

Forging Industry Technical Conference

Long Beach, CA



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The Investment



- ◆ In 2018 the OTTO FUCHS Group will take it's new hydraulic press generating 60,000 tons of power into operation at the Weber Metals site.
- ◆ This will be the third time in OTTO FUCHS Group history to have the world's largest forging press in private ownership.
- ◆ This will be the largest single equipment investment in OTTO FUCH's history at more than \$170M
- ◆ This major step investment is a long term commitment that comes with significant risks and rewards.

Introduction



- ◆ The 'Decision to Invest' in the largest press in North America was actually a series of many decisions.
- ◆ While the formal announcement was made in 2014, the planning and the process started well before.
- ◆ 'The Decision' was predicated on a return to our customers, employees, and ownership which will be decades in the making.
- ◆ So how did we get here?



The Vision



- ◆ A Commitment to growth to our customers, employees, and owners
 - To provide solutions, opportunities, and returns
 - To uphold a tradition of innovation and organic investments



- ◆ Establishes a general principle; but how to define the growth?
 - Which markets to serve?
 - What technology and innovations to bring forward?
 - Growth in what direction of the supply chain?
 - What level of risk is acceptable?

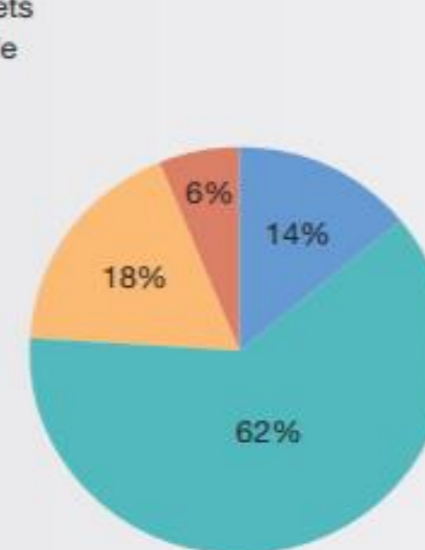
Strategic Planning



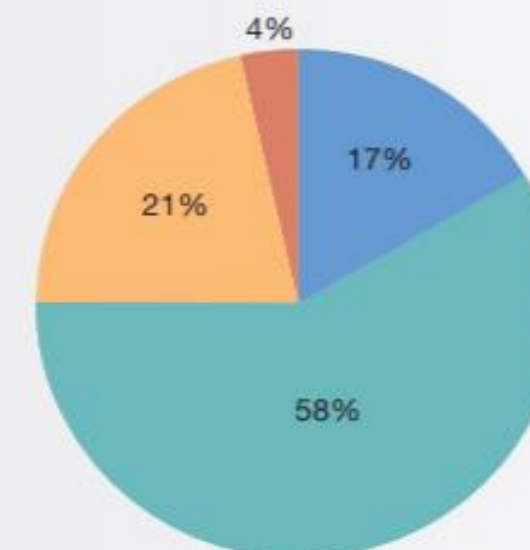
- ◆ Development of the Strategic Plan (circa 2004)
 - Identifying our core competencies
 - To utilize high-tech mechanical engineering to shape the landscape of today's modern transportation
 - Continually assessing our environment
 - Current market participations
 - Opportunities to access new markets
 - Competition
 - Customer needs
 - Global demographic outlook

The World Fleet Will More Than Double Over the Next 20 Years

■ Regional jets
■ Single-aisle
■ Twin-aisle
■ 747 and larger



2003
16,168
airplanes



2023
34,764
airplanes

Making the Commitment



- ◆ From 2004 to 2012 the Company nearly tripled gross revenues and multiple years of executing the strategic growth plan successfully brought us to face capacity challenges.
- ◆ Seeing the capacity constraints ahead, it was time to commit internal resources to begin actively working on the expansion.

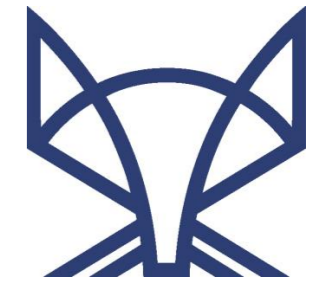
We started by defining the Initial project scope:

- *Made the decision to invest in increased forging capacity to support aerospace turbine and structural forging market.*
- *Made the decision to invest in leading technologies to support quality and process controls.*

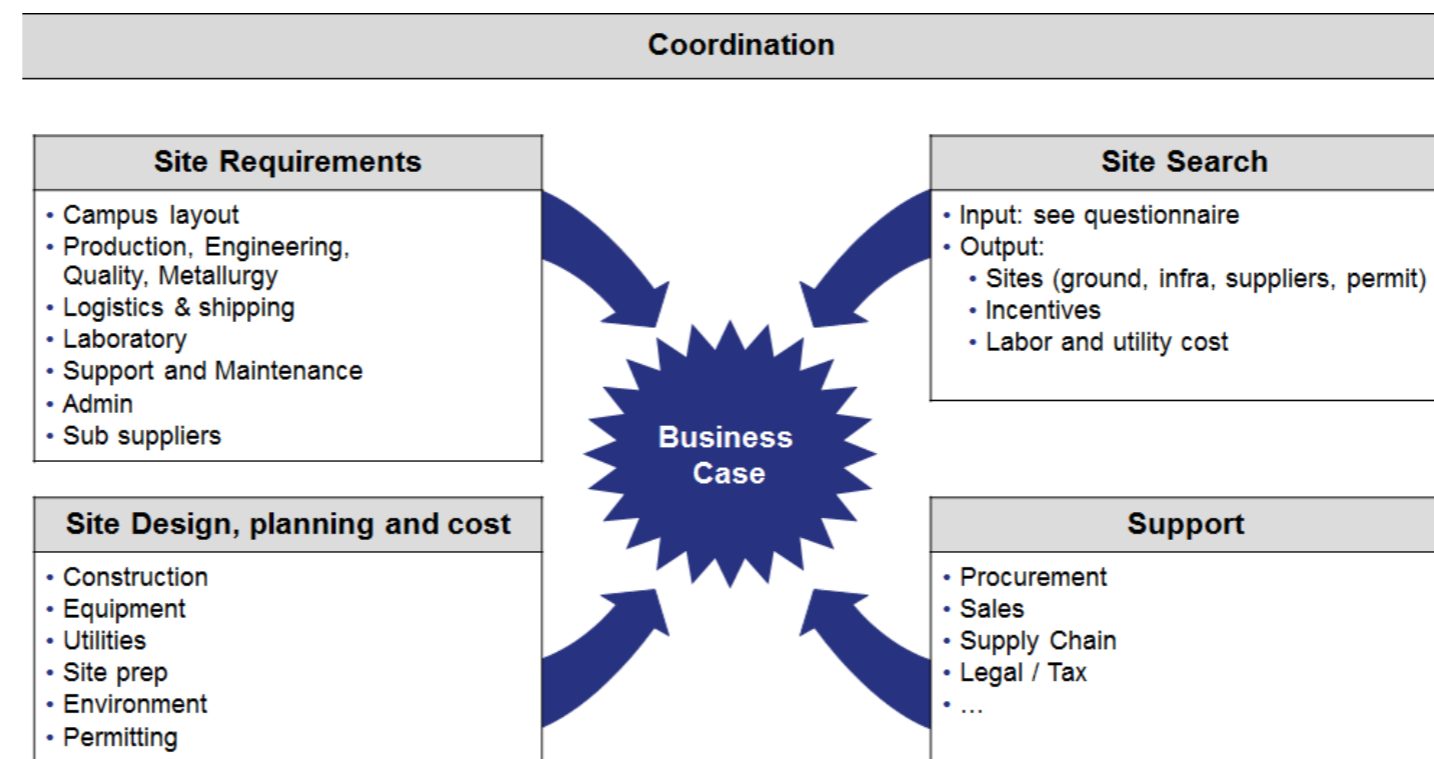
Airplanes in service 2011 and 2031			Demand by size 2012 to 2031		
Size	2011	2031	Size	New airplanes	Value (\$B)*
Large	790	1,030	Large	790	280
Twin aisle	3,710	9,110	Twin aisle	7,950	2,080
Single aisle	12,610	27,430	Single aisle	23,240	2,030
Regional jets	2,780	2,210	Regional jets	2,020	80
Total	19,890	39,780	Total	34,000	4,470

*\$ values throughout the CMO are catalog prices.

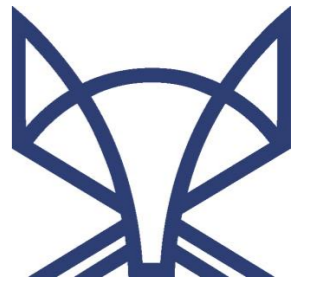
Development of a Multi-Faceted Project



- ◆ A formal initiative as to how to realize our next stage of growth commenced in 2012.
- ◆ The first phase focused gathering information and narrowing the scope:
 - Conducting the first round site selection analysis
 - Defining equipment specifications
 - Development of business case and financial justification
- ◆ We established a cross-functional project team to support



Site Analysis & Equipment Selection



- ◆ With many variables to consider – we broke down the decision process into smaller pieces.
- ◆ Market Focus: what are the programs and materials for the next generation?
- ◆ Equipment Selection – Must be defined by the market to be served
 - Identified the critical equipment elements based on their ability to meet the products targeted from both a technical and capacity view
 - Evaluated a range of suppliers for available technologies, capabilities, and engineering competency
- ◆ Site Selection Phase 1 – Europe or North America?
 - Conducted a high level review of critical market differentiators with a focus on currency, tax, regulatory and supply chain support
 - Internal organizational focus on how to transform into market focused divisions



Business Case Development



Investment	One time or temporary cost / effects	Recurring cost and taxes
<p>Site Design, Planning, Build and Commissioning</p> <ul style="list-style-type: none"> • Equipment Investments (estimated, planned, quoted, ordered, paid) • Construction Investments (estimated, planned, quoted, ordered, paid) • Utility infrastructure cost / investments • Transport of equipment • Permitting cost • Premium for general contractor / risk taking • Insurance <p>Operation planning</p> <ul style="list-style-type: none"> • User requirements equipment and infrastructure for operations <p>IT (non equipment related)</p> <ul style="list-style-type: none"> • IT hardware 	<p>Site Design, Planning, Build and Commissioning</p> <ul style="list-style-type: none"> • Site demolition and preparation cost • Interim cost (moving existing equipment, renting alternative facilities, interim equipment, ...) • Consulting costs for project (e.g. PMO, CMA, consultants, Permitting advisors, Political advisors, Fire departments, security, ..) • Sales and use Taxes (investment) • Duties (investment) • Project Insurances • Personnel Costs for project • Cost for commissioning (TÜV, etc.) • Travel costs for project <p>Operation planning</p> <ul style="list-style-type: none"> • Qualification cost • Part and die transfer cost • IT software • Training cost • Personnel cost during qualification • Personnel cost for commissioning • Personnel cost for testing • Personnel cost for ramp up <p>IT (non equipment related)</p> <ul style="list-style-type: none"> • IT implementation / consulting 	<p>Site Design, Planning, Build and Commissioning</p> <ul style="list-style-type: none"> • Utility costs (electricity, gas, water, other) <p>Operation planning</p> <ul style="list-style-type: none"> • Personnel costs for operations • Travel cost management • Cost for material supply (operation) • Logistic costs for transportation of parts <p>Legal & Tax</p> <ul style="list-style-type: none"> • Property taxes (operation) • Sales taxes (operation) • Other taxes
<p>Risks and opportunities:</p> <ul style="list-style-type: none"> • Currency Risks • Inflation / price development risk • Cost for delay (overhead per month) • Permitting risks • Unexpected (ground, environment, etc.) 	<p>Risks and opportunities:</p> <ul style="list-style-type: none"> • Contingencies for <ul style="list-style-type: none"> • Scope changes • Missed items at interfaces (complexity) • Planning inaccuracy • Unexpected events • Discrete Incentives • Tax incentives • Other incentives 	<p>Risks and Opportunities</p> <ul style="list-style-type: none"> • Currency development • Labor cost development • Utility cost development • Business case and revenue assumptions

First Phase Output



- ◆ Initial Business Case:
 - ◆ *Made the decision to invest in one hydraulic forging press that provide the OTTO FUCHS group with forging capabilities to fully serve the market for all large and medium titanium and aluminum forgings.*
 - ◆ *The investment would be made in North America.*

- ◆ But there were still many open details;
- ◆ The initial target budget was too high,
- ◆ And market demand kept increasing.

- ◆ Time was of the essence!



Phase 2 – Detailed Planning

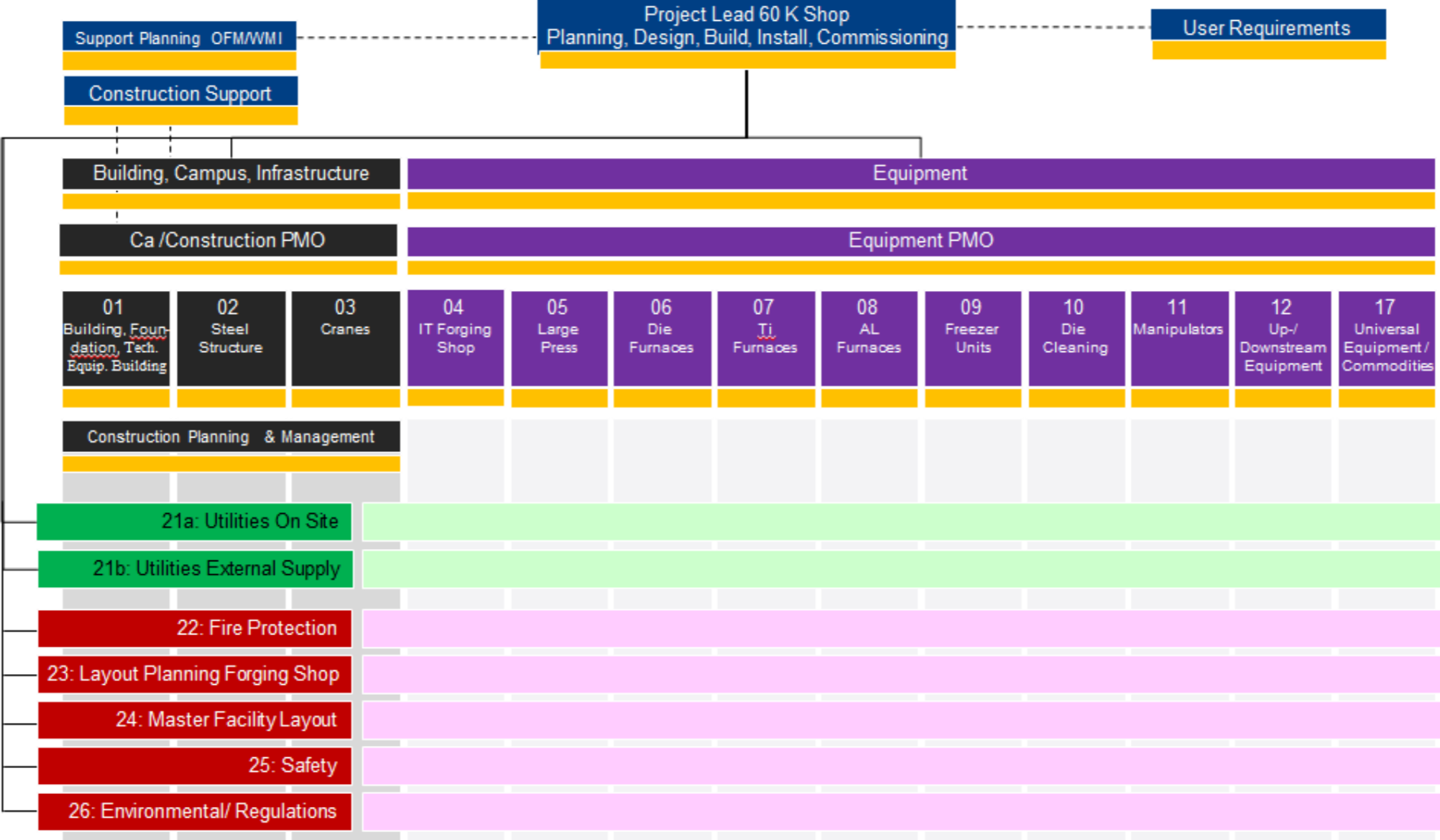


- ◆ Big decisions had been made – but it was back to the planning process again with a new focus.
- ◆ Site Selection Phase 2 – Where in North America?
- ◆ Equipment Selection – Detailed focus on the engineering requirements and finding the right equipment partner.
- ◆ Constructability, ancillary equipment, and facility planning – its not just a press!



Building out the Project Team

- Formalized a dedicated full time project team to handle the increasing complexity of the planning requirements.



Site Selection Phase 2 – Where in North America?



- ◆ Fundamental Question - Grow at the current site or establish a new site in a new location?
 - Space availability for future growth – this won't be the last investment!
 - Labor costs, availability, and quality
 - Industry support and supply chain access
 - Utility and transportation infrastructure
 - Regulatory and permitting
 - Constructability
 - Natural disasters
 - Budget constraints and incentives
 - Organizational challenges



Equipment Selection Process



- ◆ With a general product mix defined, we began a detailed evaluation on press suppliers.
 - Established detailed technical specifications with 25 key technical focus areas for evaluation.
 - Supplier maturity and ability to realize the manufacturing of the equipment were as relevant as proposed technical solutions.
- ◆ Very limited number of suppliers with technical ability to design such equipment.
 - Limitations in the equipment manufacturing supply chain as to what was possible and a project to manage hundreds of global suppliers.
- ◆ Year long co-engineering phase for suppliers to present proposals.



Construction and Facility Planning



- ◆ Second to our press supplier, the construction management firm was the most instrumental to the realization of the project.
 - Performed a detail vendor selection process a competitive bidding process
 - Developed multiple site specific layouts and construction plans.

- ◆ Utilities and Infrastructure
 - Detailed analysis on capital investments and long term operating costs.
 - Investments significantly different based on green vs. brownfield site.

- ◆ Ancillary Suppliers and Support:
 - Furnaces, Freezers, Cranes, Manipulator, etc.
 - Regulatory and political advisors
 - Legal, customers, and tax support

Investing in Long Beach



- ◆ Finally, the recommendation was in:
- ◆ To meet our long term growth and stay on budget we had decided to invest at the existing campus.
 - Time to completion was the quickest
 - Minimized capital investment
 - Good operating economics (though not the lowest)
 - Organizationally simpler
 - Strong supply chain support
- ◆ Major partners for equipment and construction were selected and contracts awarded.





30% Project Completion

- ◆ And that was just the planning phase..... the real work was still to come!
- ◆ Detailed construction and building still had to be executed...
- ◆ And a business plan still has to be realized!

