OVERVIEW

- Established 1923
- Business Unit of Curtiss Wright Surface Technologies
- ISO9001 Certified in 2012
- Key employees with 30+yrs of experience
- Early adopter of emerging technologies
- Global Technology licenses and partnerships
- Significant influence in mining, petrochemical & power generation coatings industry globally
PHILOSOPHY

- **Mission:**
  - FW Gartner is a client driven, quality conscious organization that exhibits industry leadership in every phase of customer service and craftsmanship

- **Outlook:**
  - Customers increasingly seek a technology partner, not a vendor, who can offer a total solution that meets their quality, delivery and cost requirements

- **We can do this because we have:**
  - A broad range of technology capabilities and a desire to expand them further as necessary
  - Willingness to invest to meet specific client needs
  - Excellent staff and experience retention from top to bottom
MARKET SEGMENTATION

- POWER GENERATION
- OIL & GAS (REFINING)
- OIL & GAS (DRILLING & EXPLORATION)
- MINING
- MISC.

Pie chart showing segment distribution:
- POWER GENERATION: 25%
- OIL & GAS (REFINING): 20%
- OIL & GAS (DRILLING & EXPLORATION): 10%
- MINING: 25%
- MISC.: 20%
FACILITIES

- ~92,000ft² – Pearland, TX
  - 105 personnel
- ~20,000ft² – Houston, TX
  - 6 personnel
- ~12,000ft² – Humble, TX
  - 12 personnel
- ISO 9001:2008 Certified
- 2 shift operation, 6 days/week
CAPABILITIES – HVOF

- **Multiple robotic systems:**
  - Gas and Liquid fuel
  - OD & ID capability
  - Batch processing
  - Rotameter and Mass Flow

- **Typical coating types:**
  - WC/Co/Cr; WC/Co; WCrC/NiCr; WC/Hast C; WC/Ni
  - CrC/NiCr
  - Colmonoy type alloys
  - Stellite type alloys
  - MCrAlY’s
CAPABILITIES – HVAF

- Automated HVAF system
  - OD & ID (~8”) capability
CAPABILITIES – Plasma

- **Multiple robotic systems:**
  - OD & ID capability
  - Rotameter and Mass Flow control

- **Typical coating types:**
  - YSZ & MCrAlY TBC coating systems
  - Al$_2$O$_3$ dielectric coatings
  - Cr$_2$O$_3$ corrosion/wear resistant coatings
  - Ta corrosion resistant bond coats
  - TiO$_2$
CAPABILITIES – Other Thermal Spray Processes

- Twin wire arc (TWA)
- Combustion cord, rod, powder & wire
- Multiple Spray & Fuse stations
CAPABILITIES – Laser Cladding (1)

- \( \leq 4\text{kW} \) Direct Diode laser
  - 8 axis (up to 5000 lbs)
CAPABILITIES – Laser Cladding (2)

- Multiple ≤ 4kW Fiber Coupled lasers (OD/ID)
  - 8 axis (8000lbs)
  - Hot & cold wire cladding capabilities
CAPABILITIES – Plasma Transferred Arc

- Multiple automated Plasma Transferred Arc (PTA) systems
  - Stellite Durastell (OD/ID)
  - Stellite Starweld 3 & 300 PTA systems (OD/ID)
  - Stellite Microstar hand-held torch/unit
CAPABILITIES – Machining (1)

- Dedicated machining & manufacturing facility
  - >65Rc machining capabilities
  - Multiple lathes (42”Ø x 312”L max)
  - Multiple mill/boring type machines (110” Ø max)

- EDM
- CMM
CAPABILITIES – Machining (2)

- Precision CNC machining, milling and reverse engineering
CAPABILITIES - Grinding

- Extensive cylindrical & surface grinding capabilities
  - 42”Ø x 240”L max

- CNC spherical grinding and mating lapping capabilities for ball valve components
UNIQUE CAPABILITIES (1)

- 60T cranes (x2)
- Chemical stripping
- Post weld heat treating
- Vacuum heat treating furnace
- Thermal spray support facilities:
  - 50’L HVOF, HVAF, Plasma rotating capabilities
UNIQUE CAPABILITIES (2)

Metallographic laboratory

- Full metallographic preparation
- Production support, R&D and AD functions
- Standard on-site reporting capabilities (macro/micro-hardness; porosity; adhesion etc)
- Intra-company laboratories for wear testing, SEM, XRD and advanced measurement techniques
INNOVATION

- **MarClad**
  - Licensed laser cladding material for specific applications within the Steel Industry

- **Nano TiO**
  - Licensed thermal spray coating for specific applications for Sulphuric Acid service

- **BR20**
  - Licensed laser cladding technology for the hardfacing of Ti based substrates
GLOBAL TECHNOLOGY SCOPE

- Australia (Technology Transfer) – Proprietary coating & sealing technology for customer support
- Brazil (Technological Partnership) – Laser, PTA and HVOF
- Saudi Arabia (Technology Transfer) – HVOF, Arc
- China (Equipment/Technology Transfer) – HVOF, Spray & Fuse, Spherical finishing technology
- U.K. (Technology Transfer) – Proprietary coating & sealing technology for customer support
- Western Canada (Technology Transfer) – Laser Cladding
- Others in the works
GLOBAL APPLICATIONS and KNOW-HOW

We continue to look for opportunities to support our Global clients by bringing innovative surface technology know-how and experience to bear wherever they might require it.