

THE DIAPASON

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Sacred Heart Co-Cathedral
Houston, Texas
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Cover feature

**Pasi Organ Builders, Inc., Roy, Washington, Opus 19
Sacred Heart Co-Cathedral,
Houston, Texas**

From the organbuilder

The instrument is placed in the rear gallery on either side of the 40-foot-high Resurrection Window. This massive window necessitated a divided layout for the organ's five divisions of pipes, and several unique design solutions were used to compensate for the lack of a traditional central organ case. During the organ's design, construction, and voicing, this instrument developed a unique character of its own—thanks in large part to the building's wonderfully reverberant acoustics.

The visual design of the instrument combines architectural features found in this building with elements from historic European organs. The organ is entirely encased in white oak woodwork, with decorative carvings above the façade pipes. Both the carvings and the façade pipe mouths are gilded with 23-carat gold leaf. The wooden case serves a vital tonal function by blending and focusing the sound of the 5,499 organ pipes, while also protecting them from dust.

The console's four manual keyboards are covered with cow bone and ebony, and the pedal keyboard is made of maple and rosewood. The 111 stop knobs, controlling the organ's five divisions of pipes, are on either side of the keyboards. The stop knobs and toe pistons are made of pau ferro. Other species of wood found in the organ include tulip poplar, redwood, sugar pine, basswood, walnut, hornbeam, and Douglas fir.

The organ is laid out vertically in order to take advantage of the given space. The pipes of the Great division are placed on windchests above the impost on the east side of the window. The Swell division is placed above the Great, hidden behind the façade pipes and gilded carvings. The Positive division is located above the Swell, almost hugging the building's 72-foot-high ceiling. The Grand Choir and Pedal divisions are located on the west side of the window, with the Spanish Trumpets (*Trompeta*) speaking from the very top above the Pedal division. They are placed horizontally, just behind the façade, in order to sound in the most assertive manner possible.

Two electric blowers supply wind to the organ via six bellows measuring approximately 4 feet by 8 feet. The bellows and blowers are located behind and inside the organ's two cases. This wind system imparts a gentle flexibility to the organ's sound, allowing the pipes to sound more like a choir of human voices rather than an inexpressive machine.

The organ's tonal scheme draws most of its inspiration from the great North German and French organs of the 17th and 18th centuries. Its resources are further leavened with many stops inspired by 19th- and 20th-century models. This enhances its flexibility in playing choral accompaniments and interpreting the monumental solo organ literature of the 19th and 20th centuries. The organ is tuned in "Mark Brombaugh Mild," an unequal temperament that favors the keys nearest to C major while still remaining harmonious in the most distant keys.

With the exception of the free-reed Clarinette 8' stop, all of the metal pipes were made in the Pasi shop—from the casting and rolling of the metal through to the completed pipes. They are made of various alloys of tin and lead, with trace impurities of copper, bismuth, and antimony to help stiffen the metal. To enhance the intensity of the lead pipes' sound, the metal is hammered following casting in order to tighten its molecular structure. The three 32' stops, as well as the large pipes of several other stops, are made of tulip poplar wood.

The three traditional manual divisions—Great, Positive, and Swell—are placed above the console on the east side of the window, and have normal



Console



Construction in the shop

suspended mechanical key action and mechanical couplers. The Grand Choir and Pedal divisions on the west side of the window are modeled after the Résonance division in the famous 1775 Jean-Esprit Isnard organ at St. Maximin, Provence. Most of the Grand Choir pipes are shared between the two divisions, but have independent stop knobs and actions for each division.

This divided layout of the organ, combined with the comprehensive tonal scheme necessitated by the cathedral's vast interior space, posed a special challenge in the design of the key action. Running a horizontal mechanical key action from the console to the west case 30 feet away would have been impractical. Our solution was to use the electric proportional key action developed by NovelOrg of Longueuil (Montreal), Quebec.

The NovelOrg proportional key action is an all-electric action with sophisticated electronic control that allows the valves in the windchests to follow exactly the motion of the key. Applying this action to the remote Grand Choir and Pedal divisions makes it possible to retain the sensitive control of pipe speech found in a traditional mechanical key action. In addition to the regular mechanical couplers, the Great, Positive, and Swell keyboards are coupled to the Grand Choir through the NovelOrg proportional action. The stop action is electric, and the solid-state combination action allows up to 20 organists to each have 55 levels of memory, providing for the storage and recall of thousands of stop combinations.

The staff of Pasi Organ Builders, Inc., constructed, installed, and voiced the organ over a period of three years. The Pasi

staff and other artisans who contributed to this project are as follows:

Markus Morscher: design, casework, windchests, wood pipes, bellows, pipe racking, and installation

Michael Spieler: casework, windchests, wood pipes, bellows, console key action, pipe racking, and installation

Rochus van Rump: metal flue pipes (including fabrication of the largest façade pipes on-site), reed pipes, installation, and voicing

Mark Brombaugh: design, installation, and voicing

Arpad Magyar: metal flue and reed pipes

Maurine Pasi: pipe shade carving and gilding

Jennifer Von Holstein: carving design and administration

Robert Wech: design

Raphi Giangulio: metal flue and reed pipes, design

Gyöngyi Czimbó: assistant in the Pasi wood and pipe shops

Douglas Brewer: installation

Bruce Shull: voicing

Dominik Maetzler: combination action wiring

Martin Pasi: design, flue and reed pipes, installation, voicing, and administration.

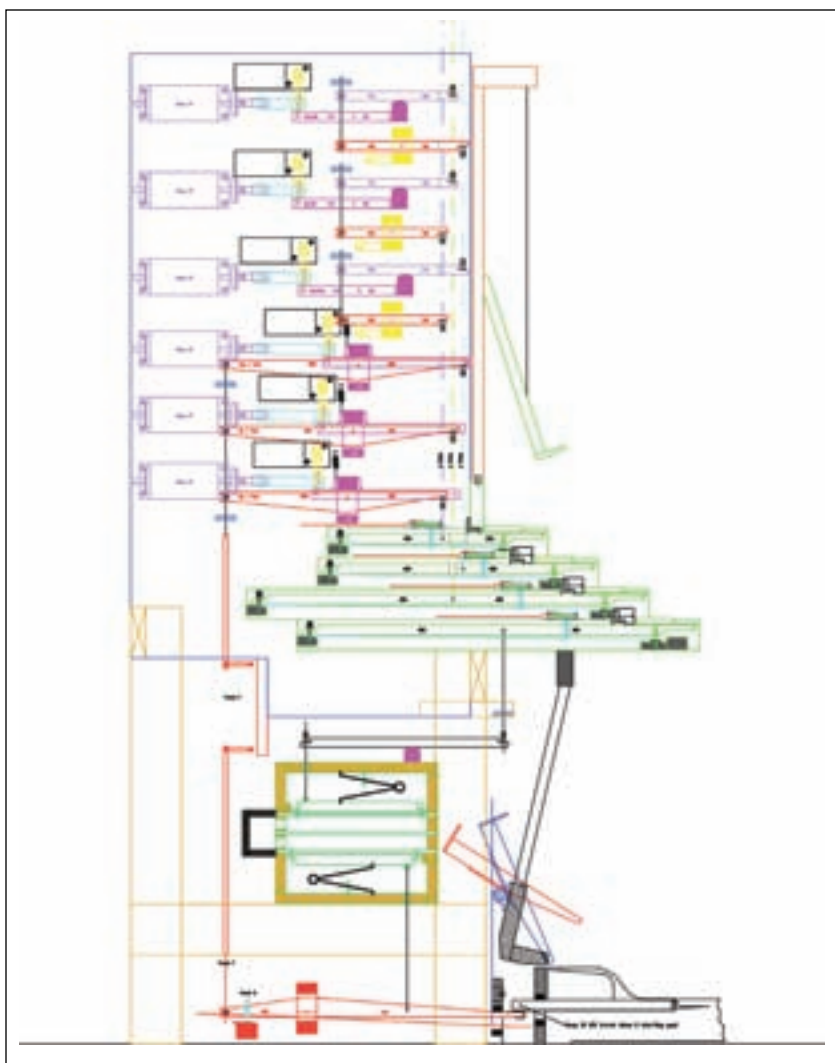
—Martin Pasi

From the consultant

What a joy it has been to work with the clergy and musicians of the Co-Cathedral of the Sacred Heart, with the architects and building contractor, and especially with Martin Pasi and his entire team. I remember very well the first meeting of the organ selection committee in 2006, when Cardinal DiNardo spelled out his vision for the project. The task of the committee, under the leadership of Crista Miller, was to find the right company to build an organ that would accompany, complement, and even augment the most perfect musical instrument—the human voice. In addition, the committee needed to be certain that the organ would function first and foremost for the Catholic liturgy. I remember how enthusiastic the cardinal was about the idea of installing a tracker-action organ that would draw from the great traditions of the past while also offering something special for our time.

The overall concept of the organ is unique, but also firmly rooted in tradition. The left side (when looking at the large Resurrection Window) is played from the upper three manuals with traditional mechanical key action. This side has an especially large and expressive Swell division, useful for choral accompanying and organ music of the 19th and 20th centuries. The principal choruses of the Great and Positive are Germanic, while the many individual stops and small combinations make possible the performance of a wide range of organ music from the Renaissance and Baroque periods, including French classical repertoire. The right side of the instrument, played from the bottom manual and pedals, uses the electric proportional key action. The right side of the instrument contains the largest pipes, including three 32' stops. This side also includes a massive principal chorus (with a large progressive mixture), impressive reed choruses, and full foundations appropriate for the French symphonic organ repertoire and festive congregational accompaniments.

I shall mention here only a few of the individual stops. The undulating *Suavial* (*Voce umana*) on the Positive is of great historical significance, although it is infrequently heard on this continent today. The two brilliant battle *Trompetas* on the Grand Choir are drawn from the Spanish and Latin American traditions. And the free-reed Clarinette, also on the Grand Choir, produces a very rare and exotic sound. From the quietest stops to the massive principal and reed choruses, the instrument produces a marvelous effect in the clear but reverberant acoustics of the co-cathedral. The residents of Houston owe Martin and all his associates at Pasi Organ Builders a debt of gratitude



Console CAD drawing



Pipe making

for this wonderful addition to the growing list of impressive new organs in our city.

—Robert Bates
Professor of Organ
Moores School of Music
University of Houston

From the director of music

When I came to the Co-Cathedral of the Sacred Heart in October 2004, one of my first duties was to provide music for the groundbreaking ceremony for the new 1800-seat church, to be completed in April 2008. There was discussion of moving the church's small Pilcher organ into the new church, but I knew from my graduate assistantship under Hans Davidsson's Eastman Rochester Organ Initiative that there are many bright stars in contemporary American organbuilding. Martin Pasi gave an intriguing presentation on a new dual-temperament organ in the Omaha Cathedral at the first annual EROI Festival in Rochester. I had arranged for a demonstration on pipe making to the Eastman organ studio and vividly remember Martin as being incapable of allowing even a throwaway demo pipe to sound anything less than beautiful.

In January 2006, I was happy to lead an archdiocesan organ committee charged with procuring a new world-class instrument for the Co-Cathedral.

We began by reviewing the fine organs in sister cathedrals in larger cities—New York, Los Angeles, and Chicago—and U.S. cathedrals where great pipe organs have emerged, and with them, a tradition of fine sacred music.

Our situation was somewhat challenging, in that the Resurrection Window, planned long before the instrument, is placed in the middle of the organ. This could have eliminated the possibility of a mechanical-action instrument. Enter the extraordinary Martin Pasi and his firm, Pasi Organ Builders, Inc. To accommodate the window, they implemented a dual-action system, mechanical and electro-mechanical. This success speaks for itself, in a thrill for both the player and numerous audience members.

The firm's nineteenth instrument is their largest to date and their first four-manual organ. It contains such luxuries as a free-reed Clarinette and a set of horizontal trumpets in a tribute to the Hispanic heritage of the Archdiocese of Galveston-Houston. This organ accompanies the liturgy in a modern way, inspired by historic traditions of 17th-century north and south Germany, Italy, Spain, and 17th- to 19th-century France. Moreover, this versatile instrument, eclectic without compromise, has proven to blend beautifully with orchestral in-

struments and to render well choral accompaniments of the English tradition.

Many people deserve thanks. Hearty congratulations to Martin Pasi and his associates at Pasi Organ Builders. His Eminence Daniel Cardinal DiNardo, Archbishop Joseph A. Fiorenza, and Auxiliary Bishop Vincent M. Rizzotto were all key, as well as Faye Sarofim and the Brown Foundation and their gift to Houston. Zeigler Cooper Architects and Linbeck Construction were invaluable. As consultant, Robert Bates contributed at all phases, continuing with the ongoing lunchtime recital series, and national conferences. Pastor and rector, The Very Reverend Lawrence W. Jozwiak has been immensely helpful, as was the organ dedication committee chaired by John Burchfield, and the many who contributed program funds.

—Crista Miller
Chair, Organ Selection Committee
Director of Music and Organist

Letter from Daniel Cardinal DiNardo in the dedication program booklet

From my days as a child, hearing the great von Beckerath organ at St. Paul Cathedral in Pittsburgh, to hearing today the opus XIX organ hand-crafted by Martin Pasi and Associates for the Co-Cathedral of the Sacred Heart, I have recognized and appreciated the importance of a good pipe organ to serve the liturgical music needs of the Church. But, this is not merely a personal observation. The Second Vatican Council's Constitution on the Sacred Liturgy attests:

In the Latin Church the pipe organ is to be held in high esteem, for it is the traditional musical instrument that adds a wonderful splendor to the Church's ceremonies and powerfully lifts up the spirit to God and higher things. (*Sacrosanctum concilium*, 120)

In 2006 our organ committee was reviewing and approving plans for the new pipe organ in Sacred Heart Co-Cathedral. At that time, I specifically requested that the organ be capable of serving three essential purposes: 1) Accompany the people's singing at the Mass and rites of the church; 2) Provide choral accompaniment; and 3) Play traditional and classical organ repertoire. These purposes are recapitulated by the Bishops of the United States in their recent instruction on sacred music highlighting the use of the organ:

Among all other instruments which are suitable for divine worship, the organ is "accorded pride of place" because of its capacity to sustain the singing of a large gathered assembly, due to both its size and its ability to give "resonance to the fullness of human sentiments, from joy to sadness, from praise to lamentation . . ." In addition to its ability to lead and sustain congregational singing, the sound of the pipe organ is most suited for solo playing of sacred music in the Liturgy at appropriate moments. Pipe organs also play an important evangelical role in the Church's outreach to the wider community in sacred concerts, music series, and other musical and cultural programs. For all of these reasons, the place of the organ should be taken into account from the outset in the planning process for the building or renovation of churches. (*Sing to the Lord: Music in Divine Worship*, 87-88).

For all of these reasons, the opus XIX pipe organ was commissioned. And, now, we celebrate its completion and inaugurate it on its profound mission. It is my sincere hope and prayer that this pipe organ will, indeed, lift all of our minds to God and higher things: through sustained congregational singing; through the accompaniment of our choirs; and through the concerts, which invite members of our wider community into the Church to experience the immensity and magnificence of God through the mysterious and powerful musical sentiments expressed by this organ.

I want to sincerely thank Rev. Lawrence W. Jozwiak, the rector of the co-cathedral, the organ committee, and all who have made this magnificent instrument a reality. And I thank all of you for your continued prayers and blessings upon the Church in the Archdiocese of Galveston-Houston.

—Daniel Cardinal DiNardo
Archbishop of Galveston-Houston

Pasi Organ Builders, Opus 19 Four manuals, 76 stops

GREAT II

- 16' Principal
- 8' Praestant
- 8' Spitzfloete
- 8' Harmonic Flute
- 8' Gamba
- 6' Quinte
- 4' Octave
- 4' Nachthorn
- 3' Quinte
- 2' Octave
- 1 3/4' Terz
- 8' Cornet V (c1)
- 2' Mixture V
- 2 3/4' Rauschpfeife IV
- 16' Trumpet
- 8' Trumpet
- 8' Trompette
- 4' Clairon

POSITIVE III

- 16' Quintadena
- 8' Praestant
- 8' Gedeckt
- 8' Salicional
- 8' Suavial (g)
- 4' Octave
- 4' Rohrflöte
- 3' Nazard
- 3' Sesquialtera II
- 2' Octave
- 2' Gemshorn
- 1 3/4' Tierce
- 1 1/4' Larigot
- 1' Scharff IV
- 16' Dulzian
- 8' Cromorne
- 8' Trumpet
- 8' Trechterregal

SWELL IV

- 16' Bourdon
- 8' Praestant
- 8' Viola
- 8' Celeste
- 8' Rohrflöte
- 4' Octave
- 4' Harm. Flute
- 4' Violetta
- 3 3/4' Gross Tierce
- 2 3/4' Nazard
- 2' Octave
- 2' Octavin
- 1 3/4' Tierce
- 1' Flageolet
- 2' Mixture V
- 16' Bassoon
- 8' Trompette
- 8' Oboe
- 4' Clairon
- 8' Voix Humaine

GRAND CHOIR I

- 32' Principal
- 16' Praestant
- 16' Violone
- 16' Bourdon
- 8' Octave
- 8' Flute
- 4' Octave
- 3' Plein Jeu Harmonique III-V+
- 16' Posaune
- 16' Bombarde
- 8' Trompette
- 8' Trumpet
- 8' Clarinette
- 4' Schalmay
- 8' Trompeta
- 4-16' Trompeta
- +Grand Choir only

PEDAL

- 32' Principal
- 16' Praestant
- 16' Violone
- 16' Bourdon
- 8' Octave
- 8' Flute
- 4' Octave
- 4' Mixtur VI*
- 32' Bombarde*
- 32' Trombone*
- 16' Posaune
- 16' Bombarde
- 8' Trompette
- 8' Trumpet
- 8' Clarinette
- 4' Schalmay
- 2' Cornet*
- 8' Trompeta

* Pedal only

Zimbelstern (seven rotating bells)

Separate tremulants for the Great and Positive divisions, one normal and one Voix Humaine tremulant for the Swell division.

Normal mechanical-action unison couplers. Optional electric-assist couplers to the Great, Positive, and Pedal.

Electric-assist couplers to the Grand Choir, and for all Octave Graves.

Electric stop action; 18 general and 38 divisional pistons on 2,750 levels of memory.

Wind system: twin blowers producing pressures ranging between 80 and 120 mm.

Three double-rise bellows for the Swell, Grand Choir and Pedal divisions. Two Baroque wedge bellows for the Great and Positive divisions.