Tower Renewal Case Study: First Canadian Place

Optimize Energy, Operations & Environmental Performance.
Analysis begins
Mechanism of deterioration: *Hygrothermal Hysteresis*
Design Options – colour, texture, module
Frit Design Options
The glass panels – final design
Process
Process
Process
Process
Process
The chosen logistical platform: SEP
1. SUSPENDED ELEVATED PLATFORM
Platform attaches to the building at the middle level via tie-in struts bolted to temporary brackets. The S.E.P. is suspended for movement by cables to winches on the roof.

2. MARBLE REMOVAL
Marble is removed from the building on the bottom level of the platform. Workers remove the sealant and stone, as well as the panel support brackets. Carts are used to wheel the panels to the elevator hoist.

3. GLASS INSTALLATION
On the top level, glass is installed where the marble used to be. The 450-kilogram panels of glass are transported by elevator hoist and then across by monorail.

4. PLATFORM DESCENT
The tie-in struts are removed and the entire structure moves down one floor. Each step of the whole process takes about four days.
SEP fabrication drawings
The Logistics – As important as the Design
This stone from Italy, obtained from the patrician father AB Ottone is drenched with sweat and tears.
Process

Removal and transfer of stones
Process

New Anchors are Set
new mineral wool

Process - New Division 7
Existing substrate remediation, sealants, flashings

Process - New Division 7
New anchors – aligned and fixed

Process - New Division 8
Removal and transfer of stones

Monorail with suction hoist
The Glass
Process

Final trims installed
Whole Building Retrofit
Mechanical System Upgrades

Replacement Heat Recovery Chillers

Building Renewal
- Attempts to realign operator’s objectives to answer building comfort requirements using more energy efficient methods.

Building Revitalization
- Re-calibrating, servicing and adjusting base building systems to improve existing functionality.
- Educating building operators on the original intent of system functions and/or any adjustments made to become more efficient or effective.

Heat Recovery Chiller Condenser Water and Heat Reclaim Tube Bundles
1 Heat Recovery Chillers

- incorporates maximum energy benefit from high C.O.P chillers
- heat of rejection returned as building’s 1st stage of heating
- continuous DHW pre-heat
- ventilation air heating (seasonal)
Energy Renewal

2. Condensing Boilers

• proposed 2nd stage building heating
• heat introduced into building secondary heating circuit allowing the primary circuit to be shut down.
• boilers under design conditions will operate at +90% thermal efficiency

Example Image -- Aerocentre – New Condensing Boiler Plant
3 Demand Control Ventilation
  • CO2 sensors control office floor plate ventilation air quantities
  • VFD’s added to central ventilation AHU’s serving the office floors
**Energy Revitalization**

**Controls Upgrades**
- VFDs on most every HVAC pump
- Office floor conversions to DDC
- Office floor lighting integrated with BAS for setback adjustment & shut down

**Demand Response Charge Reduction**
- Office floor temperatures re-set from 75°F to 78°F and office lighting dimming by agreement with Ontario Power Generation (OPG)
- A three hour time lag due to the inherent thermal inertia (building mass) for new set-point to be achieved
Water Conservation

1 Heat Recovery Chillers
   • save operation of cooling towers – and therefore save water
   • water conservation justified the cost of the new Heat Recovery Chillers
LEED EB&OM Gold certified
Clients:

Our design partners:

- fcp
- Brookfield Office Properties
- MOED de ARMAS & SHANNON
- Halsall
- ENTUITIVE
- DIALOG
- BVDA