, the 2022 FMO includes specific year-by-year base fabrication price forecasts for both BWR and PWR fuels to 2040, including discussion of the many factors influencing fabrication markets and prices.

Chapters in the 2023 FMO include:

- 1. Essay: Recent Fabrication Market Highlights and Trends**
- 2. Reactor Developments and Demand Outlook**
- 3. Results from UxC Utility Fabrication Market Survey**
- 4. The World's Nuclear Fuel Fabricators**
- 5. Supply and Demand Analysis**
- 6. Global and Regional Market Analysis**
- 7. Nuclear Fuel Fabrication Prices**
- 8. Non-LWR Fabrication Markets**

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